SOIL SURVEY OF

Escambia County, Alabama

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

Major fieldwork for this soil survey was completed in 1969. Soil names and descriptions were approved in 1969. Unless otherwise indicated, statements in the publication refer to conditions in the county in 1969. This survey was made cooperatively by the Soil Conservation Service, the Forest Service, the Alabama Department of Agriculture and Industries, and the Alabama Agricultural Experiment Station. It is part of the technical assistance furnished to the Escambia County Soil and Water Conservation District.

Either enlarged or reduced copies of the soil map in this publication can be made by commercial photographers, or they an be purchased on individual order from the Cartographic Division, Soil Conservation Service, United States Department of Agriculture, Washington, D.C. 20250.

HOW TO USE THIS SOIL SURVEY

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

Locating Soils

All the soils of Escambia County 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 county 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 suitability group in which the soil has been placed.

Individual colored maps showing the relative suitability or degree of limitations 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 with a moderate limitation can be colored yellow, and those with 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 capability units and the woodland suitability groups.

Foresters and others can refer to the section "Use of the Soils for Woodland," where the soils of the county are grouped according to their suitability for trees.

Game managers, sportsmen, and others can find information about soils and wildlife in the section "Use of the Soils for Wildlife."

Community planners and others can read about soil properties that affect the choice of sites for dwellings, industrial buildings, and recreation areas in the section "Town and Country Planning."

Engineers and builders can find, under "Use of the Soils in 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 how the soils formed and how they are classified in the section "Formation and Classification of the Soils."

Newcomers in Escambia County may be especially interested in the section "General Soil Map," where broad patterns of soils are described. They may also be interested in the information about the county given in the section "General Nature of the County."

Cover: **An area of the Greenville-Ruston-Orangeburg association. Ruston soils are in the foreground, Greenville soils in left center, and Orangeburg soils in the right background.**

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SOIL SURVEY OF ESCAMBIA COUNTY, ALABAMA

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SOILS SURVEYED BY MARTIN G. MATTOX, LEWIS A. DUNGAN, HAROLD B. NEAL, WILLIAM B. PARKER, AND THOMAS A. WALKUP, SOIL CONSERVATION SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE AND FOREST SERVICE, IN COOPERATION WITH THE ALABAMA DEPARTMENT OF AGRICULTURE AND INDUSTRIES AND THE ALABAMA AGRICULTURAL EXPERIMENT STATION

ESCAMBIA COUNTY is in the southwestern part of Alabama (fig. 1). It is about 18 miles from north to south and 54 miles from east to west. It has a total area of 962 square miles, or 615,680 acres. The climate generally is humid and mild. Rainfall is plentiful and is generally well distributed throughout the year. Brewton, the county seat, is near the center of the county.

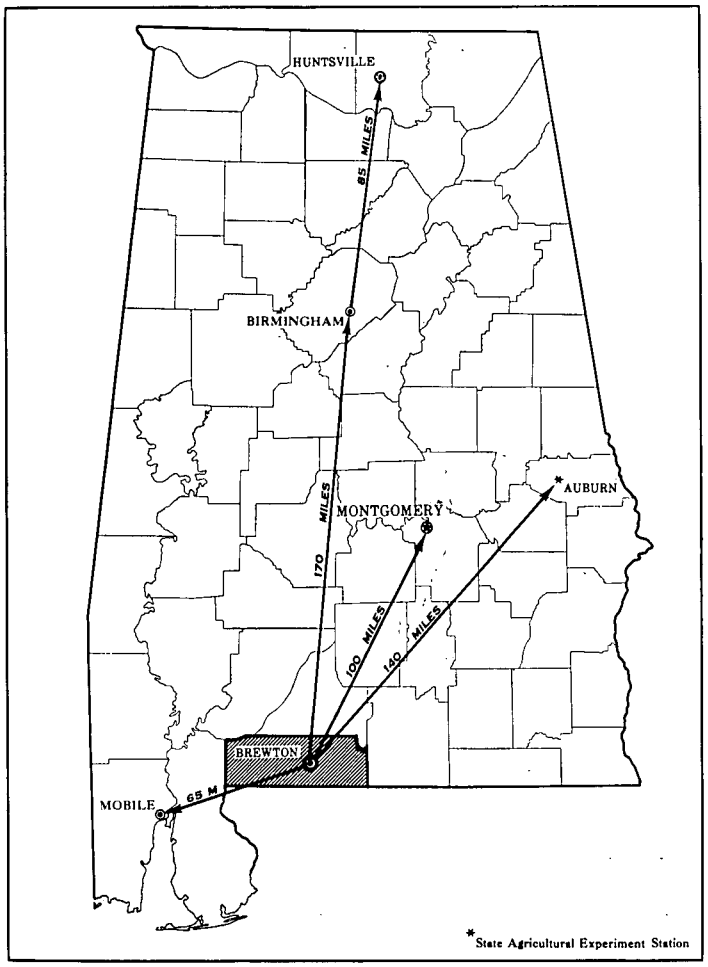

Figure 1.—Location of Escambia County in Alabama.

The county is entirely on the Coastal Plain. Elevations range from about 65 feet above sea level at Pollard in the south-central part of the county to about 345 feet above sea level near Huxford in the northwestern part of the county. The topography is nearly level and gently sloping in the western one-third of the county. The eastern two-thirds of the county is mostly gently sloping or sloping, but it is more steep near the streams.

The drainage system in the county is well developed. All of the streams flow in a southerly or southwesterly direction into Florida, except for Little River in the northwestern part of the county. It flows westward into the basin of the Alabama River. The streams meander throughout their course in Escambia County, and this results in some streambank cutting. Many of the streams flow clear, indicating that little sediment is moving into them.

The economy of the county depends primarily on woodland and farming enterprises. About 78 percent of the county is in woodland, mostly longleaf, slash, and loblolly pines on uplands and many kinds of hardwoods on bottom lands. Crops commonly grown are corn, cotton, soybeans, small grain, and a few truck crops. Much of this cropland is subject to water erosion and soil blowing. Beef cattle and hogs are the main livestock enterprises, and there are a few dairy cattle.

How This Survey Was Made

Soil scientists made this survey to learn what kinds of soil are in Escambia County, where they are located, and how they can be used. The soil scientists went into the county 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 they studied, and they compared these 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 profiles 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 other geographic feature near the place where a soil of that series was first observed and mapped. Benndale and Brewton, 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, Benndale fine sandy loam, 0 to 2 percent slopes, is one of several phases within the Benndale 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 at the back of this publication was prepared from 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 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. Three such kinds of mapping units are shown on the soil map of Escambia County: soil complexes, soil associations, and undifferentiated groups.

A soil complex consists of areas of two or more soils, so intricately mixed or so small in size that they cannot be shown separately on the soil map. Each area of a complex contains some of each of the two or more dominant soils, and the pattern and relative proportions are about the same in all areas. Generally, the name of a soil complex consists of the names of the dominant soils, joined by a hyphen. Benndale-Orangeburg complex, sloping, is an example.

A soil association is made up of adjacent soils that occur as areas large enough to be shown individually on the soil map but are shown as one unit because the time and effort of delineating them separately cannot be justified. There is a considerable degree of uniformity in pattern and relative extent of the dominant soils, but the soils may differ greatly one from another. The name of an association consists of the names of the dominant soils, joined by a hyphen. Chewacla-Lenoir-Riverview association is an example.

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. Bibb soils is an undifferentiated soil group in this county.

While a soil survey is in progress, soil scientists take soil samples needed for laboratory measurements and for engineering tests. Laboratory data from the same kinds of soil in other places are also 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.

Soil scientists observe how soils behave when used as a growing place for native and cultivated plants, and as material for structures, foundations for structures, or covering for structures. They relate this behavior to properties of the soils. For example, they observe that filter fields for onsite disposal of sewage fail on a given kind of soil, and they relate this to the slow permeability of the soil or a high water table. They see that streets, road pavements, and foundations for houses are cracked on a named kind of soil, and they relate this failure to the high shrink-swell potential of the soil material. Thus, they use observation and knowledge of soil properties, together with available research data, to predict limitations or suitability of soils for present and potential uses.

After data have been collected and tested for the key, or benchmark, soils in a survey area, the soil scientists set up trial groups of soils. They test these groups by further study and by consultation with farmers, agronomists, engineers, and others. They then 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 current 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 Escambia County. A soil association is a landscape that has a distinctive proportional pattern of soils. It normally consists of one or more major soils and at least one minor soil, and it is named for the major soils. The soils in one association may occur in another, but in a different pattern.

A map showing soil associations is useful to people who want a general idea of the soils in a county, who want to compare different parts of a county, or who want to know the location of large tracts that are suitable for a certain kind of land use. Such a map is a useful general guide in managing a watershed, a wooded tract, or a wildlife area, or in planning engineering works, recreational facilities, and community developments. It is not a suitable map for planning the management of a farm or field, or for selecting the exact location of a road, building, or similar structure, because the soils in any one

association ordinarily differ in slope, depth, stoniness, drainage, and other characteristics that affect their management.

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

The soil associations in Escambia County are discussed in the following pages.

1. Troup-Bibb-Orangeburg association

Well-drained, gently sloping to sloping soils on uplands and poorly drained soils on first bottoms

This association (fig. 2) consists primarily of well-drained, gently sloping to sloping soils and poorly drained soils along drainageways. Slopes range from long and gentle to short and choppy. The short slopes range from 8 to about 20 percent and are near streams. Areas of this association have well-developed drainage systems that consist of small draws and large creeks, and these are the areas where the poorly drained soils occur. All of the larger creeks flow generally in a southerly direction.

This association makes up about 57 percent of the county. Troup soils make up about 17 percent of the association, Bibb soils about 16 percent, and Orangeburg soils about 7 percent. The remaining 60 percent is minor soils.

Troup soils are primarily on ridgetops and gentle side slopes. They have a surface layer of very dark grayish-brown fine sand 3 inches thick over 12 inches of yellowish-brown fine sand. The next 25 inches is strong-brown loamy fine sand over 13 inches of reddish-yellow loamy sand. The subsoil is red sandy clay loam about 66 inches thick.

Bibb soils are in narrow draws and on creek bottoms. They have a surface layer of dark-brown silt loam 2 inches thick over 7 inches of very dark gray silt loam. The next 10 inches is stratified dark-gray, light-gray, and pale-brown sand, loamy sand, and sandy loam. The next 18 inches is dark-gray loam to fine sandy loam that contains light-gray strata of washed sand. Below this is 8 inches of dark-gray sandy loam that contains strata of light-gray sand and black loam. The lowermost 15 inches is light-gray sand and loamy sand.

Orangeburg soils are primarily on ridgetops and gentle side slopes. They have a surface layer of very dark grayish-brown fine sandy loam 4 inches thick over 3

Figure 2.—An area of association 1. Troup soils are in the area of planted pines and in the right foreground. Bibb soils are in the center, and Orangeburg soils are in the right background.

inches of dark-brown fine sandy loam. The upper 7 inches of the subsoil is strong-brown sandy loam; the next 8 inches is yellowish-red sandy clay loam; and the lower part of the subsoil, to a depth of 87 inches, is red sandy clay loam.

The minor soils are the well drained Benndale, Esto, Flomaton, Greenville, Lucy, and Wagram soils on uplands; the moderately well drained to well drained Dothan and Poarch soils on uplands; and the poorly drained to very poorly drained Atmore, Dorovan, Plummer, and Ponzer soils on uplands and flood plains.

About 15 percent of this association is used for crops and pasture. Farms are relatively small, or about 80 acres. They are managed and operated by the owners, some on a part-time basis. The more gently sloping soils generally are used for farming, and the steeper soils are used for the production of timber. Wooded areas are in pines and mixed hardwoods. Most of the larger tracts of woodland are owned and managed by lumber and paper companies, but a few individuals own tracts of timberland 5,000 to 35,000 acres in size. The trend in land use in this association appears to be to timber. The major limitations to cultivation are low available water capacity, wetness, and steepness. Erosion is a hazard. This association is well suited to fairly well suited to use as woodland and wildlife habitat.

Many areas in this association are suited to the development of hunting areas, campsites, riding and hiking trails, and picnic areas. Many sites are suitable for ponds or lakes. Most areas have slight to moderate limitations for urban uses. The steeper and wetter areas have severe limitations for urban uses. Bibb soils are severely limited by a high water table most of the year and by the hazard of flooding.

2. *Greenville-Ruston-Orangeburg association*

Well-drained, level to very gently sloping soils on uplands

This association consists mainly of well-drained, level to very gently sloping soils. Slopes are dominantly 0 to 5 percent. Broad, nearly level flats in this association have a few areas where water stands for short periods after heavy rain. Drainage systems are fairly well developed in the very gently sloping areas.

This association makes up about 14 percent of the county. Greenville soils make up about 25 percent of the association, Ruston soils about 15 percent, and Orangeburg soils about 10 percent. The remaining 50 percent is minor soils.

Greenville soils are primarily on broad flats. They have a surface layer of dark reddish-brown, fine sandy loam 8 inches thick. The upper 4 inches of the subsoil is dark reddish-brown sandy clay loam; the next 26 inches is dark-red sandy clay to clay; and the lower 27 inches is dark-red clay.

Ruston soils are on gentle side slopes and, in a few places, on broad flats. They have a surface layer of dark grayish-brown, very fine sandy loam 8 inches thick. The upper 6 inches of the subsoil is yellowish-red sandy clay loam; the next 16 inches is yellowish-red clay loam; the next 11 inches is yellowish-red clay loam mottled with red and pale brown; and the lowermost 24 inches is mottled yellowish-red, red, and very pale brown loam.

Orangeburg soils occupy positions similar to those of the Ruston soils. They have a surface layer of very dark grayish-brown fine sandy loam 4 inches thick over 3 inches of dark-brown fine sandy loam. The upper 7 inches of the subsoil is strong-brown sandy loam; the next 8 inches is yellowish-red sandy clay loam; and the lower part of the subsoil, to a depth of 87 inches, is red sandy clay loam.

The minor soils are the well drained Benndale, Freemanville, Grasmere, Red Bay, and Tifton soils on uplands; the moderately well drained to well drained Poarch soils and the moderately well drained Irvington and Malbis soils on uplands; and the poorly drained Atmore, Bibb, and Grady soils on upland flats and flood plains.

About 70 percent of this association has been cleared and is used for crops or pasture. Farms are mostly managed and operated by the owners. Wooded areas are in pines and mixed hardwoods. The largest tracts of woodland are owned and operated by lumber and paper companies. The major soils have very few limitations for farming or woodland. Wetness is a major limitation on some of the minor soils.

This association is well suited to the development of campsites, riding and hiking trails, picnic areas, residential and industrial developments, and other nonfarm uses.

3. *Benndale-Orangeburg-Troup association*

Well-drained, nearly level to very gently sloping soils on ridgetops and side slopes.

This association (fig. 3) consists primarily of well-drained, nearly level to very gently sloping soils on ridgetops and side slopes. Natural drainageways are numerous enough to carry excess surface water off these soils. Slopes are concave and convex and generally are less than 5 percent.

This association makes up about 15 percent of the county. Benndale soils make up about 25 percent of the association, Orangeburg soils about 20 percent, and Troup soils about 14 percent. The remaining 41 percent is minor soils.

Benndale soils are primarily on ridgetops. They have a 6-inch surface layer of very dark grayish-brown fine sandy loam over 6 inches of brown sandy loam. The subsoil is dark yellowish-brown sandy loam in the upper 7 inches and yellowish-brown sandy loam to a depth of 40 inches. Below this, between depths of 40 and 88 inches, it is yellowish-brown sandy clay loam that has strong-brown, yellowish-red, pale-yellow, and red mottles.

Orangeburg soils also are mainly on ridgetops. They have a surface layer of very dark grayish-brown fine sandy loam 4 inches thick over 3 inches of dark-brown fine sandy loam. The upper 7 inches of the subsoil is strong-brown sandy loam; the next 8 inches is yellowish-red sandy clay loam; and the lower part of the subsoil, to a depth of 87 inches, is red sandy clay loam.

Troup soils are on side slopes. They have a surface layer of very dark grayish-brown fine sand 3 inches thick over 12 inches of yellowish-brown fine sand. The next 25 inches is strong-brown loamy fine sand over 13 inches of reddish-yellow loamy sand. Below this is 66 inches of red sandy clay loam.

The minor soils are the well drained Freemanville, Greenville, Lucy, Red Bay, Ruston, and Wagram soils on uplands; the moderately well drained to well drained Dothan soils on uplands; and the somewhat poorly

Figure 3.—An area of association 3. Benndale soils are in the left foreground, Orangeburg soils in the center, and Troup soils in the background.

drained Escambia soils and the poorly drained Atmore, Bibb, and Plummer soils on upland flats and flood plains. The percentage of somewhat poorly and poorly drained soils included is small.

About 40 percent of this association is used for row crops and pasture, which grow well on these soils. Farms are managed and operated by the owners. The remaining 60 percent of this association is used for the production of timber. The wetter soils that have been cleared are used for pasture. The major hazard to growing row crops is erosion. Wetness is a major limitation on some of the minor soils. The well-drained soils have few limitations for residential or industrial development.

The soils in this association are suited to the development of wildlife management areas, campsites, picnic areas, hiking trails, hunting areas, and other nonfarm enterprises.

4. Tifton-Benndale-Escambia association

Well-drained and somewhat poorly drained, nearly level to very gently sloping soils on uplands

This association (fig. 4) consists primarily of well-drained and somewhat poorly drained soils on broad flats and gentle side slopes. Natural and manmade drainageways dissect this association. The somewhat poorly drained Escambia soils are at slightly lower elevations than the well-drained soils.

This association makes up about 6 percent of the county. Tifton soils make up about 30 percent of the association, Benndale soils about 25 percent, and Escambia soils about 10 percent. The remaining 35 percent is minor soils.

Tifton soils are on broad flats and gentle side slopes. They have a surface layer of very dark gray fine sandy loam 6 inches thick over 4 inches of brown fine sandy loam. The thick subsoil is yellowish-brown loam in the upper 3 inches; yellowish-brown clay loam in the next 10 inches; yellowish-brown clay loam mottled with strong brown in the next 17 inches; and mottled yellowish-brown, light-gray, light yellowish-brown, strong-brown, and red clay loam in the lower 25 inches.

Benndale soils are on broad flats and gentle side slopes. They have a surface layer of very dark grayish-brown fine sandy loam 6 inches thick over 6 inches of brown sandy loam. The subsoil is dark yellowish-brown sandy loam in the upper 7 inches and yellowish-brown sandy loam to a depth of 40 inches. Below this, to a depth of 88 inches, it is yellowish-brown sandy clay loam mottled with strong brown, yellowish red, pale yellow, and red.

Escambia soils are on broad flats. They have a surface layer of very dark gray fine sandy loam 7 inches thick over 6 inches of pale-olive loam. The thick subsoil is pale-yellow loam mottled with yellow and strong brown in the upper 11 inches; pale-yellow loam mottled with light gray, light yellowish brown, and strong brown in the next 11 inches; light gray loam mottled with strong brown, yellow, red, and yellowish brown in the next 15 inches; and mottled red, strong-brown, light-gray, and yellowish-brown loam in the lower 22 inches.

The minor soils are the well drained Orangeburg and Ruston soils on the uplands; the moderately well drained Irvington and Malbis soils on the uplands; the somewhat poorly drained Robertsdale soils on uplands; and the

Figure 4.—An area of association 4. The potatoes are growing on a Tifton fine sandy loam.

poorly drained Atmore, Bibb, and Grady soils on upland flats and flood plains.

The well-drained soils of this association are well suited to row crops, and the somewhat poorly drained soils are suited to row crops and some specialized truck crops. Farms are operated primarily by the owners. Farms generally are larger than 100 acres. Lumber and paper companies own a large part of the wooded area in this association. The soils are well suited to the production of timber and to wildlife management. The most severe limitation to use of some soils in this association is wetness that affects the timely use of mechanized machinery. Erosion is a hazard on the sloping soils.

The well-drained soils in this association have few limitations for urban uses and farming. The somewhat poorly drained Escambia soils are limited in their suitability for nonfarm uses because of wetness.

5. *Chewacla-Lenoir-Riverview association*

Somewhat poorly drained and well-drained, nearly level soils on flood plains and low stream terraces

This association consists of somewhat poorly drained and well-drained, nearly level soils along the large creeks and the Conecuh River. It is dissected by old creek runs, sloughs, and old river runs. The areas adjoining these old runs and sloughs generally are not more than 6 feet higher in elevation. The somewhat poorly drained soils are in the old runs and at the lower elevations along with the well-drained soils on low ridges. Some of the sloughs are filled with water seasonally, and some have water in them the year around, forming small lakes.

This association makes up about 4 percent of the county. Chewacla soils make up about 30 percent of the association, Lenoir soils about 22 percent, and Riverview soils about 20 percent. The remaining 28 percent is minor soils.

Chewacla soils are somewhat poorly drained and are at lower elevations than the Riverview soils. They have a surface layer of very dark grayish-brown silt loam 3 inches thick. The subsoil is 8 inches of brown loam mottled with brownish yellow; 12 inches of brown loam mottled with gray and yellowish red; 11 inches of mottled gray, pale-olive, and yellowish-red clay loam; and 10 inches of yellowish-brown sandy loam that has a few light brownish-gray mottles. The underlying material is 16 inches of stratified, yellow and yellowish-brown loamy sand and sand.

The Lenoir soils are at the lower elevations in this association. They have a surface layer of very dark gray fine sandy loam over 4 inches of grayish-brown fine sandy loam. The thick subsoil is light yellowish-brown clay loam mottled with light gray and yellowish red in the upper 6 inches; mottled light-gray, light yellowish-brown, yellowish-brown, and red clay in the next 11 inches; light-gray clay mottled with light yellowish brown, reddish yellow, and red in the next 9 inches; mottled light-gray, olive-yellow, brownish-yellow, strong-brown, and red clay in the next 33 inches; mottled gray, yellow, reddish-yellow, yellowish-brown, and red clay in the next 16 inches; and mottled gray, brownish-yellow, and reddish-brown clay in the lower 14 inches.

Riverview soils are well drained and are on the tops of low levees or at higher elevations. They have a surface

layer of very dark grayish-brown silt loam about 6 inches thick. The subsoil, about 33 inches thick, is dark yellowish-brown loam in the upper 17 inches; yellowish-brown loam in the next 8 inches; and yellowish-brown fine sandy loam in the lower 8 inches. The underlying material, about 21 inches thick, is brownish-yellow loamy fine sand.

The minor soils are mainly the poorly drained and very poorly drained Bibb, Coxville, Dorovan, and Weston soils; the somewhat poorly drained Brewton soils; the moderately well drained Craven soils; the well-drained Cahaba and Kalmia soils; and the excessively drained Bruno soils. All of these minor soils are on low stream terraces and flood plains.

Most areas of this association are in trees, dominantly mixed hardwoods and scattered pine and cedar. Little farming is done in the association because of the hazard of flooding. The trend in land use is to stay in the production of timber. The most severe limitations to use of the soils are the hazard of flooding and excess water in the profile.

The soils in this association are well suited to the production of timber and to wildlife management. They are poorly suited to residential and industrial development, roads, and playgrounds. They are suited to the development of hunting areas, hiking trails, picnic areas, and campsites.

6. *Kalmia-Brewton-Craven association*

Well-drained to somewhat poorly drained, nearly level soils on stream terraces

This association consists of well-drained to somewhat poorly drained, nearly level soils. The somewhat poorly drained soils are at slightly lower elevations than the moderately well drained and well drained soils. Drainageways in this association are weakly to moderately expressed.

These soils make up about 4 percent of the county. Kalmia soils make up about 20 percent of the association, Brewton soils about 17 percent, and Craven soils about 11 percent. The remaining 52 percent is minor soils.

Kalmia soils are well drained. They have a surface layer of dark-gray fine sandy loam over 5 inches of yellowish-brown fine sandy loam. The subsoil, about 27 inches thick, is yellowish-brown sandy clay loam in the upper 22 inches and yellowish-brown sandy loam mottled with very pale brown and red in the lower 5 inches. The underlying material, about 21 inches thick, is mixed yellow, white, and reddish-yellow loamy sand and sand.

Brewton soils are on flats but are lower in elevation than the Craven and Kalmia soils. They have a surface layer of very dark gray fine sandy loam 3 inches thick over 3 inches of mixed yellowish-brown and dark grayish-brown fine sandy loam. The upper part of the subsoil, about 15 inches thick, is light yellowish-brown fine sandy loam mottled with strong brown in the upper 8 inches and mottled yellowish-brown, strong-brown, and yellowish-red loam that has light-gray pockets of fine sandy loam in the next 7 inches. The fragipan, about 33 inches thick, is mottled brownish-yellow, strong-brown, and red fine sandy loam in the upper 15 inches and mottled brownish-yellow, light-gray, red, and strong-brown sandy loam in the next 18 inches. Below this, the subsoil is 6 inches of light yellowish-brown sandy loam that has yellow, strong-brown, and light-gray mottles. The underlying material, about 36 inches thick, is mottled light-gray, yellow, and pink clay in the upper 12 inches and mottled very pale brown and yellow sand and loamy sand in the lower 24 inches.

Craven soils are on flats and are higher in elevation than the Brewton soils. They have a surface layer of brown fine sandy loam about 8 inches thick. The subsoil, about 30 inches thick, is yellowish-red clay in the upper 12 inches; yellowish-red clay mottled with gray and strong brown in the next 8 inches; and yellowish-red sandy clay loam to clay loam intensely mottled with gray and strong brown in the lower 10 inches. The underlying material, about 32 inches thick, is strong-brown sandy loam stratified with sandy clay loam and mottled with yellowish brown and red in the upper 16 inches. It is strong-brown, yellowish-brown, and gray, stratified sandy loam and sandy clay in the lower 16 inches.

The minor soils are the well-drained Cahaba soils, the somewhat poorly drained Lenoir soils, the poorly drained Bibb, Coxville, and Weston soils, and the excessively drained Lakeland soils. Bibb soils are on flood plains, and the others are on stream terraces.

Small areas of this association are used for crops and pasture. Most areas are used to grow timber, both hardwoods and pines. Timber companies own most of the large timber tracts in this association. Most of the privately owned land is in small tracts and is reverting from row crops and pasture to timber, mostly pines. The most severe limitation to the use of some of the soils in this association is wetness.

The well-drained soils of this association are suited to the production of crops and to use as residential building sites. All the soils are suited to the production of timber, to wildlife management, and to pasture. The better drained soils are also suited to the development of hunting areas, campsites, picnic areas, and trails and to other nonfarm uses. The Brewton soils are limited in use because of a seasonal high water table and wetness.

Descriptions of the Soils

This section describes the soil series and mapping units in Escambia County. Each soil series is described in detail, and then, briefly, each mapping unit in that series. Unless it is specifically mentioned otherwise, the reader can assume that 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 downward to rock or other underlying material. Each series contains two descriptions of this profile. The first is brief and in terms familiar to the layman. The second is much more detailed and is for those who need to make thorough and precise studies of soils. The profile described in the series is representative for mapping units in that series. If the profile of a given mapping unit is different from the one described for the series, these differences are stated in describing the mapping unit, or the differences are apparent in the soil name. The color terms are for a moist soil unless otherwise stated.

499-067—75——2

Following the name of each mapping unit is a symbol in parentheses. This symbol 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 for the description of each capability unit and woodland suitability group can be learned by referring to the "Guide to Mapping Units" at the back of this survey.

All of the soils in Escambia County are deep. Bedrock is below a depth of 10 feet for all soils in the county. All of the soils are strongly acid or very strongly acid, except where indicated. A few soils, such as the Atmore, Brewton, Irvington, and Robertsdale, have a weak fragipan at a depth of about 30 inches that somewhat restricts the penetration of roots and retards the movement of water through these layers.

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 (*8*).[1]

Atmore Series

The Atmore series consists of poorly drained soils on uplands. These soils have a fragipan and contain plinthite. They formed in marine sediments of loam and silty clay loam. Slopes range from 0 to 3 percent.

In a representative profile the surface layer is dark-gray silt loam about 7 inches thick. The subsurface layer is gray silt loam about 6 inches thick. Below this, to a depth of 30 inches, is light-gray, friable silt loam mottled with pale yellow or yellow. The underlying material, to a depth of 70 inches, is mottled silt loam in the upper part and silty clay loam that contains 10 to 20 percent plinthite in the lower part.

[1] Italic numbers in parentheses refer to Literature Cited, p. 96.

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

Soil	Acres	Percent	Soil	Acres	Percent
Atmore silt loam, 0 to 3 percent slopes	6, 813	1. 1	Malbis fine sandy loam, 0 to 2 percent slopes	7, 367	1. 2
Benndale fine sandy loam, 0 to 2 percent slopes	12, 570	2. 0	Malbis fine sandy loam, 2 to 5 percent slopes	2, 298	. 4
Benndale fine sandy loam, 2 to 5 percent slopes	29, 767	4. 8	Orangeburg fine sandy loam, 0 to 2 percent slopes	11, 446	1. 9
Benndale fine sandy loam, 5 to 8 percent slopes	2, 830	. 5	Orangeburg fine sandy loam, 2 to 5 percent slopes	36, 974	6. 0
Benndale-Orangeburg complex, sloping	76, 396	12. 4	Orangeburg fine sandy loam, 5 to 8 percent slopes	6, 987	1. 1
Benndale-Orangeburg complex, moderately steep	22, 967	3. 7	Orangeburg-Greenville-Malbis complex, 3 to 12 percent slopes, eroded	897	. 1
Bibbs soils	74, 445	12. 1	Plummer loamy sand, 0 to 5 percent slopes	8, 881	1. 4
Brewton fine sandy loam	4, 158	. 7	Plummer loamy sand, 5 to 12 percent slopes	7, 947	1. 3
Bruno loamy sand	810	. 1	Poarch fine sandy loam, 0 to 2 percent slopes	4, 783	. 8
Cahaba fine sandy loam	2, 055	. 3	Poarch fine sandy loam, 2 to 5 percent slopes	8, 908	1. 4
Chewacla-Lenoir-Riverview association	17, 595	2. 9	Poarch fine sandy loam, 5 to 8 percent slopes	2, 355	. 4
Coxville fine sandy loam	1, 788	. 3	Ponzer muck	1, 590	. 3
Craven fine sandy loam	2, 748	. 4	Red Bay fine sandy loam, 0 to 2 percent slopes	517	. 1
Dorovan muck	2, 756	. 4	Riverview-Lenoir complex	1, 574	. 3
Dothan fine sandy loam, 2 to 5 percent slopes	7, 848	1. 2	Robertsdale fine sandy loam, 0 to 2 percent slopes	1, 858	. 3
Dothan fine sandy loam, 5 to 8 percent slopes	4, 221	. 7	Ruston very fine sandy loam, 0 to 2 percent slopes	7, 716	1. 3
Escambia fine sandy loam, 0 to 3 percent slopes	8, 161	1. 3	Ruston very fine sandy loam, 2 to 5 percent slopes	5, 900	1. 0
Esto fine sandy loam, 2 to 5 percent slopes	1, 396	. 2	Ruston very fine sandy loam, 5 to 8 percent slopes	971	. 2
Esto-Dothan-Wagram complex, sloping	20, 310	3. 3	Saffell gravelly fine sandy loam, 2 to 5 percent slopes	3, 232	. 5
Esto-Dothan-Wagram complex, moderately steep	6, 555	1. 1	Saffell gravelly fine sandy loam, 5 to 12 percent slopes	2, 338	. 4
Flomaton gravelly loamy sand, 2 to 10 percent slopes	779	. 1	Sunsweet fine sandy loam, 2 to 5 percent slopes	544	. 1
Flomaton gravelly loamy sand, 10 to 17 percent slopes	2, 455	. 4	Sunsweet fine sandy loam, 5 to 12 percent slopes	1, 092	. 2
Freemanville fine sandy loam, 0 to 2 percent slopes	2, 021	. 3	Tifton fine sandy loam, 0 to 2 percent slopes	6, 062	1. 0
Freemanville fine sandy loam, 2 to 5 percent slopes	9, 542	1. 6	Tifton fine sandy loam, 2 to 5 percent slopes	6, 530	1. 1
Freemanville fine sandy loam, 5 to 8 percent slopes	3, 125	. 5	Troup fine sand, 0 to 5 percent slopes	49, 032	8. 0
Grady loam	5, 791	. 9	Troup fine sand, 5 to 8 percent slopes	23, 219	3. 8
Grasmere silty clay	3, 076	. 5	Wagram loamy sand, 0 to 5 percent slopes	12, 105	2. 0
Greenville fine sandy loam, 0 to 2 percent slopes	16, 565	2. 7	Wagram loamy sand, 5 to 8 percent slopes	2, 504	. 4
Greenville fine sandy loam, 2 to 5 percent slopes	6, 378	1. 0	Weston fine sandy loam	6, 965	1. 1
Irvington fine sandy loam, 0 to 2 percent slopes	3, 228	. 5	Gullied land (shown on soil map by symbol)	551	. 1
Irvington fine sandy loam, 2 to 5 percent slopes	603	. 1	Water	3, 098	. 5
Kalmia fine sandy loam	4, 921	. 8			
Lakeland sand	4, 399	. 7			
Lenoir fine sandy loam	2, 730	. 4			
Lucy loamy sand, 0 to 5 percent slopes	6, 492	1. 1			
Lucy loamy sand, 5 to 8 percent slopes	1, 145	. 2	Total	615, 680	100. 0

Atmore soils are low in natural fertility and medium in organic-matter content. The available water capacity is medium. Permeability is moderate above the fragipan and moderately slow in the fragipan. Surface runoff is slow.

Most areas of these soils are in trees or pasture. Areas that have been cleared and drained are used for row crops and pasture. The native vegetation is slash and loblolly pines, a few longleaf pines, various hardwoods, and an understory of gallberry, wiregrass, and pitcherplant.

Representative profile of Atmore silt loam, 0 to 3 percent slopes, 200 yards west of entrance to Swift Lumber Company, 50 yards south of road NE¼SE¼SE¼ sec. 24, T. 1 N., R. 5 E.:

Ap—0 to 7 inches, dark-gray (N 4/0) silt loam; few, fine, faint, gray mottles; weak, fine, granular structure; very friable; strongly acid; clear, wavy boundary.

A21g—7 to 13 inches, gray (5Y 6/1) silt loam; weak, fine, granular structure; very friable; few medium iron concretions; strongly acid; clear, smooth boundary.

A22g&Bg—13 to 19 inches, light-gray (2.5Y 7/2) silt loam; common, medium, faint, pale-yellow mottles; tongues of dark material extending downward in root channels and natural cracks; weak, fine, subangular blocky structure; friable; sand grains are mostly uncoated; few medium iron concretions; strongly acid; irregular, wavy boundary.

B2tg—19 to 30 inches, light-gray (2.5Y 7/2) silt loam; many, coarse, faint, yellow mottles increasing in amount to about 50 percent in lower part; weak, medium, subangular blocky structure; friable; sand grains are coated and bridged with clay; few medium iron concretions; strongly acid; gradual, wavy boundary.

Bx1—30 to 48 inches, mottled yellow (10YR 7/8), yellowish-red (5YR 5/6), and light-gray (2.5Y 7/2) silt loam; moderate, medium, subangular blocky structure; friable in light-gray areas; firm, brittle, and compact in yellowish-red areas; 15 percent is plinthite; few, hard, red nodules; thin patchy clay films on most ped faces; strongly acid; gradual, wavy boundary.

Bx2—48 to 70 inches, reticulately mottled with dark red (2.5YR 3/6) at center enclosed with yellow (10YR 7/8) and light-gray (2.5Y 7/2) silty clay loam; moderate, medium and coarse, subangular blocky structure; friable in light-gray areas; firm, brittle, and compact in red areas; thin, gray and yellowish-brown clay films on most ped faces; common iron concretions; 20 percent is plinthite in upper part of horizon reducing to 10 percent in lower part; strongly acid.

The Ap and A1 horizons range from black to gray. The A21g horizon is gray or light olive-gray fine sandy loam to silt loam. The A22g&Bg horizon is gray, light-gray, light brownish-gray, or light olive-gray silt loam or fine sandy loam that is mottled with yellow, pale brown, or pale yellow.

The B2tg horizon ranges from gray to light-gray heavy sandy loam, silt loam, or loam that has common to many mottles of yellow, yellowish brown, gray, and pale olive. The Bx horizons are mottled yellow, light-gray, strong-brown, yellowish-red, and red or dark-red loam to silty clay loam.

Depth to the fragipan ranges from 24 to 50 inches. Content of plinthite ranges from 5 to 25 percent in these horizons. Iron concretions range from 0 to 5 percent in amount and are from ⅛ to ¾ inch in diameter throughout the profile. Reaction is strongly acid to very strongly acid throughout the profile.

Atmore soils occur on the landscape with Escambia, Grady, Irvington, Plummer, and Robertsdale soils. They are more poorly drained and are at slightly lower elevations than Escambia soils. They are coarser textured in the Bt horizon than Grady soils, which are in depressions. Atmore soils are finer textured in the A horizon than Plummer soils. They are more poorly drained than Irvington and Robertsdale soils.

Atmore silt loam, 0 to 3 percent slopes (At).—This soil is on uplands. Included in mapping are small areas of Escambia, Grady, Plummer, and Robertsdale soils. Also included are areas of Atmore soils that have slopes of more than 3 percent and areas where the fragipan is above a depth of 24 inches. A few areas that have a fine sandy loam surface layer also are included. The included soils make up about 20 percent of the mapping unit.

Tilth is moderately good if this soil is drained. Response to fertilizer is fair. The rooting zone is mainly above the fragipan.

Poor drainage is the major limitation to use of this soil. The hazard of erosion is slight. Capability unit IVw–11; woodland suitability group 3w9.

Benndale Series

The Benndale series consists of well-drained soils on uplands. These soils formed in unconsolidated beds of sandy loams and sandy clay loams. Slopes are 0 to 8 percent.

In a representative profile the surface layer is very dark grayish-brown fine sandy loam about 6 inches thick. The subsurface layer is brown sandy loam 6 inches thick. The upper 7 inches of the subsoil is dark yellowish-brown, friable sandy loam. Below this, to a depth of 40 inches, the subsoil is yellowish-brown sandy loam. Beneath this, to a depth of 88 inches, it is yellowish-brown sandy clay loam mottled with strong brown, yellowish red, pale yellow, and red.

Benndale soils are low in natural fertility and content of organic matter. The available water capacity is medium, and permeability is moderate.

About one-third of the acreage of these soils is used for row crops and pasture. Crops commonly grown are corn, cotton, soybeans, small grain, and some truck crops. The remaining acreage is used for the production of timber. The native vegetation is mainly longleaf and loblolly pines, dogwood, and various oaks. In places there is an understory of gallberry.

Representative profile of Benndale fine sandy loam, 0 to 2 percent slopes, 3.75 miles south of bridge crossing Conecuh River on State Route No. 41, 1.1 miles west on gravel road and 150 feet west of Escambia Experimental Warehouse, NE¼SE¼NE¼NE¼ sec. 33, T. 1 N., R. 10 E.:

A1—0 to 6 inches, very dark grayish-brown (10YR 3/2) fine sandy loam; weak, fine, granular structure; very friable; strongly acid; clear, wavy boundary.

A2—6 to 12 inches, brown (10YR 4/3) sandy loam; weak, fine, granular structure; very friable; strongly acid; gradual, wavy boundary.

B1—12 to 19 inches, dark yellowish-brown (10YR 4/4) sandy loam; weak, medium, subangular blocky structure; friable; sand grains are coated and bridged; very strongly acid; gradual, wavy boundary.

B21t—19 to 40 inches, yellowish-brown (10YR 5/8) sandy loam; weak, medium, subangular blocky structure; friable; few, very thin, patchy clay films; very strongly acid; clear, wavy boundary.

B22t—40 to 59 inches, yellowish-brown (10YR 5/8) sandy clay loam; few, fine, distinct, strong-brown and yellowish-red mottles; weak, medium, subangular blocky structure; friable; few clean sand grains;

few, thin, patchy clay films; very strongly acid; gradual, wavy boundary.

B23t—59 to 88 inches, yellowish-brown (10YR 5/8) sandy clay loam; common, fine and medium, strong-brown mottles, few, fine and medium, pale-yellow mottles, and few, fine, prominent, red mottles; weak, medium and coarse, subangular blocky structure; friable; few thin clay films; less than 5 percent plinthite; very strongly acid.

The A1 horizon ranges from very dark gray to grayish brown. The A2 horizon ranges from brown to light yellowish brown. It is sandy loam, fine sandy loam, very fine sandy loam, and loam. The B1 horizon ranges from sandy loam to loam and from brown to dark yellowish brown or brownish yellow.

The B2t horizon ranges from strong brown to yellow and is mottled with brown, yellow, and red in the lower part. This horizon ranges from sandy loam to sandy clay loam, and the finer textures are in the lower part.

Depth to mottles ranges from 32 to 48 inches. Quartz gravel and iron concretions range in size from ⅛ to ¾ inches in diameter and from 0 to 5 percent in amount. Content of plinthite ranges from 0 to 5 percent in the lower part of some profiles. Reaction is strongly acid to very strongly acid throughout the profile.

Benndale soils occur on the landscape with Dothan, Lucy, Orangeburg, Poarch, Tifton, and Wagram soils. Benndale soils are coarser textured in the Bt horizon than Dothan and Tifton soils and contain less than 5 percent plinthite. They lack the thick, sandy A horizon (20 to 40 inches in thickness) that is common in Lucy and Wagram soils. Benndale soils are coarser textured in the upper part of the Bt horizon than Orangeburg soils. They contain less plinthite than Dothan, Poarch, and Tifton soils.

Benndale fine sandy loam, 0 to 2 percent slopes (BeA).—This soil is on uplands. It has the profile described as representative for the series.

Included with this soil in mapping are small areas of Benndale soils that have slopes of 2 to 5 percent and a few areas that are finer textured in the upper part of the subsoil. Also included are a few areas of Dothan, Orangeburg, Poarch, and Tifton soils.

This soil can be worked within a wide range of moisture content. Tilth is good. Roots can penetrate deep. Response to fertilizer and management is very good. Surface runoff is slow. The hazard of erosion is slight.

This soil is well suited to most crops commonly grown in the county. Capability unit I–13; woodland suitability group 2o1.

Benndale fine sandy loam, 2 to 5 percent slopes (BeB).—This soil is on uplands. It has a surface layer of very dark grayish-brown fine sandy loam 5 inches thick. The upper part of the subsoil is yellowish-brown sandy loam, and the lower part is yellowish-brown sandy clay loam mottled with shades of brown, yellow, and red.

Included with this soil in mapping are soils that have a profile that is similar to that of this soil but is more clayey in the upper part of the subsoil. Also included are small areas of eroded Benndale soils and small areas of Dothan, Orangeburg, Poarch, Tifton, and Wagram soils.

Tilth of this soil is good. The rooting zone is deep. Response to fertilizer is good. Surface runoff is medium. The hazard of erosion is moderate.

This soil is suited to all crops commonly grown in the county. Erosion is a major hazard where this soil is cultivated. Capability unit IIe–13; woodland suitability group 2o1.

Benndale fine sandy loam, 5 to 8 percent slopes (BeC).—This soil is on uplands. It occurs primarily in small areas. It has a surface layer of dark grayish-brown fine sandy loam 6 inches thick. The upper part of the subsoil is yellowish-brown sandy loam, and the lower part is yellowish-brown fine sandy loam or sandy clay loam mottled with brown, red, or yellow.

Included with this soil in mapping are areas that have slopes of 2 to 5 percent, areas that are eroded, and small areas of Dothan, Orangeburg, Poarch, and Wagram soils. Also included are soils that have a profile that is similar to that of this soil but is finer textured in the upper part of the subsoil.

Tilth is good in most areas of this soil. The rooting zone is deep. Response to fertilizer and management is good. Surface runoff is medium to rapid in cultivated areas.

This soil is fairly well suited to most crops commonly grown in the county. It is suited to pasture and trees. The hazard of erosion is moderate to severe where this soil is cultivated. Capability unit IIIe–13; woodland suitability group 2o1.

Benndale-Orangeburg complex, sloping (BgD).—The soils in this complex are on side slopes of uplands adjacent to drainageways throughout most of the county. These soils formed in marine sediment of sandy loam and sandy clay loam textures. This complex is about 49 percent Benndale soils and about 35 percent Orangeburg soils. The remaining 16 percent is minor soils, including the Bibb, Esto, Flomaton, and Plummer soils. Slopes range from 5 to 12 percent.

The major soils in this complex generally are on the upper three-fourths of the side slopes, and minor soils generally are on the lower side slopes.

The Benndale soils generally have a surface layer of very dark grayish-brown fine sandy loam about 6 inches thick. The subsoil is yellowish-brown fine sandy loam in the upper part and grades to sandy clay loam in the lower part. In some areas the profile is as much as 15 percent quartz gravel, and in a few areas the lower part of the subsoil is more than 5 percent plinthite.

The Orangeburg soils generally have a surface layer of grayish-brown fine sandy loam 6 inches thick. The subsoil is red sandy clay loam. In a few areas the profile is as much as 15 percent quartz gravel, and in some areas the surface layer is thick loamy sand.

The soils of this complex are low in natural fertility and in content of organic matter, and they are medium in available water capacity. Internal drainage is medium, and permeability is moderate. Surface runoff is medium to rapid.

This complex is not suited to row crops, because of the severe hazard of erosion and steepness of slopes. It is suited to pasture and trees. Capability unit VIe–11; woodland suitability group 2o1.

Benndale-Orangeburg complex, moderately steep (BgE).—The soils in this complex are in areas throughout the county and are mostly adjacent to drainageways. These soils formed in loamy marine sediment of sandy loam and sandy clay loam textures. This complex is about 37 percent Benndale soils and about 24 percent Orangeburg soils. The remaining 39 percent is included Bibb, Esto, Flomaton, Plummer, and Sunsweet soils. Slopes range from 12 to 25 percent.

The soils in this complex primarily are on the upper two-thirds of the side slopes, but in places they are on the lower side slopes. The included soils mainly are on

the lower side slopes and steep breaks and in drainageways.

The Benndale soils generally have a surface layer of dark grayish-brown fine sandy loam 5 inches thick. The upper part of the subsoil is yellowish-brown fine sandy loam. The lower part of the subsoil is brownish-yellow sandy clay loam mottled with red, yellow, and brown.

The Orangeburg soils have a surface layer of dark grayish-brown fine sandy loam 5 inches thick. The thick subsoil is yellowish-red or red sandy clay loam.

The soils of this complex are low in natural fertility and in content of organic matter. They have medium available water capacity. Permeability is moderate, and internal drainage is medium. Surface runoff is medium to rapid.

This complex is not suited to row crops or pasture, because of the severe hazard of erosion and steepness of slopes. It is suited to trees. Capability unit VIIe–11; woodland suitability group 2o1.

Bibb Series

The Bibb series consists of poorly drained, stratified soils on flood plains along natural drainageways and streams. The water table generally is within 6 to 18 inches of the surface 9 to 11 months of the year. These soils formed in recent sandy and loamy alluvium. Slopes are generally less than 2 percent.

In a representative profile the surface layer is 9 inches thick. The upper 2 inches of this layer is dark-brown silt loam, and the lower 7 inches is very dark gray silt loam. The next 10 inches of the profile is very friable to loose, stratified, dark-gray, light-gray, and pale-brown sand, loamy sand, and sandy loam. Below this layer, to a depth of 37 inches, is dark-gray, very friable loam to fine sandy loam that has light-gray strata of washed sand. This is underlain by 8 inches of dark-gray, very friable sandy loam that has strata of light-gray sand and black loam. Beneath this is 15 inches of light-gray, loose sand and loamy sand.

Bibb soils are medium in natural fertility and organic-matter content. The available water capacity is high, and permeability is moderate.

Most areas of the Bibb soils are used for timber. A few areas have been cleared and are used for pasture and farm ponds. The native vegetation is sweetgum, maple, bay, baldcypress, yellow-poplar, and some eastern redcedar and pine.

Representative profile of Bibb silt loam in an area of Bibb soils, 2.0 miles northwest and 0.95 mile north of Wessner oil well No. 1, 200 feet west in woods south of small creek, NW¼NE¼NW¼ sec. 3, T. 1 N., R. 8 E.:

A11—0 to 2 inches, dark-brown (7.5YR 3/2) silt loam; weak, fine, granular structure; friable; many fine and medium roots; strongly acid; clear, wavy boundary.

A12—2 to 9 inches, very dark gray (10YR 3/1) silt loam; few, fine, faint, dark yellowish-brown root stains; weak, fine, granular structure; friable; strongly acid; clear, wavy boundary.

C1g—9 to 19 inches, dark-gray (10YR 4/1), light-gray (10YR 6/1), and pale-brown (10YR 6/3), stratified sand, loamy sand, and sandy loam; few dark reddish-brown root stains; strata are ½ inch to 3 inches apart and ⅛ to ½ inch in thickness; single grained; very friable to loose; strongly acid; gradual, wavy boundary.

C2g—19 to 37 inches, dark-gray (10YR 4/1) loam to fine sandy loam; few pockets or strata of light-gray washed sand; weak, coarse, subangular blocky structure to massive; very friable; very strongly acid; gradual, wavy boundary.

C3g—37 to 45 inches, dark-gray (10YR 4/1) sandy loam; few dark reddish-brown root stains and few strata of light-gray sand and black loam; massive; very friable; few quartz pebbles ⅛ to ¼ inch in size; strongly acid; gradual, wavy boundary.

IIC4—45 to 60 inches, light-gray (10YR 6/1) sand and loamy sand; single grained; loose; strongly acid.

The A11 horizon ranges from black to grayish brown and from loamy sand to silt loam. The A12 horizon ranges from very dark gray to light gray and from loamy sand to silt loam. In places this horizon has mottles of yellow, brown, and gray.

The Cg horizon has matrix colors of very dark gray to light gray. In places this horizon is mottled with gray, yellow, brown, and red. In most places the Cg horizon has strata of sand, sandy loam, loamy sand, loam, or silt loam. Some strata are high in organic-matter content, and in some places they are gravelly.

Reaction is strongly acid to very strongly acid throughout the profile. Content of mica flakes ranges from few to none.

Bibb soils occur on the landscape with Dorovan, Plummer, Ponzer, and Weston soils. Bibb soils do not have the thick organic layer that is common to Dorovan and Ponzer soils. They are more stratified and are less clayey in the layers below the surface layer than Weston soils. Bibb soils do not have the thick, sandy A horizon (more than 40 inches thick) that is common in Plummer soils.

Bibb soils (Bh).—These nearly level soils are along natural drainageways throughout the county. They have a surface layer that ranges from loamy sand to silt loam. They are flooded frequently in winter and in spring.

Included with these soils in mapping are some areas of better drained soils. Also included are a few areas of Dorovan and Ponzer soils, some areas of moderately well drained soils that formed in recent alluvium, and some old sloughs.

The composition of this mapping unit is more variable than that of the other units in the county but has been controlled well enough to interpret for the expected use of the soils.

Response to fertilizer is fair on these soils. Tilth is fair to good in drained areas and poor in undrained areas. Roots can easily penetrate the layers below the surface layer. Surface runoff is slow.

These soils are suited to pasture if they are drained. They are not suited to row crops, but they are well suited to trees and to use as wildlife habitat. Flooding is a severe hazard, and the high water table is a major limitation to use. The hazard of erosion is slight. Capability unit Vw-12; woodland suitability group 2w9.

Brewton Series

The Brewton series consists of somewhat poorly drained soils on stream terraces. These soils have a weakly expressed fragipan. They formed in stream alluvium of variable texture, mainly sandy loam, loam, and loamy sand. Slopes range from 0 to 2 percent.

In a representative profile the surface layer is very dark gray fine sandy loam about 3 inches thick. The subsurface layer is mixed yellowish-brown and dark grayish-brown fine sandy loam about 3 inches thick. The upper 8 inches of the subsoil is light yellowish-brown, friable

fine sandy loam. Below this, the subsoil is friable and firm, mottled loam that extends to a depth of 21 inches, where the fragipan starts. The fragipan is mottled brownish-yellow, strong-brown, yellowish-red, red, and light-gray, firm sandy loam or fine sandy loam that extends to a depth of 54 inches. Below the fragipan is 6 inches of light yellowish-brown, friable sandy loam that is mottled. The underlying material, to a depth of 72 inches, is mottled light-gray, yellow, and pink, firm clay. Underlying the clay layer is very pale brown and yellow, loose sand and loamy sand.

Brewton soils are low in natural fertility and organic-matter content. The available water capacity is medium above the fragipan and medium to low within the fragipan. Permeability is moderate above the fragipan and slow in it.

More than 90 percent of the acreage of these soils is wooded, and less than 10 percent is used for row crops and pasture. Most of the cleared areas are used for pasture. The native vegetation is chiefly longleaf and slash pines, bay, various gums and oaks, and, in most places, an understory of gallberry.

Representative profile of Brewton fine sandy loam, 1.3 miles south of Conecuh River on State Route No. 41 at the east entrance to the Brewton airport, 100 feet west of road on east side of drainage ditch, NW¼SE¼ SE¼NE¼ sec. 16, R. 10 E., T. 1 N.:

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

A2—3 to 6 inches, mixed yellowish-brown (10YR 5/4) and dark grayish-brown (10YR 4/2) fine sandy loam; weak, fine, granular structure; very friable; strongly acid; clear, wavy boundary.

B—6 to 14 inches, light yellowish-brown (2.5Y 6/4) fine sandy loam; few, fine, distinct, strong-brown mottles; weak, medium, subangular blocky structure; friable; common areas of uncoated sand grains in lower part; strong-brown areas have very thin, patchy clay films on most faces; very strongly acid; gradual, wavy boundary.

B&A'2—14 to 21 inches, mottled yellowish-brown (10YR 5/6), strong-brown (7.5YR 5/6), and yellowish-red (5YR 5/8) loam; many pockets of light-gray (2.5Y 7/2) fine sandy loam; weak, medium, subangular blocky structure; firm and brittle in brownish areas, friable in light-gray areas; many sand grains in light-gray pockets are uncoated; very strongly acid; gradual, wavy boundary.

B'x1—21 to 36 inches, mottled prism interiors of brownish-yellow (10YR 6/6), strong-brown (7.5YR 5/6), and red (2.5YR 5/8) fine sandy loam; weak, coarse prisms parting to weak, thick plates, which in turn part to moderate, medium, subangular blocks; brittle, firm, and hard; prism surfaces and material in polygonal cracks are light gray; many, thin, patchy, strong-brown clay films; many coarse vesicules lined with clay; few plinthite nodules; strongly acid; gradual, wavy boundary.

B'x2—36 to 54 inches, mottled brownish-yellow (10YR 6/6), light-gray (10YR 7/1), red (2.5YR 5/8), and strong-brown (7.5YR 5/6) sandy loam and pockets of loamy sand and light sandy clay loam; weak, thick, platy structure parting to medium subangular blocky structure; firm in place, hard and compact when dry, most areas moderately brittle when moist; light-gray areas in the polygonal cracks; white sand in old root channels; many vesicules lined with clay; few mica flakes; very strongly acid; gradual, wavy boundary.

B'3—54 to 60 inches, light yellowish-brown (2.5Y 6/4) sandy loam; common, medium, distinct, yellow and strong-brown mottles and common, medium, prominent, light-gray mottles; weak, medium, subangular blocky structure; friable; few mica flakes; very strongly acid; abrupt, wavy boundary.

IIC1—60 to 72 inches, mottled light-gray (10YR 7/1), yellow (10YR 7/8), and pink (5YR 7/4) clay; massive; firm; very strongly acid; abrupt, wavy boundary.

IIC2—72 to 96 inches, mottled very pale brown (10YR 8/3) and yellow (10YR 7/6) sand and loamy sand; single grained; loose; stratified; very strongly acid.

The A1 horizon ranges from black to very dark grayish brown. The A2 horizon ranges from dark grayish brown to pale yellow and is fine sandy loam or light loam.

The B horizon is pale brown, very pale brown, yellow, light yellowish brown, brownish yellow, or pale yellow. This horizon has mottles of brown, yellow, and gray in many profiles, and it has areas of uncoated sand grains that range from few to common. The B horizon is sandy loam, fine sandy loam, loam, or silt loam. The A'2 part of the B&A'2 horizon is a continuous horizon in some profiles, and in other profiles it makes up from 15 to 50 percent of the horizon that is below the B horizon. The A'2 part of the B&A'2 horizon is light gray or white loamy sand or fine sandy loam. The B part of the B&A'2 horizon is yellow, yellowish-brown, yellowish-red, strong-brown, or light yellowish-brown sandy loam or loam.

Depth to the fragipan (B'x horizon) ranges from 12 to 30 inches. This horizon is mottled gray, yellow, brown, and red, and it is sandy loam, fine sandy loam, loam, silt loam, or light sandy clay loam. The B'3 horizon, where present, is similar in color to the B horizon above the fragipan. The B'3 horizon is dominantly sandy loam, but it ranges from light sandy loam to light sandy clay loam.

The IIC horizon ranges from sand to clay and in some places is stratified. This horizon is gray or yellow or mottled with gray, yellow, brown, and red. Gray mottles are within a depth of 16 inches. Reaction is strongly acid to very strongly acid throughout the profile.

Brewton soils occur on the landscape with Cahaba, Coxville, Kalmia, Lenoir, and Weston soils. Brewton soils have a fragipan that is lacking in all of those soils. They are more poorly drained than Cahaba and Kalmia soils but are better drained than Coxville and Weston soils. Brewton soils are coarser textured in the B horizon than Lenoir soils.

Brewton fine sandy loam (Br).—This nearly level soil is on terraces along the Conecuh River and larger streams in the county. Included in mapping are small areas of Coxville, Kalmia, Lenoir, and Weston soils.

Tilth is good if this soil is drained and cultivated. Response to fertilizer is fair to good. Roots easily penetrate this soil above the fragipan. In the fragipan the root penetration generally is somewhat restricted. Surface runoff is slow. The hazard of erosion is slight.

This soil is well suited to trees. If drained, it is suited to most crops commonly grown in the county, but its use is somewhat limited by wetness and the fragipan. This soil has water at or near the surface for short periods in winter and early in spring. Capability unit IIIw–12; woodland suitability group 2w8.

Bruno Series

The Bruno series consists of excessively drained, strongly acid to mildly alkaline, coarse-textured, stratified soils on flood plains along the larger streams in the county. These soils formed in sandy alluvium. In most places slopes are less than 2 percent.

In a representative profile in a wooded area, the surface soil is 2 inches of brown loamy sand underlain by 4 inches of yellowish-brown loamy fine sand. Below this, to a depth of 74 inches, is pale-brown, loose fine sand or

loamy fine sand stratified with yellowish-brown, dark yellowish-brown, brown, or brownish-yellow fine sandy loam, loam, or silt loam in which mica flakes are common.

Bruno soils are low in natural fertility and medium to low in organic-matter content. The available water capacity is low, and permeability is moderately rapid.

Practically all areas of these soils are in woodland consisting mostly of hardwoods. The native vegetation is sycamore, cottonwood, willow, oaks, and gum trees.

Representative profile of Bruno loamy sand, 0.25 mile east of Boykin school on U.S. Highway No. 29, 1.8 miles south of highway on woods road to junction, 0.5 mile southeast on woods road at junction, and 0.3 mile southwest on logging road, 150 feet from the Conecuh River, SE¼SW¼ sec. 20, R. 12 E., T. 2 N.:

A1—0 to 2 inches, brown (10YR 4/3) loamy sand; weak, fine, granular structure and single grained; very friable; mildly alkaline; clear, wavy boundary.

AC—2 to 6 inches, yellowish-brown (10YR 5/4) loamy fine sand; single grained; loose; few mica flakes; mildly alkaline; abrupt, smooth boundary.

C1—6 to 16 inches, pale-brown (10YR 6/3) fine sand; few dark yellowish-brown strata of finer textured material; single grained; loose; common mica flakes; mildly alkaline; abrupt, smooth boundary.

C2—16 to 36 inches, stratified, pale-brown (10YR 6/3), yellowish-brown (10YR 5/4), and dark yellowish-brown (10YR 4/4) loamy fine sand (strata are fine sand, fine sandy loam, and silt loam); single grained; loose; common mica flakes; neutral; gradual, wavy boundary.

C3—36 to 74 inches, stratified, pale-brown (10YR 6/3), yellowish-brown (10YR 5/6), brown (10YR 4/3), and reddish-yellow (7.5YR 6/6) loamy fine sand (strata are fine sand, fine sandy loam, silt loam, and loamy sand); single grained; loose; common mica flakes; slightly acid to mildly alkaline.

The A1 horizon is very dark grayish brown to yellowish brown. The AC horizon is brown to yellowish brown.

The C horizon is most commonly pale brown or brown to dark grayish brown and yellow. In most places the C horizon is fine sand to loamy fine sand that is stratified with sand, fine sandy loam, silt loam, and loam.

The organic-matter content decreases irregularly with depth. Reaction ranges from strongly acid to mildly alkaline throughout the profile.

Bruno soils occur on the landscape with Chewacla, Kalmia, and Riverview soils. Bruno soils are coarser textured throughout the profile and are more stratified than any of these soils. Bruno soils are better drained than Chewacla soils.

Bruno loamy sand (Bu).—This nearly level soil is on natural levees and low flats along the larger streams in the county. Included in mapping are areas of Chewacla, Lakeland, and Riverview soils. About one-fourth of the acreage has 1 to 3 inches of dark-brown silt loam or sand at the surface.

Roots can penetrate deep into this soil. Surface runoff is slow. The hazard of erosion is slight.

This soil is poorly suited to row crops because of the flood hazard and low available water capacity. It is fairly well suited to the production of hardwoods. Capability unit IIIs-11; woodland suitability group 3s2.

Cahaba Series

The Cahaba series consists of well-drained soils on stream terraces. These soils formed in loamy to sandy alluvium at the higher elevations along stream terraces. Dominant slopes are 0 to 2 percent.

In a representative profile the surface layer is 8 inches thick. The upper 4 inches of this layer is dark grayish-brown fine sandy loam, and the lower 4 inches is dark-brown sandy loam. The subsurface layer is 6 inches of strong-brown sandy loam. The subsoil is strong-brown, very friable sandy loam in the upper 3 inches; yellowish-red, friable sandy clay loam in the next 17 inches; and yellowish-red, very friable sandy loam in the lower 5 inches. The underlying material, to a depth of 65 inches or more, is yellow and very pale brown loamy sand or sand.

Cahaba soils are low in natural fertility and organic-matter content. The available water capacity is medium, and permeability is moderate.

The major acreage of these soils is in woodland. Small areas are used for row crops and pasture. The native vegetation is pine, sweetgum, bay, dogwood, holly, oaks, and in many places, an understory of gallberry.

Representative profile of Cahaba fine sandy loam, along U.S. Highway No. 29N, 6.2 miles east of intersection of U.S. Highway No. 29N and State Route No. 41S; then 40 feet north of road in woods, NW¼NW¼SE¼ sec. 32, T. 2 N., R. 11 E.:

A11—0 to 4 inches, dark grayish-brown (10YR 4/2) fine sandy loam; weak, fine, granular structure; very friable; many fine roots; strongly acid; gradual, wavy boundary.

A12—4 to 8 inches, dark-brown (10YR 4/3) sandy loam; weak, fine, granular structure; very friable; many fine roots; strongly acid; gradual, wavy boundary.

A2—8 to 14 inches, strong-brown (7.5YR 5/6) sandy loam; weak, fine, granular structure; very friable; many fine roots; strongly acid; clear, wavy boundary.

B1—14 to 17 inches, strong-brown (7.5YR 5/8) sandy loam; weak, fine, subangular blocky structure; very friable; strongly acid; clear, wavy boundary.

B2t—17 to 34 inches, yellowish-red (5YR 5/8) sandy clay loam; weak, medium, subangular blocky structure; friable; strongly acid; clear, wavy boundary.

B3—34 to 39 inches, yellowish-red (5YR 5/8) sandy loam; weak, fine, subangular blocky structure; very friable; strongly acid; clear, wavy boundary.

C1—39 to 50 inches, yellow (10YR 7/6) loamy sand that has white clean sand grains and few splotches of yellowish-red sandy loam; single grained; loose; strongly acid; gradual, wavy boundary.

C2—50 to 65 inches, very pale brown (10YR 7/4) sand; single grained; loose; strongly acid.

The A1 horizon ranges from very dark grayish brown to brown. The A2 horizon ranges from dark brown to brown and is sandy loam or fine sandy loam. This horizon ranges from 3 to 17 inches in thickness.

The B2t horizon ranges from sandy clay loam to light clay loam. It is yellowish red or reddish yellow. The B3 horizon ranges from brownish-yellow to yellowish-red sandy loam or fine sandy loam.

The C horizon ranges from very pale brown to yellow loamy sand or sand. Depth to the C horizon ranges from 36 to 51 inches.

Reaction ranges from strongly acid to very strongly acid throughout the profile.

Cahaba soils occur on the landscape with Brewton, Craven, Kalmia, Lakeland, and Lenoir soils. They are redder in the subsoil than Kalmia soils. Cahaba soils are better drained and occupy higher positions on the landscape than Brewton and Lenoir soils. Cahaba soils are coarser textured in the Bt horizon than Craven and Lenoir soils, and they are finer textured throughout the profile than Lakeland soils.

Cahaba fine sandy loam (Ca).—This soil is on stream terraces along the larger streams in the county. Slopes range from 0 to 2 percent. In cultivated areas the upper 6 inches of the surface layer generally is brown.

Included with this soil in mapping are a few areas where the soil is less than 36 inches deep. About one-fourth of the areas have a surface layer that is sandy loam or loamy fine sand. Also included are soils that have slopes of more than 2 percent and that make up about 11 percent of the acreage, and small areas of Brewton, Craven, Kalmia, and Lenoir soils.

This soil can be worked throughout a wide range of moisture content. Tilth is good. Response to fertilizer is good. Roots can penetrate deep into the subsoil. Surface runoff is slow. The hazard of erosion is slight.

This soil is well suited to row crops, pasture, and trees. It is well suited to all crops commonly grown in the county. There is no major limitation that affects the use of this soil. Capability unit I–12; woodland suitability group 2o7.

Chewacla Series

The Chewacla series consists of somewhat poorly drained, medium acid to very strongly acid, nearly level soils on flood plains. These soils formed in loamy alluvium. Slopes are generally less than 3 percent.

In a representative profile the surface layer is very dark grayish-brown silt loam about 3 inches thick. The upper 8 inches of the subsoil is brown loam that has brownish-yellow mottles; the next 12 inches is brown loam that has gray and yellowish-red mottles; the next 11 inches is mottled gray, pale-olive, and yellowish-red clay loam; and the lower 10 inches is yellowish-brown sandy loam that has a few light brownish-gray mottles. The underlying material is stratified, yellow and yellowish-brown, loose loamy sand and sand to a depth of 60 inches.

Chewacla soils are medium in natural fertility and in organic-matter content. The available water capacity is medium to high, and permeability is moderate.

All areas of these soils are used for timber, mostly hardwoods. The native vegetation is bay, sycamore, various gums and oaks, yellow-poplar, and a few pines.

Chewacla soils are mapped only in an association with the Lenoir and Riverview soils.

Representative profile of Chewacla silt loam in an area of Chewacla-Lenoir-Riverview association, 8.5 miles east of Brewton, then 0.5 mile southeast on State Route No. 4, 1.75 miles east on woods road, and ¼ mile south on logging road, SE¼SE¼NE¼ sec. 36, T. 2 N., R. 11 E.:

A1—0 to 3 inches, very dark grayish-brown (10YR 3/2) silt loam; weak, medium, granular structure; friable; strongly acid; abrupt, smooth boundary.

B1—3 to 11 inches, brown (10YR 4/3) loam; few brownish-yellow mottles; moderate, medium and fine, subangular blocky structure; firm; strongly acid; clear, wavy boundary.

B21—11 to 23 inches, brown (7.5YR 5/4) loam; common, fine, distinct, yellowish-red (5YR 5/6) and grayish-brown (2.5Y 5/2) mottles; weak, medium, subangular blocky structure; firm; very strongly acid; gradual, wavy boundary.

B22g—23 to 34 inches, mottled gray (5Y 5/1), pale-olive (5Y 6/4), and yellowish-red (5YR 5/6) clay loam; ped faces of dark gray; weak, medium, subangular blocky structure; firm; very strongly acid; clear, wavy boundary.

B3—34 to 44 inches, yellowish-brown (10YR 5/6) sandy loam; few light brownish-gray (2.5Y 6/2) mottles; weak, medium, subangular blocky to massive structure; friable; very strongly acid; clear, wavy boundary.

C—44 to 60 inches, stratified, yellow (10YR 7/6) and yellowish-brown (10YR 5/8) loamy sand and sand; single grained; loose; very strongly acid.

The A1 horizon ranges from very dark gray to brown. It is fine sandy loam, loam, or silt loam.

The B1 horizon is brown, dark-brown, or dark grayish-brown silt loam, loam, or silty clay loam. The B2 horizon ranges from brown to dark brown and yellowish brown. This horizon is mottled yellow, yellowish red, pale olive, and gray or mottled in shades of gray, olive, and red. The B2 horizon is loam, silt loam, sandy clay loam, clay loam, and silty clay loam.

The B3 horizon is yellowish brown, brown, or brownish yellow and has mottles of yellowish red, pale olive, and gray. It is sandy loam, loam, sandy clay loam, or silt loam.

The C horizon commonly is mottled or is yellow, yellowish brown, brown, or brownish yellow and mottled. This horizon is loamy sand, sandy loam, or gravelly sandy loam.

Depth to gray mottles is less than 20 inches. Reaction is very strongly acid to medium acid throughout the profile. Content of mica flakes ranges from few to common.

Chewacla soils occur on the landscape with Bruno, Lenoir, and Riverview soils. They have a coarser textured subsoil than Lenoir soils. Chewacla soils are more poorly drained and are finer textured throughout the profile than Bruno soils. They also are more poorly drained than Riverview soils.

Chewacla-Lenoir-Riverview association (Cn).—The nearly level soils in this mapping unit are on the flood plains of the Conecuh River and large creeks in the county. The Riverview soils are at the highest elevations on the tops of old levees. The Chewacla soils are on the sides of the levees and extend downward to the old sloughlike areas where the Lenoir soils occur. A few old river runs that have been cut off from the main channel, and numerous old sloughs that are filled with water, are in this association.

The delineations of this mapping unit generally are larger and the composition is more variable than that of other units in the county. Mapping has been controlled well enough, however, to interpret for the expected uses of the soils.

Chewacla soils make up about 42 percent of the association; Lenoir soils, about 28 percent; and Riverview soils, about 23 percent. The remaining 7 percent is mainly water in old sloughs and sand deposits along the streams.

The Chewacla soils have a profile similar to that described as representative for the series, except that some of the areas have a thicker surface layer that ranges from fine sandy loam to silt loam.

The Lenoir soils have a surface layer that is 3 inches of very dark gray fine sandy loam overlying 4 inches of dark grayish-brown fine sandy loam. The subsoil is mottled gray, yellowish-brown, light yellowish-brown, and yellowish-red clay loam or clay to a depth of 26 inches. It overlies mottled light-gray, brownish-yellow, light yellowish-brown, and red clay.

The Riverview soils have a surface layer of brown or dark-brown very fine sandy loam 6 inches thick. The subsoil, about 30 inches thick, is yellowish-brown loam that is underlain, to a depth of about 60 inches, by brownish-yellow loamy sand.

Included with these soils in mapping are areas of Bibb and Bruno soils and a soil that is closely related to Riverview soils but has a thinner profile. Also included are some poorly drained, clayey and loamy soils that are similar to Chewacla and Lenoir soils.

Soils in this association are low to moderate in natural fertility. The available water capacity is medium to high. Surface runoff is slow. The hazard of erosion is slight.

Almost all of this association is in woodland, to which the soils are well suited. They also are suited to row crops and pasture if they are cleared, leveled, drained, and fertilized. Flooding in spring, however, is the major hazard. Soils in the lower areas have an additional limitation of poor drainage. Capability unit IIIw–12; woodland suitability group 2w8.

Coxville Series

The Coxville series consists of poorly drained soils on low stream terraces. These soils have slopes mainly of less than 2 percent. They formed in marine sediment or old alluvium of sandy clay and clay textures.

In a representative profile the surface layer is dark-gray fine sandy loam about 3 inches thick. The subsurface layer is gray fine sandy loam about 3 inches thick. The upper 8 inches of the subsoil is grayish-brown clay loam mottled with olive yellow. The next 26 inches is gray clay mottled with strong brown, red, and yellow. The lower 25 inches is mottled gray, red, pale-brown, yellow, and reddish-yellow clay.

Coxville soils are low in natural fertility and organic-matter content. The available water capacity is medium to low, and permeability is moderately slow.

Coxville soils are used primarily for woodland. A few areas are used for pasture. These soils are suited to row crops if they are adequately drained. The native vegetation is bay, pine, gum, baldcypress, and gallberry.

Representative profile of Coxville fine sandy loam, 1.0 mile southwest of Keego brickyard, 150 feet south of L&N Railroad, and 30 feet west of gravel road, SW¼ NW¼ sec. 14, T. 1 N., R. 9 E.:

A1—0 to 3 inches, dark-gray (10YR 4/1) fine sandy loam; weak, fine, granular structure; friable; many fine roots; very strongly acid; clear, smooth boundary.

A2—3 to 6 inches, gray (N 5/0) fine sandy loam; few, fine, faint, olive-brown mottles; weak, fine, granular structure; friable; many fine roots; very strongly acid; gradual, wavy boundary.

B1g—6 to 14 inches, grayish-brown (2.5Y 5/2) clay loam; few, fine, faint, olive-yellow mottles; weak, fine, subangular blocky structure; friable to firm; few clay films on ped faces; few fine roots; very strongly acid; diffuse, wavy boundary.

B21tg—14 to 40 inches, gray (N 6/0) clay; few, fine, prominent, strong-brown and red mottles and common, medium, distinct, yellow mottles; mottles amount to about 35 percent of colors; moderate, fine and medium, subangular blocky structure; firm; abundant clay films on ped faces; very strongly acid; diffuse, wavy boundary.

B22tg—40 to 65 inches, medium and coarsely mottled gray (5Y 6/1), red (10R 4/6), pale-brown (10YR 6/3), yellow (10YR 7/8), and reddish-yellow (7.5YR 6/6) clay; moderate, medium, subangular blocky structure; firm; abundant clay films on ped faces; very strongly acid.

The A1 horizon ranges from very dark gray to dark gray. The A2 horizon ranges from dark gray to light gray and is fine sandy loam to loam.

The B1g horizon is grayish brown, light brownish gray, or light gray and ranges from loam to clay loam. The B2tg horizon is gray or light gray and has few to many mottles of yellow, brown, and red. This horizon is clay loam, sandy clay, or clay.

Reaction is strongly acid to very strongly acid throughout the profile.

Coxville soils occur on the landscape with Brewton, Cahaba, Craven, Kalmia, Lenoir, and Weston soils. Coxville soils are more poorly drained than all of those soils, except for the Weston soils. They are finer textured in the Bt horizon than Brewton, Cahaba, Kalmia, and Weston soils.

Coxville fine sandy loam (Co).—This nearly level soil is on low terraces along the larger streams in the county. Included in mapping are areas that have a silt loam surface layer. Also included are areas of Brewton, Craven, Lenoir, and Weston soils, areas that have a darker colored surface layer, and a few areas that are dark gray in the upper part of the subsoil.

Tilth is fair to good after the surface layer has dried out, but it is poor if this layer is wet. Response to fertilizer is fair to good. Roots penetrate fairly deep but are few and small in the lower part of the subsoil because of poor aeration. Roots tend to follow structure faces into the clayey subsoil. Surface runoff is slow. The hazard of erosion is slight.

This soil is fairly well suited to trees. It is limited in its suitability for row crops because of its moderately slow permeability, slow surface runoff, and poor drainage. It is suited to row crops if it is drained. This soil has been used as a source of clay for the production of bricks. Poor drainage is a major limitation to most uses. Capability unit IVw–11; woodland suitability group 2w9.

Craven Series

The Craven series consists of moderately well drained soils on stream terraces. These soils formed in sediment of sandy clay loam, clay loam, sandy loam, or sandy clay that washed from the uplands. Slopes are dominantly 0 to 2 percent.

In a representative profile the surface layer is brown fine sandy loam about 8 inches thick. The subsoil is yellowish-red, firm clay in the upper 12 inches, yellowish-red clay that has gray and strong-brown mottles in the next 8 inches, and yellowish-red sandy clay loam that is intensely mottled with gray and strong brown in the lower 10 inches. The underlying material extends from a depth of 38 inches to 70 inches. The upper part is strong-brown sandy loam stratified with sandy clay loam that is intensely mottled with gray, yellowish brown, and red. The lower part is strong-brown, yellowish-brown, and gray, stratified sandy loam and sandy clay.

Craven soils are low in natural fertility and organic-matter content. The available water capacity is medium to high. Permeability is slow to very slow.

Most areas of these soils are in woodland. A few areas are used for row crops and pasture. Some areas now in woodland were originally cleared and cultivated but have reverted to trees. The native vegetation is pine, gum, oaks, and gallberry.

Representative profile of Craven fine sandy loam in a pasture, 0.4 mile south of the Conecuh River on State Route No. 41, then 1.4 miles west on paved road to Jay, Florida, and 200 feet north of road, NE¼SE¼NW¼ sec. 17, T. 1 N., R. 10 E.:

Ap—0 to 8 inches, brown (10YR 5/3) fine sandy loam and some mixing from horizon below in lower part; weak, fine, granular structure; friable when moist; very strongly acid; clear, wavy boundary.

B21t—8 to 20 inches, yellowish-red (5YR 4/8) clay; moderate, fine, subangular blocky structure; firm, sticky, hard; few clay films on ped faces; few mica flakes; very strongly acid; gradual, wavy boundary.

B22t—20 to 28 inches, yellowish-red (5YR 4/8) clay; common, fine, distinct, gray mottles and few, fine, faint, strong-brown mottles; moderate, fine and medium, subangular blocky structure; friable to firm, slightly sticky, hard; few clay films on ped faces; common mica flakes; very strongly acid; gradual, wavy boundary.

B3—28 to 38 inches, yellowish-red (5Y 4/8) sandy clay loam to clay loam intensely mottled with gray and strong brown; moderate, medium, subangular blocky structure; firm, hard; few clay films on ped faces; common mica flakes; very strongly acid; gradual, wavy boundary.

C1—38 to 54 inches, strong-brown (7.5YR 5/8) sandy loam stratified with lenses of sandy clay loam intensely mottled with gray, yellowish brown, and red; massive; friable, hard; common mica flakes; very strongly acid; gradual, wavy boundary.

C2—54 to 70 inches, strong-brown (7.5YR 5/8), yellowish-brown (10YR 5/8), and gray (10YR 6/1), stratified sandy loam and sandy clay; massive; friable, hard; common mica flakes; very strongly acid.

The Ap horizon is dark grayish brown to brown. The A1 horizon, where present, is very dark grayish brown to brown. The A2 horizon, where present, is brown to light yellowish brown and ranges from sandy loam to loam.

The B2t horizon is yellowish red or red and is mottled with brown, red, yellow, and gray below a depth of about 16 inches. This horizon is clay loam or clay. Depth to the B3 horizon ranges from 28 to 48 inches. This horizon is mottled with red, brown, yellow, and gray. The B3 horizon ranges from sandy clay loam to clay, and, in some places, is stratified with sandy and clayey materials.

In places the C horizon is stratified or sandy or clayey. The colors of this horizon range from a mottled condition to a matrix of strong brown to brownish yellow.

Reaction is strongly acid to very strongly acid througout the profile. Content of mica flakes ranges from few to common in the B2t, B3, and C horizons.

Craven soils that have a red B2t horizon are slightly outside the defined range of the Craven series. This does not affect the usefulness or behavior of the soils.

The Craven soils occur on the landscape with Cahaba, Coxville, Kalmia, Lenoir, and Weston soils. The Craven soils are better drained and redder in the subsoil than the Lenoir and Coxville soils. They are finer textured in the subsoil than the Cahaba and Kalmia soils and are better drained and finer textured in the subsoil than the Weston soils.

Craven fine sandy loam (Cr).—This nearly level soil is on stream terraces along the Conecuh River and larger streams in the county. In wooded or undisturbed areas, the upper 2 to 4 inches of the surface layer generally is very dark grayish brown, and the next 2 to 4 inches is brown.

Included with this soil in mapping are a few areas of Cahaba, Coxville, Kalmia, and Lenoir soils. Also included are areas of Craven soils that have slopes of 2 to 5 percent; these make up about 10 percent of the mapping unit. A few areas where the clay subsoil is continuous to below a depth of 60 inches and areas where the surface layer is sandy loam and loam also are included.

Tilth is good in areas where the clayey subsoil is not reached by farm machinery. The rooting zone is deep. Response to fertilizer is good. Surface runoff is slow.

This soil is well suited to trees and pasture. It is suited to most crops grown in the county, but its use is somewhat limited by the slow or very slow permeability. Some areas are used as a source of clay for making bricks. The slow to very slow permeability and wetness in the subsoil are major limitations. Capability unit IIw-12; woodland suitability group 2w8.

Dorovan Series

The Dorovan series consists of very poorly drained, highly organic soils along the larger streams and in drainageways in wooded areas. These soils formed in a layer of decomposed organic matter, more than 51 inches thick, overlying mineral layers. Slopes are less than 2 percent.

In a representative profile the upper 58 inches is very friable, black muck. Next is 4 inches of grayish-brown, friable silt loam. Below this, to a depth of 66 inches, is gray very fine sandy loam.

Dorovan soils are high in natural fertility and very high in organic-matter content. The available water capacity is very high, and permeability is very slow because of the high water table.

All areas of these soils are in trees. The native vegetation is bay, baldcypress, various gums, yellow-poplar, a few pines, moss, and gallberry.

Representative profile of Dorovan muck, 0.7 mile south-southwest of U.S. Geological Survey bench mark, elevation 160 feet, west of Barnett Crossroads or 4 miles north-northeast of Interstate 65 where it crosses Big Escambia Creek, then 90 feet east of gravel road, NW¼NE¼ sec. 22, R. 7 E., T. 3 N.:

Oal—0 to 58 inches, black (N 2/0) muck; rubbed and pressed; about 30 percent fiber, unrubbed; 10 percent fiber, rubbed; massive; very friable; very strongly acid; clear, wavy boundary.

IIC1g—58 to 62 inches, grayish-brown (10YR 5/2) silt loam; massive; friable; very strongly acid; clear, wavy boundary.

IIC2g—62 to 66 inches, gray (5Y 6/1) very fine sandy loam; massive; very friable; very strongly acid.

The Oal horizon ranges from dark brown to black. The organic material in this horizon is black muck or peaty muck that ranges from 51 inches to more than 70 inches in thickness. The fiber content ranges from 10 to 30 percent in an unrubbed condition and is 10 percent or less after rubbing.

The IIC1g horizon ranges from 0 to 10 inches in thickness and from very dark gray to grayish brown in color. This horizon is clay loam to loamy sand or fine sand.

The IIC2g horizon ranges from very dark gray to white and from heavy clay loam or clay to sand. In places this horizon is mottled. In some places where the IIC2g horizon is coarse textured, quartz gravel is present.

Reaction is strongly acid or very strongly acid throughout the profile.

Dorovan soils occur on the landscape with Brewton, Coxville, Plummer, Ponzer, and Weston soils. Dorovan soils are organic soils, whereas the Brewton, Coxville, and Plummer soils are inorganic soils. Dorovan soils have a thicker organic layer than Ponzer soils.

Dorovan muck (Do).—This nearly level soil is on low flats along the larger streams and in drainageways that have poorly developed channels. It remains saturated most of the year.

Included with this soil in mapping are small areas of Bibb, Ponzer, and Weston soils. Also included are areas of soils that have a mucky loam or silt loam surface layer less than 6 inches thick. About one-fourth of the areas mapped as this soil have a dark-brown muck surface layer, about 4 inches thick, overlying layers of black

muck. A few areas have mineral layers of loamy sand or clay loam below a depth of 50 inches.

Tilth of this soil is poor. Response to fertilizer is fair to poor. Surface runoff is slow. The hazard of erosion is slight.

This soil is not suited to row crops and pasture, because of the high water table and difficulty of draining. It is suited to trees and for use as wildlife habitat. Excess water that stays in the profile for long periods is the major limitation. Capability unit VIIw-11; woodland suitability group 4w9.

Dothan Series

The Dothan series consists of well drained and moderately well drained soils that contain plinthite. These soils are on broad ridgetops and gentle side slopes on uplands south of the Conecuh River in the southeastern part of the county. They formed in beds of sandy clay loam and clay. Slopes are dominantly 2 to 8 percent.

In a representative profile the surface layer is dark grayish-brown fine sandy loam about 3 inches thick. The subsurface layer is yellowish-brown fine sandy loam about 4 inches thick. The subsoil is yellowish-brown, friable sandy clay loam in the upper 21 inches. Below this, to a depth of 44 inches, the subsoil is yellowish-brown sandy clay loam that is mottled with strong brown and red and is about 8 percent plinthite. Beneath this, to a depth of 69 inches, it is brownish-yellow sandy clay loam that is mottled with strong brown, light yellowish brown, light gray, and red and is about 15 percent plinthite. The underlying material is light-gray mottled clay.

Dothan soils are low in natural fertility and content of organic matter. The available water capacity is medium. Permeability is moderate in the upper part of the subsoil and moderately slow in the plinthite horizons.

About three-fourths of the acreage of these soils is in woodland. The remaining acreage is in row crops and pasture. The native vegetation is longleaf, slash, and loblolly pines, oaks, dogwood, and, in some places, an understory of gallberry.

Representative profile of Dothan fine sandy loam, 2 to 5 percent slopes, 0.3 mile north of Silas Creek on State Route No. 4, 30 feet west of road, NW¼NW¼NW¼ sec. 5, T. 1 N., R. 12 E.:

A1—0 to 3 inches, dark grayish-brown (10YR 4/2) fine sandy loam; weak, fine, granular structure; very friable; many fine roots; very strongly acid; clear, wavy boundary.

A2—3 to 7 inches, yellowish-brown (10YR 5/4) fine sandy loam; weak, fine, granular structure; friable; many fine roots; very strongly acid; clear, wavy boundary.

B1—7 to 10 inches, yellowish-brown (10YR 5/6) sandy clay loam; weak, medium, subangular blocky structure; friable; few fine and medium roots; very strongly acid; gradual, wavy boundary.

B21t—10 to 28 inches, yellowish-brown (10YR 5/8) sandy clay loam; weak, medium, subangular blocky structure; few thin clay films; friable; few fine and medium roots; very strongly acid; clear, wavy boundary.

B22t—28 to 44 inches, yellowish-brown (10YR 5/8) sandy clay loam; common, fine, distinct, strong-brown mottles and few, fine, prominent, red mottles; weak, medium, subangular blocky structure; friable; few, thin, patchy clay films on ped faces; 8 percent plinthite; very strongly acid; gradual, wavy boundary.

B23t—44 to 69 inches, brownish-yellow (10YR 6/8) sandy clay loam; many, medium, distinct and prominent mottles of strong brown, light yellowish brown, light gray, and red; weak to moderate, medium and coarse, subangular blocky structure; few thin clay films on ped faces; friable; plinthite is firm; compact; 15 percent plinthite; very strongly acid; gradual, wavy boundary.

B24t—69 to 100 inches, light-gray (2.5Y 7/2) clay; common, medium, distinct and prominent mottles of yellowish brown, red, dusky red, and strong brown; moderate, fine and medium, subangular blocky structure; friable to firm; sticky when wet; very strongly acid.

The A1 horizon ranges from very dark grayish brown to dark grayish brown. The A2 horizon ranges from brown to yellowish brown or light olive brown. It is sandy loam or fine sandy loam.

The B1 horizon ranges from yellowish brown to light yellowish brown. It is sandy loam or sandy clay loam. The B2t horizon ranges from brownish yellow to strong brown. The lower part of this horizon is sandy clay loam, sandy clay, or clay. The lower part of the B2t horizon is mottled red, strong brown, yellowish brown, pale brown, and, in some places, light gray, and it contains from 5 to 25 percent plinthite, by volume.

Depth to plinthite ranges from 24 to 44 inches. Iron concretions occur throughout some profiles. Their content ranges from 0 to 5 percent. Reaction is strongly acid to very strongly acid throughout the profile.

Dothan soils occur on the landscape with Benndale, Orangeburg, Troup, and Wagram soils. Dothan soils are finer textured in the subsoil than Benndale soils. They are yellower in the subsoil than Orangeburg soils. Dothan soils lack the thick, coarse-textured A horizon that is common to the Wagram and Troup soils.

Dothan fine sandy loam, 2 to 5 percent slopes (DtB).—This soil is on ridgetops and very gentle side slopes. It has the profile (fig. 5) described as representative for the series.

Included with this soil in mapping are a few areas that have a loamy sand and sandy loam surface layer and a few areas that have plinthite within 24 inches of the surface. Also included are small eroded areas where the subsoil is exposed and small areas of Benndale, Esto, and Orangeburg soils.

This soil can be worked throughout a fairly wide range of moisture content. Tilth is good. Response to fertilizer is good. Roots can easily penetrate the subsoil to the plinthite layer, where they are somewhat restricted and follow the polygonal cracks into the lower subsoil. Surface runoff is medium.

This soil is well suited to trees, pasture, and to many of the crops commonly grown in the county. The hazard of erosion is moderate. Capability unit IIe-12; woodland suitability group 2o1.

Dothan fine sandy loam, 5 to 8 percent slopes (DtC).—This soil is on side slopes. It has a surface layer of very dark grayish-brown fine sandy loam 6 inches thick. The subsoil is yellowish-brown or brownish-yellow sandy clay loam or clay loam to a depth of about 28 inches. The lower part of the subsoil is sandy clay loam that is mottled with shades of yellow, brown, red, and gray. Plinthite makes up about 10 to 20 percent of the subsoil below a depth of 24 inches.

Included with this soil in mapping are a few areas that have plinthite within 24 inches of the surface and a few areas that have a loamy sand and sandy loam surface

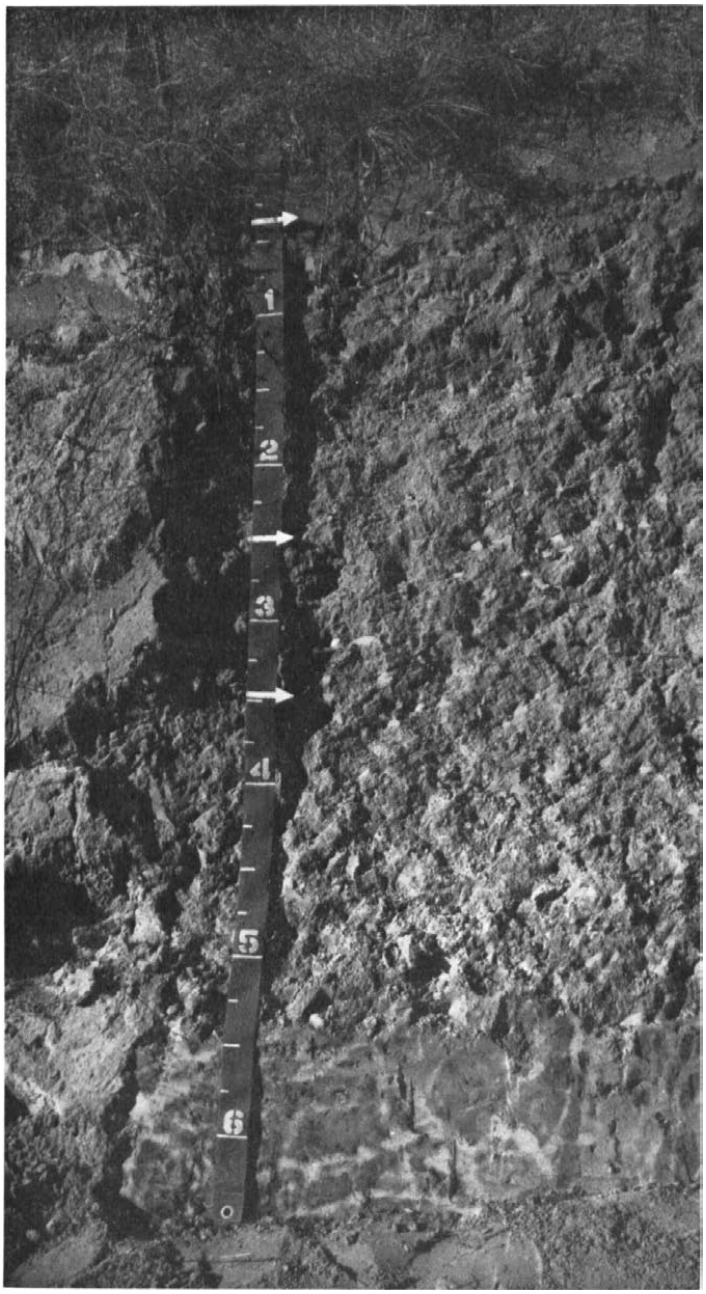

Figure 5.—**Profile of Dothan fine sandy loam, 2 to 5 percent slopes. Plinthite makes up 12 to 15 percent, by volume, of the lower part of the profile.**

layer 6 to 10 inches thick. Also included are areas of Benndale, Esto, and Wagram soils.

Tilth of this soil is good. Roots can easily penetrate the subsoil to the plinthite layers, where they follow cracks filled with material that is more friable than the plinthite. Response to fertilizer is good. Surface runoff is medium to rapid. The hazard of erosion is moderate to severe.

This soil is suited to most of the locally grown crops. It is well suited to trees and pasture. The suitability of this soil for row crops is only fair to good because of slope and the hazard of erosion. Capability unit IIIe-12; woodland suitability group 2o1.

Escambia Series

The Escambia series consists of somewhat poorly drained soils that contain plinthite. These soils are on uplands, where they formed in loamy marine sediments. Slopes are dominantly 0 to 3 percent.

In a representative profile the surface layer is very dark gray fine sandy loam about 7 inches thick. The subsurface layer is pale-olive loam about 6 inches thick. The subsoil, to a depth of 35 inches, is pale-yellow, friable loam mottled with yellow, light gray, and strong brown. Below this, to a depth of 50 inches, the subsoil is light-gray, friable loam that is mottled with strong brown, yellow, red, and yellowish brown and is 15 percent plinthite. Beneath this, to a depth of 72 inches, it is mottled red, strong-brown, light-gray, and yellowish-brown, friable loam that is 5 percent plinthite.

Escambia soils are low in natural fertility and organic-matter content. The available water capacity is medium. Permeability is moderate above the plinthite layers and moderately slow or slow in them.

About half the acreage of these soils is used for row crops and pasture. The remaining acreage is in woodland. The native vegetation is mixed pines and hardwoods and an understory of gallberry.

Representative profile of Escambia fine sandy loam, 0 to 3 percent slopes, 0.35 mile east of the south end of the Atmore airport, NW¼NE¼NW¼ sec. 35, T. 1 N., R. 6 E.:

Ap—0 to 7 inches, very dark gray (10YR 3/1) fine sandy loam; weak, medium and fine, granular structure; friable; strongly acid; clear, smooth boundary.

A3—7 to 13 inches, pale-olive (5Y 6/3) loam; single grained; friable; many fine roots; sand grains are mostly coated and weakly bridged with clay; few areas of uncoated sand grains less than 5 millimeters in size few, small, soft, black concretions; strongly acid; gradual, smooth boundary.

B1—13 to 24 inches, pale-yellow (5Y 7/3) loam; common, fine, distinct, yellow and strong-brown mottles; massive; friable; many fine roots; 15 to 20 percent of the sand grains are uncoated light gray (10YR 7/2) and are in pockets less than 8 millimeters in diameter; less than 1 percent plinthite; few iron concretions; very strongly acid; gradual, wavy boundary.

B21t—24 to 35 inches, pale-yellow (5Y 7/3) loam; many, medium, distinct, light-gray mottles and common, medium, distinct, light yellowish-brown and strong-brown mottles; weak, medium, subangular blocky structure; friable; common fine roots; common patchy clay films; few uncoated sand grains; 5 percent plinthite; 2 percent iron concretions; very strongly acid; gradual, wavy boundary.

B22t—35 to 50 inches, light-gray (N 7/0) loam; many, medium, prominent, strong-brown (7.5YR 5/6) mottles and few to common, fine, distinct, yellow, red, and yellowish-brown mottles; moderate, medium, subangular blocky structure; compact in place, most peds are friable; plinthite is firm and brittle; common fine roots; common patchy clay films; 15 percent plinthite; very strongly acid; gradual, wavy boundary.

B23t—50 to 72 inches, prominently mottled red (2.5YR 4/8), strong-brown (7.5YR 5/6), light-gray (10YR 7/1), and yellowish-brown (10YR 5/6) loam; very weak, medium, subangular blocky structure; friable; common fine roots; plinthite decreasing to 5 percent; very strongly acid.

The Ap and A1 horizons are dark gray, very dark gray, dark grayish brown, or very dark grayish brown. The A3

horizon is pale yellow, pale olive, or light yellowish brown. It is fine sandy loam, loam, or silt loam.

The B1 horizon has the same colors as the A3 horizon, but it also is light gray, light brownish gray, and light olive gray, mostly as areas of uncoated sand. This horizon has few to common mottles in shades of yellow, brown, and light gray. Content of uncoated sand grains ranges from 5 to 20 percent in the B1 horizon. This horizon is fine sandy loam, loam, or silt loam. The B2t horizon is dominantly light gray, light yellowish brown, pale yellow, or pale olive and contains mottles of gray, yellow, brown, and red. The lower part of the B2t horizon is mottled with shades of gray, yellow, brown, and red and has no dominant colors. The B2t horizon is fine sandy loam, loam, silt loam, or sandy clay loam; the finer textures are in the lower part. Content of plinthite in the Bt horizon ranges from 5 percent to about 20 percent, by volume; depth to plinthite in this horizon ranges from 24 to 41 inches.

Gray mottles occur at depths between 12 and 30 inches below the surface. Content of iron concretions ranges from 0 to 5 percent throughout the profile. Reaction is strongly acid to very strongly acid throughout the profile.

Escambia soils occur on the landscape with Atmore, Grady, Malbis, Poarch, and Robertsdale soils. Escambia soils are better drained than Atmore and Grady soils. They are coarser textured in the subsoil than Grady, Malbis, and Robertsdale soils. Escambia soils lack the fragipan that is common to Atmore and Robertsdale soils. They are more poorly drained than Poarch soils.

Escambia fine sandy loam, 0 to 3 percent slopes (Es).—This soil is on uplands. Included in mapping are small areas of Atmore, Grady, Poarch, and Robertsdale soils. Also included are areas of Escambia soils that have slopes of more than 3 percent and a few areas that contain more than 5 percent iron concretions. Areas where the surface layer is very fine sandy loam, loam, and silt loam also are included.

Tilth is good where this soil is at optimum moisture content. The soil can be worked within a medium range of moisture content. Roots can easily penetrate to the plinthite layer, where they follow the cracks and crevesses through the plinthite. Response to fertilizer is good. Surface runoff is slow. The hazard of erosion is slight.

This soil is suited to row crops. It is well suited to pasture and trees. It is late to warm up in spring. The subsoil is wet and, in places, is waterlogged in winter and early in spring. Capability unit IIw-17; woodland suitability group 2w8.

Esto Series

The Esto series consists of well-drained soils on rounded knolls and short side slopes. These soils formed in mixed marine deposits of fine and medium texture. Slopes are dominantly 2 to 5 percent.

In a representative profile the surface layer is dark grayish-brown fine sandy loam about 4 inches thick. The subsurface layer is brownish-yellow fine sandy loam 4 inches thick. The upper 5 inches of the subsoil is reddish-yellow, friable clay loam. Below this, to a depth of 60 inches, the subsoil is firm clay mottled in shades of brown, yellow, gray, and red.

Esto soils are low in natural fertility and organic-matter content. The available water capacity is medium to low, and permeability is slow.

Most areas of these soils are in woodland. A few small areas, generally less than 10 acres in size, are used for row crops and pasture. The native vegetation is long-leaf and loblolly pines, a few hardwoods, and, in some places, an understory of gallberry and wiregrass.

Representative profile of Esto fine sandy loam, 2 to 5 percent slopes, 3.75 miles south of bridge crossing Conecuh River on State Route No. 41 and 3.0 miles west on gravel road and 100 feet north of road, NE¼NW¼ SW¼ sec. 32, T. 1 N., R. 10 E.:

A1—0 to 4 inches, dark grayish-brown (10YR 4/2) fine sandy loam; weak, medium, granular structure; friable; strongly acid; clear, wavy boundary.

A2—4 to 8 inches, brownish-yellow (10YR 6/6) fine sandy loam; weak, medium, granular and subangular blocky structure; friable; strongly acid; clear, wavy boundary.

B1—8 to 13 inches, reddish-yellow (7.5YR 6/6) clay loam; common, fine, distinct, yellow mottles; weak, medium, subangular blocky structure; friable; few thin clay films on ped faces; very strongly acid; gradual, wavy boundary.

B21t—13 to 34 inches, mottled brownish-yellow (10YR 6/6), strong-brown (7.5YR 5/6), red (2.5YR 4/6), reddish-brown (5YR 5/4), and light-gray (10YR 7/1) clay; weak, fine and medium, subangular and angular blocky structure; firm; patchy clay films on ped faces; very strongly acid; gradual, wavy boundary.

B22t—34 to 60 inches, mottled light-gray (10YR 7/1), red (2.5YR 4/8), brownish-yellow (10YR 6/6), and yellow (10YR 7/8) clay; weak, medium, subangular blocky structure and weak, fine, angular blocky structure; firm; patchy clay films on ped faces; very strongly acid.

The A1 horizon ranges from very dark gray to grayish brown in color. The A2 horizon ranges from pale brown to yellowish brown and from loamy sand to fine sandy loam.

The B1 horizon, where present, is reddish-yellow to light yellowish-brown sandy clay loam or clay loam. The B2t horizon ranges from brownish-yellow to strong-brown clay loam, sandy clay, or clay mottled with gray, brownish yellow, strong brown, and red. In places the matrix color is lacking, and the horizon is mottled in shades of gray, brown, and red. The gray colors are not indicative of wetness. The upper part of the B2t horizon is free of mottles in places.

Reaction is strongly acid to very strongly acid throughout the profile.

Esto soils occur on the landscape with Benndale, Dothan, Orangeburg, Troup, and Wagram soils. They are finer textured in the subsoil than all of those soils.

Esto fine sandy loam, 2 to 5 percent slopes (EtB).—This soil is on uplands on rounded knolls and short sides slopes. It has the profile described as representative for the series.

Included with this soil mapping are small areas of Benndale, Dothan, Orangeburg, and Wagram soils. Also included are a few areas in the extreme northeastern part of the county, near Brooklyn, where limestone part out. In the limestone areas the soil is clayey and very sticky and has a high shrink-swell potential. In about 15 percent of the mapping unit, the slope is 5 to 8 percent. In eroded areas the surface layer is sandy loam less than 4 inches thick. In about one-fourth of the acreage the surface layer is loamy sand or sandy loam.

This soil can be worked within a medium range of moisture content. Tilth is fair. Rooting is somewhat restricted because of the dense, clayey subsoil. Response to fertilizer is fair. Surface runoff is medium to rapid in most places.

This soil is fairly well suited to row crops. It is suited to trees. The hazard of erosion is moderate to severe. Capability unit IIIe-19; woodland suitability group 3o1.

Esto-Dothan-Wagram complex, sloping (EwD).—The soils in this complex are on side slopes. The complex is about 38 percent Esto soils, 27 percent Dothan soils, and 20 percent Wagram soils. The remaining 15 percent is minor soils, mainly the Flomaton, Grasmere, Plummer, and Saffell soils. Slope ranges from 5 to 12 percent.

The Esto soils in this complex are well drained and clayey. They generally are about midway on the side slopes. In most places Dothan and Wagram soils occupy upper and lower side slopes. Any part of the major soils, however, may occupy any given area of the complex.

The Esto soils have a surface layer of very dark grayish-brown fine sandy loam. The subsoil is yellowish brown or strong brown and is mottled in shades of gray, yellow, brown, and red. It is sandy clay loam in the upper part and grades to clay in the lower part.

The Dothan soils have a surface layer of dark grayish-brown fine sandy loam about 5 inches thick. The subsoil is yellowish-brown sandy clay loam. The lower part of the subsoil is mottled in shades of red, brown, and yellow; it is more than 5 percent plinthite.

The Wagram soils have a surface layer of dark grayish-brown loamy sand 3 inches thick. This overlies a subsurface layer, 33 inches thick, of yellowish-brown and yellow loamy sand. The upper 5 inches of the subsoil consists of yellowish-brown sandy loam overlying 30 inches of yellowish-brown sandy clay loam mottled with strong brown, red, and very pale brown.

Included with this complex in mapping are a few areas of Bibb soils and a few eroded areas. Also included are areas in the northeastern part of the county where limestone crops out. The soils in the immediate area of the limestone have a high content of clay and are very sticky. They crack in dry weather and have a high shrink-swell potential.

The soils of this complex are moderately low or low in natural fertility. The available water capacity is medium to low. Permeability is slow in the Esto soils and moderate in the Dothan soils. It is rapid in the surface layer of the Wagram soils and moderate in the subsoil. Surface runoff is slow to rapid.

This complex is not suited to row crops, because the hazard of erosion is severe. It is suited to trees and pasture. Capability unit VIe-11; woodland suitability group 3ol.

Esto-Dothan-Wagram complex, moderately steep (EwE).—This complex is on side slopes. Esto soils make up about 33 percent of this complex, Dothan about 28 percent, and Wagram about 25 percent. The remaining 14 percent is mainly Flomaton, Grasmere, and Plummer soils, as well as loamy soils that become more sandy with increasing depth. Slopes range from 12 to 25 percent.

The Esto soils are near the middle of the side slopes. The Dothan and Wagram soils on or near the upper and the lower slopes. Any of the major soils, however, may occupy any given area of the complex.

The Esto soils have a surface layer of very dark grayish-brown fine sandy loam 5 inches thick. The subsoil is brownish-yellow clay mottled with strong brown, red, and light gray.

The Dothan soils have a surface layer of very dark grayish-brown fine sandy loam about 4 inches thick. The upper part of the subsoil is yellowish-brown sandy clay loam, and the lower part is brownish-yellow sandy clay loam mottled with strong brown, light gray, and red.

The Wagram soils have a surface layer of dark grayish-brown loamy sand about 4 inches thick, overlying 20 inches of very pale brown loamy sand. The subsoil is yellowish-brown sandy clay loam.

The soils in this complex are low in natural fertility and organic-matter content. The available water capacity is medium to low. Permeability is moderately rapid to slow. Surface runoff is slow to rapid.

Included with this complex in mapping are areas that are severely eroded and small areas where slopes are less than 12 percent. Also included are some areas of poorly drained soils that formed in local alluvium, and areas that are gullied.

This complex is not suited to row crops and pasture. It is suited to trees. The hazard of erosion is severe. Capability unit VIIe-11; woodland suitability group 3ol.

Flomaton Series

The Flomaton series consists of excessively drained, very gently sloping to moderately steep, gravelly soils on uplands. Slopes range from 2 to 25 percent, but dominant slopes are 2 to 17 percent. These soils formed in marine or stream-deposited sands and loams that were very high in gravel content.

In a representative profile the surface layer is dark grayish-brown gravelly loamy sand about 3 inches thick. The subsurface layer is light yellowish-brown gravelly loamy sand in the upper 6 inches and loose, brownish-yellow very gravelly loamy sand in the lower 31 inches. Below this, between depths of 40 to 72 inches, is brownish-yellow very gravelly loamy sand and strata of yellowish-red, very friable sandy loam and sandy clay loam that are ½ to 1¼ inches thick and 2 to 6 inches apart.

Flomaton soils are very low in natural fertility and low in organic-matter content. The available water capacity is low or very low, and permeability is rapid.

Almost all the acreage of these soils is in woodland. A few areas have been cleared of scrub oak and replanted to loblolly pine. The native vegetation is scrub oak, scattered longleaf pine, and some dogwood.

Representative profile of Flomaton gravelly loamy sand, 2 to 10 percent slopes, 0.4 mile south of Peacocks store at Little Rock, 50 feet east of road, NE¼SE¼ NW¼ sec. 29, T. 2 N., R. 7 E.:

A1—0 to 3 inches, dark grayish-brown (10YR 4/2) gravelly loamy sand; very weak, medium, granular structure; very friable; 15 percent quartz gravel; strongly acid; gradual, wavy boundary.

A21—3 to 9 inches, light yellowish-brown (10YR 6/4) gravelly loamy sand; single grained; loose; about 25 percent gravel, mostly less than 1 inch in diameter; strongly acid; gradual, wavy boundary.

A22—9 to 40 inches, brownish-yellow (10YR 6/6) very gravelly loamy sand; single grained; loose; about 22 percent of sand grains, mostly in lower 10 inches, are coated and bridged with fines of reddish yellow; about 55 percent quartz gravel, mostly less than 1 inch in diameter; strongly acid; gradual, wavy boundary.

A23&B2t—40 to 72 inches, brownish-yellow (10YR 6/6) very gravelly loamy sand and lamellae of yellowish-red (5YR 5/6) gravelly sandy loam and gravelly sandy clay loam ½ to 1¼ inches thick and 2 to 6 inches apart; areas between strata are single grained and

the lamellae are massive or have very weak, subangular blocky structure; loose to very friable; about 60 percent quartz gravel; very strongly acid.

The A1 horizon is very dark grayish brown, dark brown, dark grayish brown, or brown. The A2 horizon ranges from reddish yellow or brown to yellow. In many profiles this horizon has washed sand grains that are pinkish white to very pale brown. The A2 horizon is gravelly loamy sand or gravelly sand. The A23&B2t horizon ranges from yellow to reddish yellow and is gravelly loamy sand to gravelly sandy loam. Lamellae in the A23&B2t horizon range from strong brown through red and from sandy loam to sandy clay loam. They are ¼ to 2 inches thick and are 2 to 11 inches apart.

Depth to lamellae ranges from 28 to 65 inches. The lamellae in some profiles grade into a uniform horizon without lamellae. Gravel content ranges from 10 to 30 percent in the upper 9 inches of the profile and from 35 to 80 percent below a depth of 9 inches. Reaction is strongly acid to very strongly acid throughout the profile.

Flomaton soils occur on the landscape with Lucy, Orangeburg, Plummer, Saffell, Troup, and Wagram soils. Flomaton soils contain more gravel throughout the profile than any of those soils. They are coarser textured in the subsoil than Saffell soils.

Flomaton gravelly loamy sand, 2 to 10 percent slopes (FlC).—This soil is on uplands. It has the profile described as representative for the series.

Included with this soil in mapping are small areas of Lucy, Orangeburg, Plummer, Saffell, and Troup soils. Also included are small areas of a soil that has a thick surface layer of gravelly loamy sand overlying a mottled, clayey subsoil.

Tilth of this Flomaton soil is fair to poor because of the high gravel content. Response to fertilizer is fair. Surface runoff is slow.

This soil is poorly suited to row crops. It has fair suitability for pasture and trees. The hazard of erosion is slight unless water is concentrated. Capability unit IVs-11; woodland suitability group 4f2.

Flomaton gravelly loamy sand, 10 to 17 percent slopes (FlD).—This soil is along the larger streams. It generally has a surface layer of very dark grayish-brown gravelly loamy sand 6 inches thick. The upper part of the subsoil, to a depth of 21 inches, is pale-brown or light yellowish-brown gravelly loamy sand. Below this, between depths of 21 and 36 inches, the subsoil is very pale brown gravelly loamy sand that is underlain, to a depth of 84 inches, by very pale brown gravelly loamy sand and yellowish-red gravelly sandy loam layers ¼ to 1½ inches thick.

Included with this soil in mapping are small areas of Plummer, Saffell, and Troup soils.

Surface runoff is moderately slow to slow, but the hazard of erosion is severe where water is concentrated.

This soil is not suited to row crops or pasture, because of slope and the low available water capacity. Its suitability for woodland is fair. Capability unit VIIe-11; woodland suitability group 4f2.

Freemanville Series

The Freemanville series consists of well-drained, nearly level to gently sloping soils that contain plinthite. These soils are on uplands. They formed in medium-textured and fine-textured marine sediments. Slopes range from 0 to 8 percent.

In a representative profile in a wooded area, the surface layer is dark grayish-brown fine sandy loam about 6 inches thick. The subsurface layer is yellowish-brown fine sandy loam 4 inches thick. The subsoil is strong-brown, friable loam in the upper 7 inches. Below this, to a depth of 49 inches, the subsoil is red clay that has reddish-yellow and brownish-yellow mottles in the lower 12 inches. Beneath this, to a depth of 72 inches, it is mottled red, yellowish-brown, strong-brown, and light yellowish-brown clay and about 15 percent plinthite.

Freemanville soils are low in natural fertility and organic-matter content. The available water capacity is medium to high. Permeability is moderate above the plinthite horizons and moderately slow in the plinthite horizons.

About one-third to one-half of the acreage of these soils is used for row crops and pasture. The remaining acreage is used for woodland. The native vegetation is longleaf, loblolly, and slash pines, oaks, and dogwood.

Representative profile of Freemanville fine sandy loam, 0 to 2 percent slopes, 0.25 mile south of Magnolia Church and about 50 feet east of road, north of Stanley Crossroads, SW¼NW¼SE¼ sec. 11, T. 2 N., R. 7 E.:

A1cn—0 to 6 inches, dark grayish-brown (10YR 4/2) fine sandy loam; weak, fine, granular structure; friable; many fine roots; many medium concretions of iron; medium acid; clear, wavy boundary.

A2cn—6 to 10 inches, yellowish-brown (10YR 5/4) fine sandy loam; weak, fine, granular structure; friable; many fine roots; many medium concretions of iron; medium acid; gradual, wavy boundary.

B1cn—10 to 17 inches, strong-brown (7.5YR 5/8) loam; weak, fine and medium, subangular blocky structure; friable; many fine and medium roots; many medium concretions of iron; strongly acid; gradual, wavy boundary.

B21tcn—17 to 37 inches, red (2.5YR 5/6) clay; weak, medium, subangular blocky structure; friable; few fine roots; many medium concretions of iron; common patchy clay films on most ped faces; strongly acid; gradual, wavy boundary.

B22tcn—37 to 49 inches, red (2.5YR 4/6) clay; few, fine, distinct, reddish-yellow mottles and few, fine, prominent, brownish-yellow mottles; weak, medium, subangular blocky structure; friable; many medium concretions of iron; common patchy clay films on most ped faces; 8 percent plinthite; very strongly acid; gradual, wavy boundary.

B23tcn—49 to 72 inches, mottled red (2.5YR 4/6), yellowish-brown (10YR 5/8), strong-brown (7.5YR 5/6), and light yellowish-brown (2.5Y 6/4) clay; moderate, medium, subangular blocky structure; friable; common medium concretions of iron; common patchy clay films; 15 percent plinthite; very strongly acid.

The A1cn horizon is brown, dark brown, very dark grayish brown, or dark grayish brown. The A2cn horizon is brown, yellowish brown, brownish yellow, or reddish yellow. It ranges from sandy loam to loam.

The B1cn horizon is strong brown, yellowish red, reddish yellow, or red and is loam, sandy clay loam, or clay loam. The upper part of the B2tcn horizon is yellowish red or red. The lower part of this horizon is mottled with shades of brown, yellow, red, and, in some profiles, gray below a depth of 40 inches. The B2tcn horizon is clay, sandy clay, or clay loam that has a clay content of 35 to 45 percent. Content of plinthite in the upper part of the B2tcn horizon is less than 5 percent, but the lower part of this horizon contains 5 to 25 percent plinthite.

Depth to plinthite ranges from 27 to 50 inches. Iron concretions range from 10 to 50 percent in the A horizon and from 5 to 35 percent in the B2tcn horizon. Size of concretions ranges from ⅛ to ¾ inch in diameter. In unlimed areas re-

action is medium acid or strongly acid in the A and B21tcn horizons and is strongly acid or very strongly acid in the B22tcn and B23tcn horizons.

Freemanville soils occur on the landscape with Dothan, Greenville, Malbis, Orangeburg, Ruston, and Tifton soils. Freemenville soils are finer textured in the Bt horizon than Dothan, Malbis, Orangeburg, Ruston, and Tifton soils. They are lighter red throughout the profile and have more iron concretions than Greenville soils.

Freemanville fine sandy loam, 0 to 2 percent slopes (FrA).—This soil is on flats and ridgetops. It has the profile described as representative for the series. The surface layer in plowed areas is browner than it is in undisturbed areas.

Included with this soil in mapping are small areas of Greenville, Orangeburg, Ruston, and Tifton soils. Also included are small areas of a soil that is similar to this Freemanville soil but has plinthite within 27 inches of the surface.

This Freemanville soil can be worked throughout a fairly wide range of moisture content. Tilth is good. Response to fertilizer is very good. Roots can penetrate fairly deep into the subsoil. Surface runoff is slow.

This soil is well suited to row crops, pasture, and trees. It is well suited to most crops commonly grown in the county. The hazard of erosion is only slight, and limitations to use are few. Capability unit I-11; woodland suitability group 3o1.

Freemanville fine sandy loam, 2 to 5 percent slopes (FrB).—This soil is on ridgetops and side slopes. It has a surface layer that is 10 inches thick. The upper 5 inches of this layer is very dark grayish-brown fine sandy loam, and the lower 5 inches is yellowish-brown fine sandy loam. The upper 3 inches of the subsoil is yellowish-red sandy clay loam, and the next 31 inches is red clay or clay loam that has a few yellowish-brown mottles in the lower part. The lower part of the subsoil, to a depth of 72 inches, is mottled yellowish-brown, pale-yellow, red, and strong-brown clay loam and about 12 percent plinthite.

Included with this soil in mapping are small areas that have slopes of 0 to 2 percent and small eroded areas. Also included are small areas of Greenville, Malbis, Ruston, and Tifton soils.

Tilth of this soil is good, and response to fertilizer is very good. Infiltration is medium. Surface runoff is medium.

This soil is well suited to most crops commonly grown in the county. It is well suited to pasture and trees. The hazard of erosion is slight to moderate. Capability unit IIe-11; woodland suitability group 3o1.

Freemanville fine sandy loam, 5 to 8 percent slopes (FrC).—This soil is on side slopes. It has a surface layer of dark-brown fine sandy loam 4 inches thick. The upper 3 inches of the subsoil is strong-brown sandy clay loam. This is underlain by 29 inches of red clay loam that is mottled with yellowish red and yellowish brown in the lower 6 inches. Below this, to a depth of 66 inches, is mottled red, yellowish-red, yellowish-brown, and light yellowish-brown clay loam and about 10 percent plinthite.

Included with this soil in mapping are small areas of Greenville, Orangeburg, and Ruston soils. Also included are areas of Tifton soils that have slopes of 5 to 8 percent.

Tilth of this soil is good in most places where the subsoil is not reached by tillage machinery. Roots can penetrate fairly deep into the subsoil. Surface runoff is medium to rapid.

This soil is well suited to pasture and trees. It is suited to most crops commonly grown in the county. The hazard of erosion is moderate to severe. Capability unit IIIe-11; woodland suitability group 3o1.

Grady Series

The Grady series consists of poorly drained soils in depressions. These soils formed in sediments of sandy clay loam or clay. Slopes are mainly less than 2 percent and are concave in shape.

In a representative profile the surface layer is very dark gray loam about 5 inches thick. Below this is a transitional layer of gray loam to clay loam 3 inches thick. The subsoil extends to a depth of 92 inches. It is 8 inches of gray clay loam mottled with light gray and strong brown; 25 inches of light-gray clay mottled with red and light yellowish brown; 15 inches of light-gray clay mottled with strong brown and brownish yellow; 19 inches of mottled light-gray, brownish-yellow, strong-brown, and yellowish-red clay; and 21 inches of light-gray clay mottled with strong brown and light yellowish brown.

Grady soils are low in natural fertility and moderately low in organic-matter content. Tilth is fair if these soils are drained. The available water capacity is medium. Permeability is slow to very slow. Roots do not penetrate the soils readily because of poor aeration.

Most areas of these soils are used for woodland. A few acres have been cleared and drained and are used for pasture or row crops. The native vegetation is gum, bay, baldcypress, oaks, and some water-tolerant grasses.

Representative profile of Grady loam, 0.55 mile northeast of Robinsville church, 0.15 mile north on farm road, and 100 feet west of farm road, NE¼NW¼SE¼ sec. 1, T. 1 N., R. 6 E.:

A1—0 to 5 inches, very dark gray (10YR 3/1) loam; weak, medium, granular structure; friable; strongly acid; gradual, wavy boundary.

A&B—5 to 8 inches, gray (10YR 6/1) loam to clay loam; some mixing from horizon above with gray, dark-gray, and strong-brown root stains; weak, medium, granular and subangular blocky structure; friable; strongly acid; clear, wavy boundary.

B21tg—8 to 16 inches, gray (10YR 6/1) clay loam; few, fine, faint, light-gray mottles and strong-brown root stains; weak to moderate, subangular blocky structure; friable to firm; very strongly acid; gradual, wavy boundary.

B22tg—16 to 29 inches, light-gray (10YR 6/1–7/1) clay; few, medium, prominent, red mottles and few, fine, faint, light yellowish-brown mottles; moderate, medium, subangular blocky structure; firm; grayish-brown clay films on ped faces; very strongly acid; gradual, wavy boundary.

B23tg—29 to 41 inches, light-gray (10YR 6/1) clay; few, medium, prominent, red mottles; moderate, medium, subangular blocky structure; firm; very strongly acid; gradual, wavy boundary.

B24tg—41 to 56 inches, light-gray (10YR 6/1) clay; common to many strong-brown mottles and few, fine, faint, brownish-yellow mottles; moderate, medium, subangular blocky structure; firm; very strongly acid; gradual, wavy boundary.

B25tg—56 to 75 inches, mottled light-gray (10YR 7/1), gray (10YR 5/1), brownish-yellow (10YR 6/6), strong-brown (7.5YR 5/6), and yellowish-red (5YR 4/8) clay; moderate, medium to coarse, subangular blocky structure; firm; very strongly acid; gradual, wavy boundary.

B3—75 to 96 inches, light-gray (10YR 7/1) clay; many, fine and medium, strong-brown mottles and few, fine, faint, light yellowish-brown mottles; weak, coarse, subangular blocky structure to massive; firm; very strongly acid.

The A horizon ranges from black to dark gray. The B1 or A&B horizon, where present, is dark-gray to light-gray fine sandy loam to clay loam. The B2tg horizon ranges from dark gray to light gray and has a few, fine or medium mottles of brownish yellow, pale brown, strong brown, yellowish brown, and red. This horizon ranges from clay loam to clay. Reaction is strongly acid to very strongly acid throughout the profile.

Grady soils occur on the landscape with Atmore, Escambia, Malbis, Robertsdale, and Tifton soils. Grady soils are finer textured in the subsoil than those soils. Grady soils lack the plinthite that is in those soils and, except for Atmore soils, are more poorly drained than those soils.

Grady loam (Gr).—This nearly level soil is in depressions.

Included with this soil in mapping are areas where the surface layer is 3 to 10 inches of fine sandy loam, silt loam, clay loam, or organic material. Some of the areas where water stands most of the time have a darker colored surface layer and are dark gray in the upper part of the subsoil. Also included are areas of a soil that is similar to this Grady soil but is finer textured in the upper part and occurs at the heads of draws and on very gentle side slopes. A few areas of better drained soils that occur around depressions and a few areas where the lower part of the subsoil becomes coarser textured also are included.

This soil is ponded much of the time, especially in winter and in spring. Surface runoff is slow, and the hazard of erosion is slight.

This soil is suited to row crops and pasture if it is drained. It is fairly well suited to water-tolerant trees. Ponding and slow to very slow permeability are limitations to use for cultivated crops. Capability unit Vw-13; woodland suitability group 2w9.

Grasmere Series

The Grasmere series consists of well-drained, strongly acid to slightly acid soils on uplands. These soils have a thick, dark-colored surface soil overlying a buried profile. They are in slight depressions and at the heads of natural drains. Slopes range from 0 to 3 percent but generally are less than 2 percent. These soils formed in medium-textured and fine-textured alluvium that washed from adjacent soils on uplands.

In a representative profile the surface layer is dark reddish-brown silty clay about 6 inches thick. The upper 17 inches of the subsoil is dark reddish-brown, friable silty clay loam overlying a buried surface layer of very dark gray silt loam 4 inches thick. The subsoil under the buried surface layer is dark-brown, friable silty clay loam in the upper 4 inches and strong-brown silty clay to a depth of 60 inches.

Grasmere soils are high in natural fertility and moderately high in organic-matter content. Available water capacity is high. Permeability is moderate.

These soils are used mainly for the same purpose as the adjoining soils because of their small acreage in any one location. The native vegetation in wooded areas is pine, oaks, and dogwood. Idle areas in cultivated fields have a lush growth of weeds.

Representative profile of Grasmere silty clay, ¼ mile west of Jack Springs, Alabama, then ¾ mile north and ¼ mile east on gravel road to farm house; north of farm house and about 300 feet northwest of northeast corner of pecan orchard, NE¼SW¼SE¼ sec. 34, T. 3 N., R. 5 E.:

Ap—0 to 6 inches, dark reddish-brown (5YR 3/2) silty clay; weak, medium, granular structure; friable; medium acid; clear, wavy boundary.

B21—6 to 14 inches, dark reddish-brown (5YR 3/3) silty clay loam; weak, medium, subangular blocky structure; friable; medium acid; gradual, wavy boundary.

B22—14 to 23 inches, dark reddish-brown (5YR 3/2) silty clay loam and very few thin strata or pockets of reddish-brown, fine-textured material, and dark grayish-brown, coarser textured material; weak, medium, subangular blocky structure and some weak platy structure; friable; medium acid; clear, wavy boundary.

Ab—23 to 27 inches, very dark gray (10YR 3/1) silt loam and a few areas of reddish brown in worm casts; weak, medium, granular structure; friable; few charcoal particles; strongly acid; clear, wavy boundary.

B1b—27 to 31 inches, dark-brown (7.5YR 4/4) silty clay loam; weak, medium, subangular blocky structure; friable, slightly sticky; 4 percent manganese concretions; medium acid; gradual, wavy boundary.

B2tb—31 to 60 inches, strong-brown (7.5YR 5/6) silty clay and few dark-brown (7.5YR 3/2) coatings in pores; weak, medium, subangular blocky structure; friable, slightly sticky; few very thin clay films; 4 percent manganese concretions; medium acid.

The A, B, and Ab horizons range from 22 to 35 inches in combined thickness. The Ap horizon is dark reddish brown to dark brown.

The B2 horizon is dark reddish brown, dark brown, or very dark grayish brown and is silty clay or silty clay loam. In some profiles this horizon has thin strata in the lower part.

Depth to the Ab horizon ranges from 14 to 29 inches. This horizon ranges from 4 to 11 inches in thickness. It ranges from dark brown to very dark gray and from loam to silty clay loam.

The Btb horizon is dark reddish brown, yellowish red, dark brown, brown, and strong brown. It ranges from sandy clay loam to silty clay. Depth to the Btb horizon is 22 to 35 inches.

Some profiles are mottled with shades of brown, gray, and yellow. Content of manganese concretions ranges from 0 to about 8 percent in the Btb horizon. Reaction is strongly acid to medium acid throughout the profile.

Grasmere soils occur on the landscape with Benndale, Greenville, Malbis, Orangeburg, and Ruston soils. Grasmere soils are less red in the subsoil than Greenville, Orangeburg, and Ruston soils. They have more silt throughout the profile than their associated soils. Grasmere soils have a buried A horizon and a thick, dark-colored surface layer that are lacking in their associated soils.

Grasmere silty clay (Gt).—This nearly level soil is in slight depressions and at the heads of natural drainageways on uplands.

Included with this soil in mapping are areas that have a dark-colored surface layer of silty clay loam less than 22 inches thick. In about one-fourth of the acreage there are areas that have a surface layer of silty clay loam, and in some areas the upper part of the subsoil has very thin strata of coarser textured material. Also included are areas of Greenville, Orangeburg, and Ruston soils and areas that have a surface layer of black or dark-gray

silt loam that is about 20 inches thick and overlies a subsoil of gray or light-gray, brittle, compact very fine sandy loam or silt loam.

Tilth of this soil is good at optimum moisture content, but plowing can be a problem if the soil is wet. Roots can easily penetrate the subsoil. Response to fertilizer is good to very good. Surface runoff is slow. The hazard of erosion is slight.

This soil is used mainly for the same purposes as the adjoining soils. Some crop damage can be expected from flooding. This soil is well suited to row crops, pasture, and trees. The major limitation is occasional flooding. Capability unit IIw-11; woodland suitability group 1o7.

Greenville Series

The Greenville series consists of well-drained, nearly level to sloping soils on uplands. These soils formed in marine sediments of unconsolidated sandy clays and clays. Slopes range from 0 to 12 percent but are dominantly 0 to 5 percent.

In a representative profile the surface layer is dark reddish-brown fine sandy loam 8 inches thick. The upper 4 inches of the subsoil is dark reddish-brown sandy clay loam. Below this it is dark-red clay to a depth of 65 inches.

Greenville soils are medium in natural fertility and organic-matter content. The available water capacity is medium, and permeability is moderate.

More than three-fourths of the acreage of these soils is used for row crops and pasture. The remaining acreage is used for woodland. The native vegetation is mainly longleaf, slash, and loblolly pines, but it includes other species, such as oaks, gum, dogwood, and gallberry.

Representative profile of Greenville fine sandy loam, 0 to 2 percent slopes, 0.25 mile west of Jack Springs and 0.7 mile north on gravel road, then 50 feet west of gravel road in plantation of pine trees, SE¼NE¼NE¼NW¼ sec. 3, T. 2 N., R. 5 E.:

Ap—0 to 8 inches, dark reddish-brown (5YR 3/3) fine sandy loam; weak, fine, granular structure; friable; very strongly acid; abrupt, smooth boundary.

B1—8 to 12 inches, dark reddish-brown (2.5YR 3/4) sandy clay loam; weak, medium, subangular blocky structure; friable; very strongly acid; clear, wavy boundary.

B21t—12 to 38 inches, dark-red (10R 3/6) clay; weak to moderate subangular blocky structure; firm; few clay films; very strongly acid; diffuse, wavy boundary.

B22t—38 to 65 inches, dark-red (10R 3/6) clay; weak to moderate subangular blocky structure; firm; few to common clay films; very strongly acid.

The Ap horizon ranges from very dark grayish brown to dark reddish brown.

The B1 horizon ranges from red to dark reddish brown and from sandy clay loam to clay loam. The B2t horizon ranges from clay loam to clay.

Content of iron concretions is 0 to 5 percent throughout the profile. Reaction is strongly acid to very strongly acid throughout the profile.

Greenville soils occur on the landscape with Freemanville, Grasmere, Orangeburg, Red Bay, and Ruston soils. Greenville soils are darker red in the subsoil than all of those soils except the Red Bay. They are finer textured in the Bt horizon than Orangeburg, Red Bay, and Ruston soils. Greenville soils lack the plinthite that is common in the Freemanville soils. They are sandier in the A horizon than Grasmere soils.

Greenville fine sandy loam, 0 to 2 percent slopes (GvA).—This soil is on broad flats and ridgetops. It has the profile described as representative for the series.

Included with this soil in mapping are areas of Freemanville, Grasmere, Orangeburg, Red Bay, and Ruston soils. Also included are a few areas of soils that have slopes of 2 to 5 percent and areas that have a sandy loam or loam surface layer.

This soil can be worked throughout a fairly wide range of moisture content. Tilth is good. Response to fertilizer is very good. Roots can easily penetrate into the subsoil. Surface runoff is slow. The hazard of erosion is slight.

This soil is well suited to row crops, pasture, and trees. There are no serious limitations or hazards that affect the use of this soil. Capability unit I-11; woodland suitability group 3o1.

Greenville fine sandy loam, 2 to 5 percent slopes (GvB).—This soil is on ridgetops and side slopes. It typically has a surface layer of dark reddish-brown fine sandy loam 6 inches thick. The upper 3 inches of the subsoil is dark-red sandy clay loam, and the lower part is dark-red sandy clay to a depth of 74 inches.

Included with this soil in mapping are areas that have yellowish-red sandy clay loam in the upper part of the subsoil and areas that have slopes of 5 to 8 percent. Also included are small eroded areas and areas of Freemanville, Orangeburg, Red Bay, and Ruston soils.

This soil can be worked throughout a medium range of moisture content. Tilth is good, except in eroded areas where it is fair. Roots can easily penetrate into the subsoil. Response to fertilizer is very good. Infiltration into the surface layer is medium. Surface runoff is medium.

This soil is well suited to most crops commonly grown in the county, but it is not commonly used for potatoes. The soil also is well suited to pasture and trees. The hazard of erosion is moderate. Capability unit IIe–11; woodland suitability group 3o1.

Irvington Series

The Irvington series consists of moderately well drained, nearly level and very gently sloping soils that have a fragipan and contain plinthite. These soils are on uplands. They formed in beds of sandy clays, sandy clay loams, and sandy loams of marine origin.

In a representative profile the surface layer is dark grayish-brown fine sandy loam 6 inches thick. The upper 4 inches of the subsoil is light yellowish-brown, friable fine sandy loam. The next 23 inches is brownish-yellow, friable sandy clay loam mottled with yellowish brown, strong brown, and red. In addition, light-gray mottles and about 8 percent plinthite occur in the lower 12 inches. This layer is underlain by a mottled fragipan that contains plinthite and extends to a depth of 65 inches.

Irvington soils are low in natural fertility and organic-matter content. The available water capacity is medium to moderately low. Permeability is moderate above the fragipan and slow through the fragipan.

About one-third to one-half of the acreage of these soils is used for row crops and pasture. The remaining acreage is used for woodland. The native vegetation is mixed pine, oaks, dogwood, and gallberry.

Representative profile of Irvington fine sandy loam, 0 to 2 percent slopes, 0.6 mile northwest of bridge crossing Interstate Highway No. 65 on Jack Springs road, then 0.05 mile east on gravel road and 45 feet north in a field, SW¼NE¼SW¼ sec. 35, T. 2 N., R. 5 E.:

Apcn—0 to 6 inches, dark grayish-brown (10YR 4/2) fine sandy loam; weak, fine, granular structure; friable; common (10 percent) iron concretions; strongly acid; abrupt, smooth boundary.

B1cn—6 to 10 inches, light yellowish-brown (10YR 6/4) fine sandy loam; weak, fine, granular structure; friable; common (about 10 percent) iron concretions; strongly acid; clear, wavy boundary.

B21tcn—10 to 21 inches, brownish-yellow (10YR 6/6) sandy clay loam; few yellowish-brown and strong-brown mottles; weak, medium, subangular blocky structure; friable; common (about 12 percent) iron concretions; few clay films around concretions; strongly acid; gradual, wavy boundary.

B22tcn—21 to 33 inches, brownish-yellow (10YR 6/6) sandy clay loam; light-gray, yellowish-brown, light yellowish-brown, strong-brown, and red mottles; weak, medium, subangular blocky structure; friable; plinthite is firm; common (about 12 percent) iron concretions; few clay films around concretions; about 8 percent plinthite; strongly acid; gradual, wavy boundary.

Bx1—33 to 59 inches, mottled yellowish-brown (10YR 5/8), light yellowish-brown (2.5Y 6/4), strong-brown (7.5YR 5/6), red (2.5YR 5/6), and light-gray (10YR 7/1) sandy clay loam; weak to moderate, subangular blocky structure; friable; plinthite is firm and slightly brittle; common (about 15 percent) iron concretions; few clay films on ped faces; about 20 percent plinthite; very strongly acid; gradual, wavy boundary.

Bx2—59 to 65 inches, mottled light-gray (10YR 7/1), brownish-yellow (10YR 6/6), strong-brown (7.5YR 5/8), light yellowish-brown (2.5Y 6/4), and red (2.5YR 4/6) sandy clay loam; weak to moderate, subangular blocky structure; friable; plinthite is firm and slightly brittle; less than 15 percent iron concretions; few clay films on ped faces; about 30 percent plinthite; very strongly acid.

The Apcn horizon ranges from very dark gray to dark grayish brown.

The B1cn horizon ranges from very pale brown to yellowish brown and from fine sandy loam to sandy clay loam. The B2tcn horizon ranges from yellowish-brown to light yellowish-brown sandy clay loam to clay loam mottled in shades of yellow, brown, and red.

The Bx horizon is mottled light gray, light yellowish brown, yellowish brown, strong brown, and red. Fragipan expression is weak to moderate.

Content of iron concretion ranges from 4 to 10 percent in the A horizon and from 5 to 25 in the B2tcn and Bx horizons. Depth to the fragipan ranges from 22 to 34 inches. Depth to soft plinthite layer is 17 inches to 28 inches or more, and the content of plinthite ranges from 5 to 30 percent.

Reaction is strongly acid to very strongly acid throughout the profile.

Irvington soils occur on the landscape with Escambia, Malbis, Poarch, Robertsdale, and Tifton soils. Irvington soils are better drained than Escambia and Robertsdale soils. Irvington soils have a fragipan that is lacking in all of those soils, except for Robertsdale. Irvington soils are more poorly drained than Tifton soils. They have more iron concretions in the profile than Malbis and Poarch soils. They are finer textured in the Bt horizon than Poarch soils.

Irvington fine sandy loam, 0 to 2 percent slopes (IrA).—This soil is on uplands. It has the profile described as representative for the series. In undisturbed areas this soil has a very dark gray or very dark grayish-brown surface layer. Depth to the fragipan in many places is less than 33 inches.

Included with this soil in mapping are areas of Escambia, Poarch, Robertsdale, and Tifton soils. Also included are areas that contain more than 25 percent iron concretions and more than 30 percent plinthite and areas where the surface layer is sandy loam.

Tilth of this soil is good. Response to fertilizer is good for most crops. Roots can penetrate the upper part of the subsoil fairly easy to the fragipan, but they are restricted in the fragipan. Surface runoff is slow. The hazard of erosion is slight.

This soil is suited to most crops grown in the county. It is slow to warm up in spring because of a seasonally high water table. It is well suited to pasture and trees. Capability unit IIw-16; woodland suitability group 2o7.

Irvington fine sandy loam, 2 to 5 percent slopes (IrB).—This soil is on uplands. It typically has a surface layer 7 inches thick. The upper 4 inches is very dark gray fine sandy loam, and the lower 3 inches is dark-gray fine sandy loam. The upper 18 inches of the subsoil is light yellowish-brown sandy clay loam that is mottled with yellowish brown in the lower part. Below this is a fragipan of yellowish-brown sandy clay loam mottled with light gray, red, and strong brown in the upper 7 inches and mottled below this with light gray, light yellowish brown, yellowish brown, strong brown, and red to a depth of 60 inches.

Included with this soil in mapping are areas of Escambia, Malbis, Poarch, and Tifton soils. Also included are areas of soils that have a sandy loam surface layer.

This soil has a seasonally high water table. Tilth is moderately good. Most crops grown in the county respond well to applications of fertilizer. Roots can penetrate the upper part of the subsoil fairly easy and follow the more friable areas into the pan. Very few roots can penetrate the firm, brittle part of the pan. Surface runoff is medium. The hazard of erosion is moderate.

This soil is suited to row crops. It is slow to warm up in spring. It is well suited to pasture and trees. Erosion is a hazard where the soil is cultivated. Capability unit IIe-16; woodland suitability group 2o7.

Kalmia Series

The Kalmia series consists of well-drained, nearly level soils on stream terraces. These soils formed in medium-textured and coarse-textured old stream alluvium.

In a representative profile the surface layer is dark-gray fine sandy loam about 7 inches thick. The subsurface layer is yellowish-brown fine sandy loam 5 inches thick. The friable subsoil is 27 inches thick. The upper 22 inches is yellowish-brown sandy clay loam, and the lower 5 inches is yellowish-brown sandy loam mottled with very pale brown and red. The underlying material is yellow, white, and reddish-yellow loamy sand and sand to a depth of 60 inches.

Kalmia soils are low in natural fertility and organic-matter content. The available water capacity is medium. Permeability is moderate in the upper part of the subsoil and rapid in the lower part.

Most of the acreage of these soils is used for woodland. A few small areas are used for row crops and pasture. The native vegetation is longleaf, slash, and loblolly pines, various oaks, gum, and gallberry.

Representative profile of Kalmia fine sandy loam, 0.5 mile south of bridge crossing the Conecuh River on State Route No. 41, 0.85 mile east on paved road, 1.6 miles east on woods road, and 30 feet south of road, S½NE¼SE¼ sec. 11, T. 1 N., R. 10 E.:

A1—0 to 7 inches, dark-gray (10YR 4/1) fine sandy loam; weak, fine, granular structure; friable; strongly acid; clear, wavy boundary.

A2—7 to 12 inches, yellowish-brown (10YR 5/4) fine sandy loam and some mixing of dark grayish brown from horizon above; weak, fine, granular structure; friable; strongly acid; clear, wavy boundary.

B1—12 to 17 inches, yellowish-brown (10YR 5/6) sandy clay loam; weak, medium, subangular blocky structure; friable; very strongly acid; gradual, wavy boundary.

B2t—17 to 34 inches, yellowish-brown (10YR 5/8) sandy clay loam; weak, medium, subangular blocky structure; friable; few patchy clay films on ped faces; few mica flakes; very strongly acid; gradual, wavy boundary.

B3—34 to 39 inches, yellowish-brown (10YR 5/8) sandy loam; few, fine, faint, very pale brown mottles and few, fine, prominent, red mottles; weak, fine and medium, subangular blocky structure; very friable; few mica flakes; very strongly acid; clear, wavy boundary.

IIC—39 to 60 inches, mixed yellow (10YR 7/6), white (10YR 8/2), and reddish-yellow (7.5YR 6/8) loamy sand and sand; single grained; loose; few mica flakes; very strongly acid.

The A1 horizon ranges from very dark gray to dark grayish brown. The A2 horizon ranges from yellowish brown to pale brown and is sandy loam or fine sandy loam. It ranges from 5 to 8 inches in thickness.

The B2t horizon ranges from yellowish brown to reddish yellow. The lower part of the B2t horizon has mottles of strong brown, pale brown, and shades of gray and red in some places. The B3 horizon ranges from light sandy clay loam to sandy loam and from yellowish brown to brownish yellow.

The C horizon is loamy sand or sand and ranges from yellowish brown to white.

Depth to sandy material ranges from 32 to 67 inches. Reaction is strongly acid to very strongly acid throughout the profile.

Kalmia soils occur on the landscape with Brewton, Cahaba, Coxville, Craven, Lenoir, and Weston soils. Kalmia soils are not as red in the subsoil as Cahaba and Craven soils. They are coarser textured in the subsoil and better drained than Coxville, Craven, and Lenoir soils. Kalmia soils also are better drained than Brewton and Weston soils. They lack the fragipan that is in Brewton soils.

Kalmia fine sandy loam (Ka).—This nearly level soil is on stream terraces along the larger streams in the county.

Included with this soil in mapping are areas of Kalmia soils that have slopes of more than 2 percent and a few areas of Brewton, Cahaba, Coxville, and Craven soils. Also, in some areas, the depth to the loamy sand in the lower part of the subsoil is more than 39 inches. In addition, a moderately well drained soil that is similar to this Kalmia soil is included; it makes up about 10 percent of the total acreage.

This Kalmia soil can be worked throughout a wide range of moisture content. Tilth is good. Response to fertilizer is good for most crops. Roots can penetrate fairly easy into the subsoil. Surface runoff is slow. The hazard of erosion is slight.

This soil is well suited to row crops, pasture, and trees. There are very few limitations to its use. Capability unit I-12; woodland suitability group 2o7.

Lakeland Series

The Lakeland series consists of excessively drained, sandy soils on stream terraces. These soils formed in thick beds of loamy sands and sands. Slopes range from 0 to 5 percent.

In a representative profile the surface layer is brown sand about 2 inches thick. The next layer is light yellowish-brown sand 11 inches thick. The loose underlying material is yellow sand or fine sand to a depth of 58 inches, yellow and white fine sand to a depth of 70 inches, and white sand between depths of 70 and 80 inches.

Lakeland soils are very low in natural fertility and organic-matter content. The available water capacity is low, and permeability is rapid.

These soils are used almost entirely for woodland. The native vegetation is mainly scrub oak, live oak, and scattered longleaf and loblolly pines.

Representative profile of Lakeland sand, 1.8 miles north of junction of State Route 63 and U.S. Highway No. 29, then 2 miles east, NE¼SW¼SW¼ sec. 19, T. 2 N., R. 11 E.:

A1—0 to 2 inches, brown (10YR 4/3) sand; very weak, fine, granular structure; very friable; very strongly acid; clear boundary.

AC—2 to 13 inches, light yellowish-brown (10YR 6/4) sand; very weak, medium, granular structure and single grained; loose to very friable; very strongly acid; gradual boundary.

C1—13 to 48 inches, yellow (10YR 7/6) sand; few, white, clean sand grains in lower part; very weak, medium, granular structure becoming single grained; loose; very strongly acid; gradual boundary.

C2—48 to 58 inches, yellow (10YR 8/6) fine sand; single grained; loose; very strongly acid; gradual boundary.

C3—58 to 70 inches, yellow (10YR 8/6) and white (2.5Y 8/2) fine sand; single grained; loose; very strongly acid; gradual boundary.

C4—70 to 80 inches, white (10YR 8/2) sand; single grained; loose; very strongly acid; gradual boundary.

The A1 horizon ranges from very dark gray to light brownish gray to brown. The AC horizon ranges from brown to light yellowish brown. The C horizon ranges from very pale brown or white through yellowish brown. The fine sand or sand is more than 8 feet thick. As much as 15 percent quartz gravel is in some profiles.

Lakeland soils occur on the landscape with Cahaba, Craven, Kalmia, and Troup soils. Lakeland soils have a coarser textured subsoil than all of those soils. Lakeland soils lack the loamy texture in the lower part of the subsoil that is in the Troup soils.

Lakeland sand (La).—This soil is on stream terraces along the Conecuh River and larger creeks. Slopes range from 0 to 5 percent.

Included in mapping are areas of Cahaba, Kalmia, and Troup soils. About one-half the acreage of this Lakeland soil has a surface layer of dark grayish-brown fine sand. Also included are a few areas of soils that have a loamy sand subsoil.

This soil is easily cultivated and can be worked throughout a wide range of moisture content. Response to fertilizer is only fair because of leaching. The rooting zone is deep. Surface runoff is very slow. The hazard of erosion is slight.

This soil is poorly suited to row crops. It is well suited to deep-rooted pasture grasses, such as bahiagrass and bermudagrass. It is fairly well suited to trees. The rapid permeability and low available water capacity are the

major limitations. Capability unit IIIs-11; woodland suitability group 4s3.

Lenoir Series

The Lenoir series consists of somewhat poorly drained soils on low stream terraces. These soils formed in fine-textured stream alluvium. Slopes range from 0 to 2 percent.

In a representative profile the surface layer is very dark gray fine sandy loam 3 inches thick. The subsurface layer is grayish-brown fine sandy loam 4 inches thick. The thick subsoil is light yellowish-brown clay loam mottled with light gray and yellowish red in the upper 6 inches; mottled light-gray, light yellowish-brown, yellowish-brown, and red clay in the next 11 inches; light-gray clay mottled with light yellowish brown, yellowish brown, reddish yellow, and red in the next 9 inches; and mottled light-gray, olive-yellow, brownish-yellow, strong-brown, yellow, and reddish-brown clay in the lower 63 inches.

Lenoir soils are low in natural fertility and medium in organic-matter content. The available water capacity is medium to high, and permeability is slow.

Most areas of these soils are used for growing timber. Only a few areas are used for pasture, and even fewer for row crops. The native vegetation is pines, mostly longleaf and slash, as well as mixed hardwoods and gallberry.

Representative profile of Lenoir fine sandy loam, 0.45 mile north of turn to Parker bridge, about 10 miles east of Brewton on U.S. Highway No. 29, then 40 feet west in wooded area, SE¼SW¼NW¼ sec. 26, T. 2 N., R. 11 E.:

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

A2—3 to 7 inches, grayish-brown (2.5Y 5/2) fine sandy loam; weak, fine, granular structure; friable; many fine roots; very strongly acid; clear, wavy boundary.

B21t—7 to 13 inches, light yellowish-brown (2.5Y 6/4) clay loam; about 5 percent light-gray mottles and about 8 percent yellowish-red mottles; weak, medium, subangular blocky structure; friable; few fine and medium roots; very strongly acid; gradual, wavy boundary.

B22t—13 to 24 inches, mottled light-gray (N 7/0), light yellowish-brown (2.5Y 6/4), yellowish-brown (10YR 5/6), and red (2.5YR 4/6) clay; weak, medium, subangular blocky structure; friable to firm; few fine and medium roots; few patchy clay films on ped faces; very strongly acid; gradual, wavy boundary.

B23t—24 to 33 inches, light-gray (N 6/0) clay; light yellowish-brown, yellowish-brown, reddish-yellow, and red mottles; weak to moderate, medium, subangular blocky structure; friable to firm; few fine roots along ped faces; few patchy clay films on ped faces; very strongly acid; gradual, wavy boundary.

B24t—33 to 66 inches, mottled light-gray (N 7/0), olive-yellow (2.5Y 6/6), brownish-yellow (10YR 6/6), strong-brown (7.5YR 5/6), and red (2.5YR 4/6) clay; weak to moderate, medium to coarse, subangular blocky structure; friable to firm, slightly sticky; few patchy clay films on ped faces; very strongly acid; gradual, wavy boundary.

B25t—66 to 82 inches, mottled gray (N 6/0), yellow (2.5Y 7/8), reddish-yellow (7.5YR 6/6), yellowish-brown (10YR 5/6), and red (10R 4/6) clay; weak, coarse, subangular blocky structure; firm, slightly sticky; very strongly acid; gradual, wavy boundary.

B3—82 to 96 inches, mottled gray (N 6/0), brownish-yellow (10YR 6/8), and reddish-brown (5YR 5/4) clay; massive to weak, coarse, subangular blocky structure; firm, slightly sticky; very strongly acid.

The A1 horizon ranges from very dark gray to grayish brown and from fine sandy loam to loam. The A2 horizon ranges from very dark grayish brown to light brownish gray, or it may be mottled in shades of brown, gray, or yellow. It ranges from sandy loam to silt loam.

The B21t horizon is olive-yellow to brown and is mottled with gray, yellowish red, strong brown, and pale brown. It ranges from clay loam to clay. The B22t horizon and those horizons below it are clay loam or clay. They generally are mottled or are gray or light yellowish brown with mottles in shades of gray, yellow, brown, and red. Content of clay in the B2t horizon is over 35 percent.

Some profiles have a B1 horizon of sandy clay loam and clay loam. Most profiles are more than 60 inches thick. Reaction is strongly acid to very strongly acid throughout the profile.

Lenoir soils occur on the landscape with Brewton, Coxville, Craven, Kalmia, and Weston soils. Lenoir soils are finer textured in the Bt horizon than Brewton, Kalmia, and Weston soils. They are more poorly drained than Craven and Kalmia soils but are better drained than Coxville and Weston soils.

Lenoir fine sandy loam (le).—This nearly level soil is on low stream terraces along the Conecuh River and larger creeks.

Included with this soil in mapping are areas of Brewton, Coxville, Craven, and Kalmia soils. Also included are a few areas that contain up to 5 percent plinthite and a few areas where the upper 5 to 7 inches of the subsoil is free of gray mottles. A few areas that have loamy sand within 60 inches of the surface also are included.

This soil can be worked throughout a medium range of moisture content. Tilth is fair to good. Roots slowly penetrate the subsoil. Response to fertilizer is fair to good. Surface runoff is slow. The hazard of erosion is slight.

This soil is suited to pasture and row crops where good drainage systems are installed. It warms up slowly in spring, and plowing is delayed in places because of slow movement of water from the upper part of the soil. The more water-tolerant pasture grasses grow well. The soil is well suited to trees. Slow surface runoff and slow permeability that result in excess water in the profile are major limitations. Capability unit IIIw-12; woodland suitability group 2w8.

Lucy Series

The Lucy series consists of well-drained soils on ridgetops and side slopes. These soils formed in unconsolidated sandy loams and sandy clay loams. Slopes are dominantly 0 to 8 percent.

In a representative profile the upper 27 inches is loamy sand. The upper 4 inches is very dark grayish brown, the next 11 inches is brown, and the lower 12 inches is yellowish red. The upper 9 inches of the subsoil is red sandy loam, and below this, to a depth of 84 inches, it is red sandy clay loam.

Lucy soils are low in natural fertility and organic-matter content. The available water capacity is low in the upper part of the profile and medium in the lower part. Permeability is rapid in the upper part of the profile and moderate in the lower part.

Most areas of these soils are used for the production of timber. Some of the acreage, however, is used for pasture and row crops. The native vegetation is mixed oaks, dogwood, and longleaf and loblolly pines.

Representative profile of Lucy loamy sand, 0 to 5 percent slopes, 0.3 mile north of the Florida line on Alaflora-Parker Springs road and 0.6 mile west on south side of gravel road, SW¼SE¼ sec. 33, T. 1 N., R. 12 E.:

A1—0 to 4 inches, very dark grayish-brown (10YR 3/2) loamy sand; single grained; very friable; many fine roots; very strongly acid; clear, wavy boundary.

A2—4 to 15 inches, brown (7.5YR 4/4) loamy sand; single grained, very friable; many fine roots; very strongly acid; clear, wavy boundary.

A3—15 to 27 inches, yellowish-red (5YR 4/8) loamy sand; single grained; very friable; many fine and medium roots; very strongly acid; gradual, wavy boundary.

B1t—27 to 36 inches, red (2.5YR 4/6) sandy loam; weak, medium, subangular blocky structure; very friable; some bridging of sand grains; very strongly acid; gradual, wavy boundary.

B2t—36 to 84 inches, red (10R 4/6) sandy clay loam; moderate, medium, subangular blocky structure; friable; few patchy clay films; very strongly acid.

The A horizon ranges from 22 to 40 inches in thickness. The A1 horizon is very dark grayish brown, dark grayish brown, or brown. The A2 horizon ranges from brown to reddish yellow. The A3 horizon is yellowish-red or reddish-yellow loamy sand or sandy loam.

The B1 horizon is yellowish-red to red sandy loam or sandy clay loam. The B2t horizon is yellowish red or red. The horizon ranges from sandy loam to sandy clay loam, but in most profiles it is sandy clay loam.

Reaction is strongly acid to very strongly acid throughout the profile.

Lucy soils occur on the landscape with Benndale, Orangeburg, Troup, and Wagram soils. Lucy soils have a thick (22 to 40 inches), sandy A horizon, but the Benndale and Orangeburg soils do not. Lucy soils are redder in the subsoil than Wagram soils. They have a thinner sandy A horizon than Troup soils.

Lucy loamy sand, 0 to 5 percent slopes (LuB).—This soil is on ridgetops and side slopes. It has the profile (fig. 6) described as representative for the series.

Included with this soil in mapping are areas of Benndale, Orangeburg, Troup, and Wagram soils. Also included are areas of soils that have a surface layer of loamy fine sand.

This soil can be worked throughout a wide range of moisture content. Tilth is good. Response to fertilizer is fair to good. The rooting zone is deep. Surface runoff is slow.

During dry periods, crops do not grow well on this soil. Deep-rooted pasture grasses, such as bahiagrass and Coastal bermudagrass, are well suited to this soil. Suitability for row crops is fair. The use of this soil is limited because of rapid permeability, low available water capacity, and susceptibility to leaching in the upper 27 inches of loamy sand. The soil is fairly well suited to trees. The hazard of erosion is slight. Capability unit IIs–12; woodland suitability group 3s2.

Lucy loamy sand, 5 to 8 percent slopes (LuC).—This soil is on uplands. It has a surface layer of dark grayish-brown loamy sand in the upper 2 inches overlying yellowish-brown or strong-brown loamy sand to a depth of 26 inches. The subsoil is yellowish-red sandy loam in the upper 7 inches and red sandy clay loam to a depth of 75 inches.

Figure 6.—**Profile of Lucy loamy sand, 0 to 5 percent slopes. The upper 27 inches is loamy sand; below this is sandy loam and sandy clay loam.**

Included with this soil in mapping are areas of Benndale, Orangeburg, Troup, and Wagram soils. Also included are a few areas of soils that have slopes of less than 5 percent and a few areas of soils that have a surface layer of loamy fine sand.

This soil can be worked throughout a wide range of moisture content without clodding. Tilth is good. Response to fertilizer is fair to good, but in places the plants cannot fully utilize the fertilizer because of leaching or inadequate amounts of moisture. The rooting zone is

deep. Surface runoff is slow. The hazard of erosion is slight.

This soil is suited to deep-rooted pasture grasses and some drought-resistant row crops. It is fairly well suited to trees but is somewhat limited to this use because of rapid permeability, low available water capacity, and susceptibility to leaching in the sandy surface layer. Irregular slopes in some places limit use of the soil to trees. Capability unit IIIs-17; woodland suitability group 3s2.

Malbis Series

The Malbis series consists of moderately well drained soils that contain plinthite. These soils formed in beds of unconsolidated loams, clay loams, and sandy clays. Slopes range from 0 to 5 percent.

In a representative profile the surface layer is very dark grayish-brown fine sandy loam about 5 inches thick. The subsoil is brown, friable fine sandy loam in the upper 4 inches. Below this, to a depth of 47 inches, it is yellowish-brown, friable sandy clay loam and clay loam that, between depths of 38 and 47 inches, is about 7 percent plinthite and contains strong-brown and red mottles. Beneath this, to a depth of 70 inches, the subsoil is mottled strong-brown, red, light yellowish-brown, and light-gray, friable and firm sandy clay loam and 10 to 12 percent plinthite.

Malbis soils are low in natural fertility and organic-matter content. The available water capacity is medium to high. Permeability is moderate.

About one-half to two-thirds of the acreage of these soils is used for row crops and pasture. The remaining acreage is used for the production of timber. These soils are suited to most crops commonly grown in the county. The native vegetation is longleaf, slash, and loblolly pines, various oaks, and dogwood. In some places there is an understory of gallberry.

Representative profile of Malbis fine sandy loam, 0 to 2 percent slopes, 2.0 miles east of State Route No. 21 at Atmore Prison farm, then 3.15 miles north on paved road, 0.25 mile north-northwest on woods road, and 30 feet north of road, NE¼SE¼SW¼ sec. 23, T. 3 N., R. 6 E.:

A1—0 to 5 inches, very dark grayish-brown (10YR 3/2) fine sandy loam; weak, fine, granular structure; very friable; many medium and large roots; very strongly acid; clear, wavy boundary.

B1—5 to 9 inches, brown (10YR 4/3) fine sandy loam; weak, fine, granular and very weak, subangular blocky structure; friable; many medium and large roots; very strongly acid; clear, wavy boundary.

B21t—9 to 17 inches, yellowish-brown (10YR 5/6) sandy clay loam; weak, medium, subangular blocky structure; friable, slightly sticky; few patchy clay films; many fine roots; very strongly acid; clear, wavy boundary.

B22t—17 to 38 inches, yellowish-brown (10YR 5/8) clay loam, weak, medium, subangular blocky structure; friable, slightly sticky; few iron concretions; few patchy clay films; very strongly acid; gradual, wavy boundary.

B23t—38 to 47 inches, yellowish-brown (10YR 5/8) clay loam; strong-brown and red mottles; weak, medium, subangular blocky structure; friable, slightly sticky; plinthite is slightly firm, brittle; few iron concretions; few patchy clay films; about 7 percent plinthite; very strongly acid; gradual, wavy boundary.

B24t—47 to 62 inches, mottled strong-brown (7.5YR 5/6), red (2.5YR 4/6), light yellowish-brown (10YR 5/6), and light-gray (10YR 6/1) sandy clay loam; moderate, medium, subangular blocky structure; friable; plinthite is firm, slightly brittle; 12 percent plinthite; patchy clay films on ped faces; very strongly acid; gradual, wavy boundary.

B25t—62 to 70 inches, mottled strong-brown (7.5YR 5/8), red (2.5YR 4/6), yellowish-brown (10YR 5/6), and light-gray (10YR 6/1) sandy clay loam; moderate, medium, subangular blocky structure; firm; 10 percent plinthite; plinthite is slightly brittle; very strongly acid.

The A1 or Ap horizon ranges from very dark grayish brown to brown.

The B1 horizon ranges from brown to yellowish brown and from fine sandy loam to sandy clay loam. The B2t horizon ranges from yellowish brown to strong brown and from clay loam to sandy clay loam or loam. It is mottled in shades of brown, red, yellow, and gray in the B23t horizon and below.

Depth to mottles ranges from 24 to 40 inches. Gray mottles, if present, occur below a depth of 30 inches. Iron concretions range from ¼ to ½ inch in diameter and from 0 to 5 percent in amount. Quartz gravel ranges from ⅛ to ½ inch in diameter and up to 5 percent in amount. Content of plinthite ranges from 5 to 25 percent; plinthite begins at a depth of 30 to 48 inches. Reaction is strongly acid to very strongly acid throughout the profile.

Malbis soils occur on the landscape with Benndale, Poarch, Ruston, and Tifton soils. Malbis soils contain more plinthite and have a yellower subsoil than Ruston soils. They are finer textured in the subsoil than Benndale and Poarch soils, and they lack the amount of hard iron concretions that is in Tifton soils.

Malbis fine sandy loam, 0 to 2 percent slopes (MaA).—This soil is on uplands. It has the profile described as representative for the series.

Included with this soil in mapping are similar soils that have plinthite and gray mottles within 24 to 30 inches of the surface. Also included are small areas of Benndale, Grady, Poarch, Ruston, and Tifton soils and a few areas of soils that have a sandy loam or loam surface layer.

This soil can be worked throughout a wide range of moisture content. Tilth is good. Response to fertilizer is good. Roots can easily penetrate the subsoil to a depth of more than 50 inches. Surface runoff is slow. The hazard of erosion is slight.

This soil is well suited to all crops commonly grown in the county. There are no serious limitations or hazards to its use. Capability unit I-12; woodland suitability group 2o1.

Malbis fine sandy loam, 2 to 5 percent slopes (MaB).—This soil is on uplands. It has a surface layer of dark grayish-brown fine sandy loam about 6 inches thick. The upper 25 inches of the subsoil is yellowish-brown light clay loam, and the lower part of the subsoil is mottled with shades of brown, yellow, red, and in places, gray. The lower part of the subsoil contains about 15 percent plinthite.

Included with this soil in mapping are areas of a similar soil that contains gray mottles and plinthite between depths of 24 and 28 inches. This included soil makes up about 16 percent of the total acreage. Also included are small areas of Benndale, Poarch, Ruston, and Tifton soils. Areas of soils that have a surface layer of sandy loam or loam also are included.

Tilth of this soil is good, except in eroded areas where the subsoil is exposed. Response to fertilizer is good.

Surface runoff is medium. The hazard of erosion is moderate.

This soil is well suited to most crops grown in the county. Erosion is the major hazard where the soil is cultivated. Capability unit IIe–12; woodland suitability group 2o1.

Orangeburg Series

The Orangeburg series consists of well-drained, nearly level to moderately steep soils on uplands. These soils formed in marine sediments of sandy loams and sandy clay loams. Slopes range from 0 to 25 percent but are dominantly 0 to 8 percent.

In a representative profile the surface layer is very dark grayish-brown fine sandy loam about 4 inches thick. The subsurface layer is dark-brown fine sandy loam about 3 inches thick. The upper 7 inches of the friable subsoil is strong-brown sandy loam, the next 8 inches is yellowish-red sandy clay loam, and the lower part of the subsoil is red sandy clay loam to a depth of 87 inches.

Orangeburg soils are low in natural fertility and organic-matter content. The available water capacity is medium, and permeability is moderate.

About one-third of the acreage of these soils is used for row crops and pasture. The remaining acreage is used for the production of timber. The native vegetation is mainly longleaf, slash, and loblolly pines, dogwood, and various oaks.

Representative profile of Orangeburg fine sandy loam, 2 to 5 percent slopes, 0.9 mile east of firetower on Ridge road and 650 feet north on east side of gravel pit, W½NW¼SW¼SE¼ sec. 24, R. 10 E., T. 2 N.:

A1—0 to 4 inches, very dark grayish-brown (10YR 3/2) fine sandy loam; weak, fine, granular structure; friable; many fine roots; very strongly acid; clear, wavy boundary.

A2—4 to 7 inches, dark-brown (10YR 4/3) fine sandy loam; weak, fine, granular structure; friable; many fine roots; very strongly acid; clear, wavy boundary.

B1—7 to 14 inches, strong-brown (7.5YR 5/6) sandy loam; weak, fine, granular structure; friable; many fine roots; very strongly acid; gradual, wavy boundary.

B21t—14 to 22 inches, yellowish-red (5YR 5/8) sandy clay loam; weak, medium, subangular blocky structure; friable; many fine roots; few clay films; very strongly acid; gradual, wavy boundary.

B22t—22 to 67 inches, red (2.5YR 4/6) sandy clay loam; weak, medium, subangular blocky structure; friable; few medium roots; few clay films; very strongly acid; diffuse, wavy boundary.

B3—67 to 87 inches, red (10R 4/6) sandy clay loam; very weak, subangular blocky structure; friable; very strongly acid.

The A1 horizon ranges from very dark gray to brown. The A2 horizon is sandy loam or fine sandy loam and ranges from dark brown to yellowish brown.

The B1 horizon ranges from strong brown to yellowish red and from sandy loam to sandy clay loam. The B2t horizon ranges from yellowish red to red. In places the lower part of this horizon is mottled with yellowish brown, very pale brown, red, yellowish red, or brownish yellow below a depth of 50 inches.

Content of quartz gravel ranges from 0 to 15 percent. This gravel is ¼ to 1 inch in diameter. Reaction is strongly acid to very strongly acid throughout the profile.

Orangeburg soils occur on the landscape with Benndale, Dothan, Greenville, Lucy, Ruston, Troup, and Wagram soils. Orangeburg soils are finer textured in the subsoil than Benndale soils. They are redder throughout the profile than Benndale and Dothan soils. They are coarser textured and less red in the subsoil than Greenville soils. Orangeburg soils contain less silt and have mottles deeper in the profile (more than 50 inches) than Ruston soils. They lack the thick, sandy A horizon that is common to Lucy, Troup, and Wagram soils.

Some areas of Orangeburg soils are outside the range defined for the series in that the soil contains about 5 percent more silt than is allowed for the series, but this does not affect the usefulness or behavior of the soils.

Orangeburg fine sandy loam, 0 to 2 percent slopes (OrA).—This soil is on ridgetops and broad flats on uplands. It has a 4-inch surface layer of very dark grayish-brown fine sandy loam overlying 4 inches of brown fine sandy loam. The subsoil is strong-brown fine sandy loam in the upper 4 inches and, below this, is yellowish-red or red sandy clay loam to a depth of 70 inches. In some places this soil is light sandy clay loam or sandy loam below a depth of 60 inches.

Included with this soil in mapping are areas of Benndale, Greenville, Lucy, and Ruston soils. Also included are areas of soils that have mottles within 50 inches of the surface.

This soil can be worked throughout a wide range of moisture content without clodding. Tilth is good. Response to fertilizer is good for most crops grown in the county. Roots can easily penetrate deep into the subsoil. Surface runoff is slow. The hazard of erosion is slight.

This soil is well suited to row crops, pasture, and trees. It has few limitations. Capability unit I–12; woodland suitability group 2o1.

Orangeburg fine sandy loam, 2 to 5 percent slopes (OrB).—This soil is on ridgetops and side slopes. It has the profile described as representative for the series. The plow layer in cultivated areas is typically dark grayish brown or brown.

Included with this soil in mapping are areas of Benndale, Greenville, Lucy, and Ruston soils. Also included are a few areas of soils that have slopes of 0 to 2 percent and a few areas of soils that have mottles within 50 inches of the surface.

This soil can be worked throughout a fairly wide range of moisture content without clodding. Tilth is good. Response to fertilizer is good for most crops grown in the county. Roots can easily penetrate into the subsoil. Surface runoff is medium.

This soil is well suited to row crops, pasture, and trees. Where the soil is cultivated, erosion is a moderate hazard. Capability unit IIe-12; woodland suitability group 2o1.

Orangeburg fine sandy loam, 5 to 8 percent slopes (OrC).—This soil is on uplands. It has a surface layer of very dark grayish-brown fine sandy loam that is 4 inches thick and overlies a layer of strong-brown sandy loam 3 inches thick. The subsoil is yellowish-red sandy loam or sandy clay loam in the upper 12 inches. Below this, to a depth of 54 inches, it is red sandy clay loam overlying red sandy loam or sandy clay loam to a depth of 74 inches.

Included with this soil in mapping are areas of Benndale, Dothan, Lucy, Troup, and Wagram soils. Also included are areas of eroded soils and areas of soils that have slopes of 2 to 5 percent.

Tilth of this soil is fairly good, but workability is somewhat hampered by small eroded areas and by slope. Response to fertilizer is fair to good for most commonly grown crops. Roots can penetrate this soil fairly easily. Surface runoff is medium to rapid.

This soil is well suited to trees. It is suited to row crops and pasture, but the hazard of erosion is moderate to severe. Capability unit IIIe-12; woodland suitability group 2o1.

Orangeburg-Greenville-Malbis complex, 3 to 12 percent slopes, eroded (OvC2).—The soils in this complex are on uplands. The complex is about 22 percent Orangeburg soils, 18 percent Greenville soils, and 12 percent Malbis soils. The remaining 48 percent is other soils. Among these soils, about 18 percent of the complex is soils that are similar to Orangeburg soils but are higher in silt content and, in some places, are gravelly; about 12 percent is soils that are similar to Greenville soils in texture but are mottled in the subsoil; about 12 percent is soils that are similar to Malbis soils but contain more iron concretions; and 6 percent is coarser textured and alluvial soils.

Most of this complex has been cultivated but is now idle. The subsoil is exposed in many areas, and shallow gullies and a few deep gullies have formed. The shallow gullies are 1 to 5 feet deep and are about 50 to 800 feet apart. The deeper gullies are more than 6 feet deep and generally are 1,000 feet or more apart.

The well-drained Orangeburg soils generally are on the lower slopes, but, in some places, are on the upper slopes. They have a surface layer of grayish-brown fine sandy loam 5 inches thick. The subsoil is red or yellowish-red, friable sandy clay loam.

The Greenville soils in most places are on the upper slopes. They have a surface layer of dark reddish-brown fine sandy loam 4 inches thick. The subsoil is dark-red clay loam or clay.

The Malbis soils generally are on the upper slopes or middle slopes. They have a surface layer of very dark grayish-brown fine sandy loam 4 inches thick. The upper part of the subsoil is yellowish-brown or strong-brown sandy clay loam or clay loam. The lower part of the subsoil is sandy clay loam or clay loam mottled in shades of yellow, brown, red, and gray. This part of the subsoil is 5 to 15 percent plinthite.

Included with this complex in mapping are areas of soils that have a sandy clay loam or sandy loam surface layer that ranges from 2 to 10 inches in thickness. This layer generally is thicker on the lower slopes.

The soils of this complex are medium to low in natural fertility and organic-matter content. The available water capacity is medium to high. Permeability is moderate. Tilth of these soils generally is poor to fair, and response to fertilizer is fair. The rooting zone is fairly deep. Surface runoff is medium to rapid. The hazard of erosion is severe.

These soils are not suited to row crops, because of erosion and slope. They are suited to pasture, especially in the less sloping areas. They are suited to trees. Most of the complex is idle and covered with weeds. A few areas are wooded. Capability unit VIe–11; woodland suitability group 2o1.

499-067—75——3

Plummer Series

The Plummer series consists of poorly drained, nearly level to sloping soils on uplands. These soils formed in sandy and loamy marine sediments. Slopes are dominantly 0 to 12 percent.

In a representative profile the surface layer is loamy sand about 12 inches thick. The upper 2 inches is very dark gray and the lower 10 inches is dark gray. The subsurface layer, about 30 inches thick, is gray loamy sand mottled with brownish gray, yellowish brown, light yellowish brown, and dark gray. The friable subsoil is mottled light-gray, light yellowish-brown, brownish-yellow, strong-brown, and red sandy loam and sandy clay loam to a depth of 62 inches.

Plummer soils are very low in natural fertility and low in organic-matter content. The available water capacity is low to medium in the upper part and medium in the lower part. Permeability is rapid in the upper sandy layer and moderate in the lower loamy layer.

These soils are almost entirely in woodland or occur in areas that have very little useful vegetation on them. A few areas are used for pasture. These soils are not used for row crops. The native vegetation is pitcherplant, wiregrass, gallberry, saw brier, scattered pines, mostly longleaf and slash, and a few mixed hardwoods.

Representative profile of Plummer loamy sand, 0 to 5 percent slopes, 0.6 mile south of Peacock's store at Little Rock on paved road, then 0.1 mile east on woods road, 0.35 mile south on old woods road, 150 feet west in the woods, NE¼SE¼SW¼ sec. 29, T. 2 N., R. 7 E.:

A11—0 to 2 inches, very dark gray (10YR 3/1) loamy sand; single grained; loose; many fine and medium roots; very strongly acid; clear, wavy boundary.

A12—2 to 12 inches, dark-gray (N 4/0) loamy sand; single grained; loose; common fine and medium roots; few quartz pebbles; very strongly acid; clear, wavy boundary.

A21g—12 to 20 inches, gray (N 5/0) and light brownish-gray (2.5Y 6/2) loamy sand; few, fine, distinct, yellowish-brown root stains; single grained; loose; common fine and medium roots; few quartz pebbles; very strongly acid; gradual, wavy boundary.

A22g—20 to 38 inches, gray (N 5/0) loamy sand; few, fine, distinct, light yellowish-brown and yellowish-brown mottles and common, medium, faint, dark-gray mottles; single grained; loose; few quartz pebbles; very strongly acid; gradual, wavy boundary.

A23g—38 to 42 inches, light-gray (N 7/0) loamy sand; common, fine, distinct, light yellowish-brown and brownish-yellow mottles and few, fine, prominent, red mottles; interfingering of brownish-yellow and red sandy loam from horizon below; single grained; loose; few quartz pebbles; very strongly acid; gradual, wavy boundary.

B21tg—42 to 48 inches, mottled light-gray (N 7/0), light yellowish-brown (2.5Y 6/4), brownish-yellow (10YR 6/8), strong-brown (7.5YR 5/8), and red (2.5YR 4/8) sandy loam; weak, fine, subangular blocky structure; friable; sand grains are well coated and bridged; less than 3 percent plinthite; few quartz pebbles; very strongly acid; gradual, wavy boundary.

B22tg—48 to 62 inches, mottled light-gray (N 7/0), light yellowish-brown (2.5Y 6/4), brownish-yellow (10YR 6/6), and red (2.5YR 4/8) sandy clay loam; weak, fine, subangular blocky structure; friable; less than 3 percent plinthite; very strongly acid.

The A1 horizon ranges from very dark gray to gray or grayish brown. The A2 horizon ranges from dark gray to

light gray. This horizon is mottled in shades of brown, red, yellow, and gray.

The B2t horizon ranges from sandy loam to sandy clay loam. Depth to the B2t horizon ranges from 41 to 54 inches. In some places the B2t horizon is only 15 inches thick and overlies sand or loamy sand. Reaction is strongly acid to very strongly acid throughout the profile.

Plummer soils occur on the landscape with Benndale, Bibb, Escambia, Poarch, and Troup soils. Plummer soils are more poorly drained than all of those soils except the Bibb. They are not stratified like Bibb soils, and they are finer textured in the lower part of the subsoil.

Plummer loamy sand, 0 to 5 percent slopes (PlB).—This soil is on broad flats and on uplands. It has the profile described as representative for the series.

Included with this soil in mapping are areas of Atmore, Bibb, Escambia, and Troup soils. Also included are areas of soils that contain 5 to 10 percent plinthite in the lower part of the subsoil and areas that have as much as 12 inches of mucky loam on the surface.

Tilth of this soil is poor to fair because of the high water table most of the year. Root penetration is slow because of the high water table and poor aeration in the lower part of the soil. Surface runoff is slow. The hazard of erosion is slight.

This soil is not suited to row crops and is poorly suited to pasture. Suitability for trees is fair. Row crops are not grown, because of the high water table and the difficulty in preparing a seedbed on this soil, which is waterlogged for most of the year. Capability unit Vw-11; woodland suitability group 2w3.

Plummer loamy sand, 5 to 12 percent slopes (PlC).—This soil is mainly in areas along drainageways. These areas have seepage water at the surface. This soil has a surface layer of dark gray loamy sand, 3 inches thick, that overlies 51 inches of gray loamy sand that has mottles in shades of brown, gray, and yellow. The subsoil, between depths of 54 to 70 inches, is mottled gray, light yellowish-brown, reddish-yellow, and yellowish-red sandy loam and sandy clay loam.

Included with this soil in mapping are areas of Bibb, Flomaton, Poarch, and Troup soils.

Tilth of this soil is poor, and response to fertilizer is fair to poor. Roots penetrate into this soil fairly slowly because of the high water table and poor aeration. Surface runoff is medium to slow. The hazard of erosion is slight.

This soil is not suited to row crops and is poorly suited to pasture because of the high water table, poor aeration, and steepness of slope. Suitability for trees is fair. Capability unit Vw-11; woodland suitability group 2w3.

Poarch Series

The Poarch series consists of moderately well drained to well drained soils that contain plinthite. These soils are on broad flats and gentle side slopes on uplands. They formed in unconsolidated marine sediments of sandy loam, loam, and sandy clay loam. Slopes are dominantly 0 to 8 percent.

In a representative profile the surface layer is dark-gray fine sandy loam about 7 inches thick. The subsurface layer is light yellowish-brown loam about 5 inches thick. The friable subsoil, to a depth of 32 inches, is yellow loam that has a few light-gray areas of clean sand and a few brownish-yellow mottles in the lower part. Below this, between depths of 32 and 66 inches, the subsoil is mottled yellow, light-gray, light yellowish-brown, strong-brown, and red loam that contains 5 to 12 percent plinthite.

Poarch soils are low in natural fertility and organic-matter content. The available water capacity is medium to high, and permeability is moderate.

About one-third of the acreage of these soils is used for row crops, pasture, and some truck crops. The remaining acreage is used for the production of timber, mostly longleaf, slash, and loblolly pines. The native vegetation is pine, blackgum, various oaks, and an understory of gallberry.

Representative profile of Poarch fine sandy loam, 0 to 2 percent slopes, 2.6 miles southeast of radio station in Atmore, Alabama, 60 feet north of Florida line road, SW¼SW¼SE¼ sec. 34, T. 1 N., R. 6 E.:

Ap—0 to 7 inches, dark-gray (10YR 4/1) fine sandy loam; weak, fine, granular structure; friable; very strongly acid; clear, smooth boundary.

A2—7 to 12 inches, light yellowish-brown (2.5Y 6/4) loam; weak, fine, granular structure; friable; very strongly acid; gradual, wavy boundary.

B21t—12 to 24 inches, yellow (2.5Y 7/6) loam; weak, medium, subangular blocky structure; friable; sand grains are well coated and bridged with clay; very strongly acid; gradual, wavy boundary.

B22t—24 to 32 inches, yellow (2.5Y 7/6) loam; few, fine, faint, brownish-yellow mottles; weak, medium, subangular blocky structure; friable; most sand grains are coated and bridged with clay; common, medium, light-gray areas of clean, uncoated sand grains; very strongly acid; clear, wavy boundary.

B23t—32 to 38 inches, mottled yellow (2.5Y 7/6), light-gray (2.5Y 7/2), strong-brown (7.5YR 5/6), and red (2.5YR 5/6) loam; moderate, medium, subangular blocky structure; friable; sand grains are coated and bridged with clay; very thin, patchy clay films on plinthite nodules; 6 percent plinthite; very strongly acid; gradual, wavy boundary.

B24t—38 to 50 inches, mottled olive-yellow (2.5Y 6/6), light-gray (2.5Y 7/2), strong-brown (7.5YR 5/6), and red (2.5YR 5/8) loam; weak, medium, subangular blocky structure; friable, hard; sand grains are well coated and bridged with clay; very thin, nearly continuous clay films on plinthite nodules; 12 percent plinthite; few hard iron concretions; very strongly acid; gradual, wavy boundary.

B25t—50 to 66 inches, mottled brownish-yellow (10YR 6/6), light-gray (10YR 7/1), strong-brown (7.5YR 5/8), and red (2.5YR 5/8) loam; weak, medium, subangular blocky structure; friable; most sand grains are coated and bridged with clay; 5 percent plinthite; few hard iron concretions; very strongly acid.

The Ap and A1 horizons range from very dark gray or very dark grayish brown to gray or grayish brown. The A2 horizon is grayish brown, light grayish brown, light yellowish brown, or pale brown. It is fine sandy loam, very fine sandy loam, or loam.

The B2t horizon is pale yellow, yellow, olive yellow, light olive brown, light yellowish brown, very pale brown, brownish yellow, or yellowish brown. This horizon is mottled in various shades of red, brown, yellow, and olive below the B21t subhorizon. Gray mottles are common below a depth of 32 inches. In some profiles the lower subhorizons of the B2t horizon are mottled without a matrix color. The B2t horizon is sandy loam, loam, or silt loam.

Content of plinthite ranges from 5 to 25 percent in some subhorizons of the B2t horizon. In places there are horizons that contain less than 5 percent plinthite between depths of 17 and 24 inches. Depth to subhorizons that contain 5 to 25

percent plinthite ranges from 24 to 58 inches. Reaction is strongly acid or very strongly acid throughout the profile.

Poarch soils occur on the landscape with Benndale, Escambia, Irvington, Malbis, and Ruston soils. Poarch soils are coarser textured in the Bt horizon than Irvington, Malbis, and Ruston soils. They are better drained than Irvington soils and lack the fragipan of those soils. Poarch soils are better drained than Escambia soils and contain more plinthite than Benndale soils.

Poarch fine sandy loam, 0 to 2 percent slopes (PoA).—This soil is on broad flats. It has the profile described as representative for the series. In undisturbed areas the surface layer is typically very dark gray fine sandy loam, 3 or 4 inches thick, and overlies a layer of light yellowish-brown fine sandy loam 3 to 6 inches thick.

Included with this soil in mapping are areas of Benndale, Escambia, Irvington, and Malbis soils. Also included are a few areas of Poarch soils that have slopes of 2 to 5 percent and a few small areas of Grady soils. A moderately well drained soil that has a profile similar to the one of this Poarch soil also is included.

This soil can be worked throughout a wide range of moisture content. Tilth is good. Response to fertilizer is very good for most crops. Roots can easily penetrate the subsoil and move fairly easily through the plinthite layers. Surface runoff is slow. The hazard of erosion is slight.

This soil is well suited to row crops and pasture. Some of the better suited crops are corn, soybeans, potatoes, and small grain. The soil is well suited to trees. There are few limitations to its use. Capability unit I-13; woodland suitability group 2o1.

Poarch fine sandy loam, 2 to 5 percent slopes (PoB).—This soil is on uplands. It has a surface layer 6 inches thick. The upper 2 inches of this layer is very dark gray fine sandy loam, and the lower 4 inches is grayish-brown fine sandy loam. The subsoil, to a depth of 37 inches, is light yellowish-brown loam that has mottles of yellowish brown, strong brown, brownish yellow, and light gray in the lower part. The lower part of the subsoil, to a depth of 72 inches, is mottled yellowish-brown, light yellowish-brown, light-gray, strong-brown, and red loam and 5 to 15 percent plinthite.

Included with this soil in mapping are areas of Benndale, Escambia, Malbis, and Ruston soils. Also included are areas of Poarch soils that have slopes of 5 to 8 percent and a few small areas of Grady soils.

This soil can be worked throughout a wide range of moisture content without clodding. Tilth is good. Response to fertilizer is good for most crops grown in the county. The hazard of erosion is moderate. Surface runoff is medium.

This soil is suited to all crops commonly grown in the county. Some of the better suited crops are soybeans, potatoes, corn, and small grain. The soil also is suited to pasture and trees. The major hazard is erosion. Capability unit IIe–13; woodland suitability group 2o1.

Poarch fine sandy loam, 5 to 8 percent slopes (PoC).—This soil is on uplands. It has a surface layer of very dark gray fine sandy loam overlying light yellowish-brown fine sandy loam. The subsoil is pale-yellow or yellow loam to a depth of 33 inches. Below this, to a depth of 65 inches, the subsoil is mottled yellow, light yellowish-brown, light-gray, strong-brown, and red sandy clay loam and 9 percent plinthite.

Included with this soil in mapping are areas of Benndale, Dothan, and Escambia soils. Also included are a few areas of soils that have slopes of 2 to 5 percent.

Tilth of this soil is fairly good, and response to fertilizer is good. Roots can easily penetrate into the subsoil. Surface runoff is medium.

This soil is fairly well suited to most crops grown in the county, but good conservation practices are needed to control erosion where the soil is cultivated. The hazard of erosion is moderate to severe. This soil is suited to pasture and is well suited to trees. Capability unit IIIe-13; woodland suitability group 2o1.

Ponzer Series

The Ponzer series consists of very poorly drained mucky soils in natural drainageways and along the larger creeks. These soils formed in decomposed organic matter, less than 48 inches thick, overlying loamy mineral soils. Slopes range from 0 to 2 percent.

In a representative profile the upper 40 inches is very friable, black muck. This overlies loose, white mucky sandy loam that extends to a depth of 60 inches.

Ponzer soils are high in natural fertility and very high in organic-matter content. The available water capacity is very high in the organic layers and medium to low in the lower mineral layers. Permeability is slow because of the high water table in these soils most of the year.

All the acreage of these soils is in woods, where water stands on or near the surface most of the year. The native vegtation is bay, baldcypress, pine, gum, titi, pitcherplant, and gallberry.

Representative profile of Ponzer muck, south of paved road, 1.5 miles east-northeast of Rock Creek settlement; this is 580 feet south and 195 feet west of center of sec. 29, T. 1 N., R. 13 E.:

Oa1—0 to 12 inches, black (N. 2/0) muck; about 5 percent dark-brown stains; weak, fine, granular structure or massive; very friable; fiber content is about 30 percent unrubbed and less than 10 percent rubbed; very strongly acid; diffuse, wavy boundary.

Oa2—12 to 40 inches, black (N 2/0) muck; weak, fine, granular structure or massive; very friable; fiber content is about 30 percent unrubbed and less than 10 percent rubbed; very strongly acid; clear, wavy boundary.

IIC1—40 to 45 inches, white (N 8/0) mucky sandy loam; about 10 percent of fine pores filled with organic matter; massive; loose; very strongly acid; gradual, wavy boundary.

IIC2—45 to 60 inches, white (N 8/0) mucky sandy loam; massive; loose; very strongly acid.

The mucky layer ranges from 16 to 48 inches in thickness. In many places the surface is covered with a layer of partly decomposed leaves and twigs ½ inch to 2 inches thick. The Oa1 horizon ranges from 12 to 28 inches in thickness. The Oa2 horizon ranges from black to very dark gray and from muck to loamy muck. This horizon is 3 to 28 inches thick.

The C horizon is loamy and ranges from black to white. In some places the C horizon is mottled with shades of gray, brown, and yellow.

The fiber content of the organic layer ranges from about 15 to 35 percent in an unrubbed condition and is about 10 percent or less after rubbing.

Ponzer soils occur on the landscape with Bibb, Brewton, Dorovan, Plummer, and Weston soils. Ponzer soils are organic, whereas those soils are mineral, except for the Dorovan. Ponzer soils have thinner organic layers than Dorovan soils.

Ponzer muck (Pr).—This nearly level soil is along natural drainageways.

Included with this soil in mapping are areas of Bibb, Dorovan, Plummer, and Weston soils. Also included are a few areas of soils that have a fiber content of more than 35 percent before rubbing.

Under natural conditions tilth is poor. Surface runoff is slow. The hazard of erosion is slight.

This soil is not suited to row crops or pasture. It is suited to trees. The high water table for long periods and poor aeration are the major limitations. Capability unit VIIw–11; woodland suitability group 4w9.

Red Bay Series

The Red Bay series consists of well-drained, nearly level soils on uplands. These soils formed in unconsolidated marine sediments of sandy loam and sandy clay loam. Slopes are dominantly 0 to 2 percent.

In a representative profile the surface layer is dark reddish-brown fine sandy loam about 6 inches thick. The subsoil is dark-red sandy loam to a depth of 14 inches, dark-red sandy clay loam between depths of 14 and 65 inches, and dark-red sandy loam between depths of 65 and more than 100 inches.

Red Bay soils are low in natural fertility and organic-matter content. The available water capacity is medium. Permeability is moderately rapid.

Almost all the acreage of these soils is used for row crops or pasture. A few areas are used for woodland. The native vegetation is longleaf pine, oaks, and dogwood.

Representative profile of Red Bay fine sandy loam, 0 to 2 percent slopes, 1 mile south of Alabama line, 1.3 miles northeast on Three Notch gravel road, north 0.6 mile on gravel road, 0.2 mile north of Florida line, 150 feet northeast of gravel road in field, NE¼SE¼SE¼ sec. 31, T. 1 N., R. 10 E.:

Ap—0 to 6 inches, dark reddish-brown (5YR 3/4) fine sandy loam; weak, fine, granular structure; very friable; very strongly acid; abrupt, smooth boundary.

B1—6 to 14 inches, dark-red (2.5YR 3/6) sandy loam; some dark reddish-brown mixing in upper part from horizon above; weak, fine, granular structure and very weak, subangular blocky structure; very friable; very strongly acid; gradual boundary.

B2t—14 to 65 inches, dark-red (10YR 3/6) sandy clay loam; weak, medium, subangular blocky structure; friable; very strongly acid; gradual boundary.

B3—65 to 111 inches, dark-red (10R 3/6) sandy loam; very weak, medium, subangular blocky structure; friable; very strongly acid.

The A horizon is 6 to 10 inches thick. It ranges from dark reddish brown to dark brown.

The B1 horizon ranges from dark red to dark reddish brown and from sandy loam to sandy clay loam. The B2t horizon is sandy clay loam and, in some places, sandy loam in the lower part. In some profiles this horizon has a few splotches of clean sand grains in the upper part.

Red Bay soils occur on the landscape with Greenville, Orangeburg, and Ruston soils. They are darker red than Orangeburg and Ruston soils and contain less silt than Ruston soils. Red Bay soils are coarser textured in the Bt horizon than Greenville soils.

Red Bay fine sandy loam, 0 to 2 percent slopes (Rb).—This soil is on uplands.

Included in mapping are areas of Greenville, Orangeburg, and Ruston soils. Also included are areas of soils that have a dark-colored surface layer more than 10 inches thick, areas that have a sandy loam surface layer, and a few areas of Red Bay soils that have slopes of 2 to 5 percent.

This soil can be worked throughout a wide range of moisture content without clodding. Tilth is good. Response to fertilizer is very good for most crops. Roots penetrate into the subsoil very easily. Surface runoff is slow. The hazard of erosion is slight.

This soil is well suited to all crops grown in the county. Some of the better suited crops are cotton, peanuts, and soybeans. The soil also is well suited to pasture and trees. It has no major limitations. Capability unit I–12; woodland suitability group 2o1.

Riverview Series

The Riverview series consists of well-drained, nearly level soils on narrow natural levees on the flood plains of streams. These soils formed in stream alluvium having medium and coarse textures. Slopes are less than 2 percent.

In a representative profile the surface layer is very dark grayish-brown silt loam about 6 inches thick. The friable subsoil is dark yellowish-brown loam in the upper 17 inches. Below this, to a depth of 39 inches, it is yellowish-brown loam and fine sandy loam mottled with yellowish red in the lower part. The underlying material is brownish-yellow loamy fine sand to a depth of 70 inches.

Riverview soils are medium in natural fertility and organic-matter content. The available water capacity is medium in the upper part of the profile and low in the lower part. Permeability is moderate in the upper part of the profile and rapid in the lower part.

Almost all the acreage of these soils is in trees, mostly hardwoods. The native vegetation is various gums and oaks, some pine, and yellow-poplar.

Representative profile of Riverview silt loam in an area of Riverview-Lenoir association, 4.0 miles east of junction of U.S. Highway No. 29 and State Route No. 41 south of Brewton, Alabama, and 1.35 miles east and south on woods road, in woods about 10 feet east of road and about 0.2 mile north of the Conecuh River, NW¼ SE¼ sec. 5, T. 1 N., R. 11 E.:

A—0 to 6 inches, very dark grayish-brown (10YR 3/2) silt loam; weak, medium, granular structure; friable; many fine roots; strongly acid; clear, wavy boundary.

B21—6 to 12 inches, dark yellowish-brown (10YR 3/4) loam; weak, medium, subangular blocky structure; friable, hard; many fine roots; very strongly acid; gradual, wavy boundary.

B22—12 to 23 inches, dark yellowish-brown (10YR 4/4) loam; moderate, medium, subangular blocky structure; friable, hard; ped faces are brown (7.5YR 5/4); few mica flakes; very strongly acid; gradual, wavy boundary.

B23—23 to 31 inches, yellowish-brown (10YR 5/4) loam; weak, medium, subangular blocky structure; friable; ped faces are brown (7.5YR 5/4); common mica flakes; strongly acid; gradual, wavy boundary.

B3—31 to 39 inches, yellowish-brown (10YR 5/4) fine sandy loam; few, fine, distinct, yellowish-red mottles; weak, medium, subangular blocky structure; friable; few uncoated sand grains, common mica flakes; very strongly acid; gradual, wavy boundary.

C—39 to 70 inches, brownish-yellow (10YR 6/6) loamy fine sand; single grained; loose; few thin strata of darker colored, finer textured material; common mica flakes; very strongly acid.

The A horizon is very dark grayish brown, brown, dark brown, or dark yellowish brown. It is very fine sandy loam, loam, or silt loam.

The B horizon is brown, yellowish brown, or dark yellowish brown. In some profiles the lower part of the B2 horizon is mottled in shades of yellow, brown, or red, and a few profiles are mottled with gray at a depth of 24 inches or more. The B2 horizon is sandy clay loam, loam, silt loam, or silty clay loam. The B3 horizon is sandy clay loam, loam, or fine sandy loam.

The C horizon ranges from very pale brown or yellow to yellowish brown, strong brown, or reddish yellow. It is fine sandy loam, sandy loam, loamy fine sand, loamy sand, or sand. Strata in the C horizon range from sandy loam to silty clay loam.

Mica flakes range from few to common in the B and C horizons. Reaction is strongly acid to very strongly acid throughout the profile.

Riverview soils are on the landscape with Lenoir, Chewacla, Bruno, and Kalmia soils. They are better drained than Chewacla and Lenoir soils and are coarser textured in the subsoil than Lenoir soils. Riverview soils are finer textured throughout the profile than Bruno soils. They lack the distinct evidence of clay accumulation in the subsoil that occurs in Kalmia soils.

Riverview soils in this county are mapped only in a complex with Lenoir soils and in an association with Chewacla and Lenoir soils.

Riverview-Lenoir complex (Re).—This complex is about 60 percent Riverview soils and about 29 percent Lenoir soils. Slopes range from 0 to 2 percent. The remaining 11 percent is made up of a soil that has a thinner, coarser textured subsoil than that in Riverview soils a clayey soil that is similar to Lenoir soils but is massive in place; a moderately well drained soil that is similar to Riverview soils in physical characteristics; and a well-developed clayey soil. Riverview and Lenoir soils are so closely intermingled on narrow levees and in low areas between levees that they are mapped together as one unit.

The Riverview soils in this complex have a profile similar to the one described as representative for the Riverview series, except the surface layer is fine sandy loam, loam, or silt loam.

The Lenoir soils have a surface layer of dark-gray loam, 4 inches thick, that overlies a layer of mottled gray, dark yellowish-brown, and strong-brown silt loam 4 inches thick. The upper part of the subsoil is 10 inches of brown clay loam that has light-gray mottles. Below this, to a depth of 60 inches, the subsoil is light-gray clay mottled with light yellowish brown and brownish yellow in the upper part and reddish yellow and pale brown in the lower part.

The soils of this complex are low to medium in natural fertility and medium in organic-matter content. The available water capacity is medium to high. Permeability is slow in the Lenoir soils and moderate in the Riverview soils. Surface runoff is slow. The hazard of erosion is slight. Tilth is fair to good. The rooting zone is fairly deep. Response to fertilizer is fair to good.

This complex is used mainly for woodland. If the soils were cleared, smoothed, and drained, they would be suited to row crops or pasture. The hazard of occasional flooding and excess water and the slow permeability in the Lenoir soils are the major limitations to use of the soils in this complex. Capability unit IIIw–12; woodland suitability group 1o7.

Robertsdale Series

The Robertsdale series consists of nearly level, somewhat poorly drained soils that have a fragipan and contain plinthite. These soils are on uplands. They formed in unconsolidated marine sediments of sandy loams, loams, and sandy clay loams. Slopes range from 0 to 2 percent.

In a representative profile the surface layer is dark-gray fine sandy loam about 5 inches thick. The subsurface layer is light olive-gray fine sandy loam about 3 inches thick. The upper 6 inches of the friable subsoil above the fragipan is light brownish-gray fine sandy loam mottled with pale olive and gray. Below this, the subsoil is 8 inches of light yellowish-brown fine sandy loam mottled with yellow and light gray and 7 inches of light yellowish-brown sandy clay loam mottled with light olive gray, yellow, and strong brown. The fragipan is between depths of 29 inches and 60 inches. It is mottled gray, light yellowish-brown, yellowish-brown, strong-brown, and red sandy clay loam and 10 to 15 percent plinthite.

Robertsdale soils are low in natural fertility and organic-matter content. The available water capacity is medium to high. Permeability is moderate above the fragipan and moderately slow to slow through the fragipan.

About one-half the acreage of these soils is used for row crops and pasture, and the remaining acreage is used for woodland. The native vegetation is longleaf and slash pines, blackgum, gallberry, and native grasses.

Representative profile of Robertsdale fine sandy loam, 0 to 2 percent slopes, 1.25 miles west and 0.75 mile north of Atmore depot, SE¼SE¼NE¼ sec. 24, T. 1 N., R. 5 E.:

Ap—0 to 5 inches, dark-gray (10YR 4/1) fine sandy loam; weak, fine, granular structure; friable; many fine roots; few iron concretions; strongly acid; abrupt, smooth boundary.

A2—5 to 8 inches, light olive-gray (5Y 6/2) fine sandy loam and some mixing of dark gray; weak, fine, granular structure; friable; few fine roots; few iron concretions; very strongly acid; gradual, wavy boundary.

B1cn—8 to 14 inches, light brownish-gray (2.5Y 6/2) fine sandy loam; few, fine, faint, pale-olive and gray mottles; weak, fine, subangular blocky structure; friable; few fine roots; few to common iron concretions; very strongly acid; gradual, wavy boundary.

B21tcn—14 to 22 inches, light yellowish-brown (2.5Y 6/4) fine sandy loam; few, fine, faint, yellow and light olive-gray mottles; weak, fine, subangular blocky structure; friable, common iron concretions; very strongly acid; gradual, wavy boundary.

B22tcn—22 to 29 inches, light yellowish-brown (2.5Y 6/4) sandy clay loam; common, fine, faint, light olive-gray and yellow mottles and few, fine, distinct, strong-brown mottles; weak, medium, subangular blocky structure; friable; very strongly acid; gradual, wavy boundary.

Bx1—29 to 42 inches, mottled gray (5Y 6/1), light yellowish-brown (2.5Y 6/4), yellowish-brown (10YR 5/6), and strong-brown (7.5YR 5/8) sandy clay loam; weak to

moderate, medium, subangular blocky structure; friable; brown areas are firm and brittle; gray areas are seams around medium-sized polygons and are coarser textured than the polygons; common iron concretions; 10 percent plinthite; very strongly acid; gradual, wavy boundary.

Bx2—42 to 60 inches, reticulately mottled yellowish-brown (10YR 5/6), strong-brown (7.5YR 5/8), red (2.5YR 5/8), and gray (5Y 6/1) sandy clay loam; weak to moderate, medium, subangular blocky structure; friable; brown and red areas are firm and brittle; gray areas are seams around medium-sized polygons and are coarser textured than the polygons; 15 percent plinthite; very strongly acid.

The Ap or A1 horizon ranges from very dark gray to dark grayish brown. The A2 horizon ranges from light olive gray to light yellowish brown or pale yellow fine sandy loam or loam.

The B1cn and B2tcn horizons range from light brownish gray to pale yellow or light yellowish brown and are mottled in shades of gray, yellow, and brown. These horizons range from fine sandy loam to sandy clay loam.

The Bx horizon is mottled with yellow, light olive gray, strong brown, red, and gray or in shades of these colors in varying amounts. It is sandy clay loam to clay loam.

Content of iron and manganese concretions ranges from 1 to 12 percent in the surface layer and from 5 to 25 percent in the subsoil. Content of plinthite ranges from 4 to 30 percent, and depth to plinthite ranges from 12 to 29 inches. Depth to the fragipan ranges from 14 to 30 inches. Reaction is strongly acid to very strongly acid throughout the profile.

Robertsdale soils occur on the landscape with Atmore, Escambia, Grady, Irvington, and Tifton soils. Robertsdale soils are more poorly drained than Irvington and Tifton soils. They are finer textured in the Bt horizon than Atmore and Escambia soils and are better drained than Atmore soils. Robertsdale soils are better drained and coarser textured in the subsoil than Grady soils.

Robertsdale fine sandy loam, 0 to 2 percent slopes (Ro).—This soil is on nearly level to very slightly depressed uplands.

Included with this soil in mapping are areas of Atmore, Escambia, Irvington, and Tifton soils. Also included are a few areas of soils that contain less than 5 percent or more than 25 percent iron concretions and soils that have a surface layer of sandy loam or loam.

Tilth of this soil is good after the seasonal water table drops to a lower depth in spring. Response to fertilizer is fair to good for most crops. Roots can penetrate the subsoil fairly easily down to the fragipan, where they follow the seams around the polygons. Surface runoff is slow. The hazard of erosion is slight.

The use of this soil for cultivation is somewhat limited by the somewhat poor drainage and slowness of the soil to warm up in spring. In places the subsoil is waterlogged until midspring. This soil is suited to row crops and pasture if a good drainage system is installed. Suitability for trees is good. The major limitations are the seasonal high water table and slow internal drainage through the pan. Capability unit IIIw–12; woodland suitability group 2w8.

Ruston Series

The Ruston series consists of well-drained soils on broad flats and gently sloping uplands. These soils formed in unconsolidated marine sediments of sandy clay loams and loams or clay loams. Slopes range from 0 to 8 percent.

In a representative profile the surface layer is dark grayish-brown very fine sandy loam about 8 inches thick. The upper part of the subsoil, to a depth of 41 inches, is yellowish-red, friable sandy clay loam and clay loam mottled with red and pale brown in the lower 11 inches. The lower part of the subsoil, to a depth of 65 inches, is mottled yellowish-red, red, and very pale brown loam.

Ruston soils are low in natural fertility and organic-matter content. The available water capacity is medium to high. Permeability is moderate.

About one-half the acreage of these soils is used for row crops and pasture. The remaining acreage is used for the production of timber. The native vegetation is longleaf and slash pines, dogwood, and various oaks.

Representative profile of Ruston very fine sandy loam, 0 to 2 percent slopes, 0.55 mile north of Oak Hill Cemetery north of Atmore on State Route No. 21, and 50 feet east of highway in plantation of pines, SW¼SE¼NW¼ sec. 17, T. 1 N., R. 6 E.:

Ap—0 to 8 inches, dark grayish-brown (10YR 4/2) very fine sandy loam; weak, fine, granular structure; friable; very strongly acid; abrupt, smooth boundary.

B1t—8 to 14 inches, yellowish-red (5YR 5/6) sandy clay loam; weak, medium, subangular blocky structure; friable; very strongly acid; clear, wavy boundary.

B21t—14 to 30 inches, yellowish-red (5YR 5/8) clay loam; weak, medium, subangular blocky structure; friable; few iron concretions; very strongly acid; clear, wavy boundary.

B22t—30 to 41 inches, yellowish-red (5YR 5/8) clay loam; few, fine, faint, red mottles and few, fine, distinct, pale-brown mottles; weak, medium, subangular blocky structure; friable; very strongly acid; gradual, wavy boundary.

B23t—41 to 65 inches, mottled yellowish-red (5YR 5/8), red (2.5YR 5/6), and very pale brown (10YR 7/4) loam; weak, medium, subangular blocky structure; friable; very strongly acid.

The Ap horizon ranges from very dark grayish brown to brown. It ranges from 4 to 8 inches in thickness. The A1 horizon is 3 to 6 inches thick. The A2 horizon, where present, ranges from yellowish brown to brown fine sandy loam or sandy loam.

The B1t horizon ranges from yellowish red to yellowish brown and from fine sandy loam to clay loam. It ranges from 2 to 7 inches in thickness. The B2t horizon ranges from yellowish red to red and from fine sandy clay loam to loam or clay loam.

Depth to mottles in shades of red, brown, and yellow is 23 to 38 inches. In some profiles iron concretions range up to 5 percent in amount and from ⅛ to ¾ inch in diameter. In some profiles the content of plinthite is as much as 5 percent. Reaction is strongly acid to very strongly acid throughout the profile.

Ruston soils occur on the landscape with Benndale, Greenville, Malbis, Orangeburg, and Tifton soils. Ruston soils contain less plinthite and are redder in the subsoil than Malbis and Tifton soils. They are finer textured in the Bt horizon than Benndale soils. Ruston soils contain more silt than Orangeburg soils and have mottles nearer to the surface than those in Orangeburg soils. They are coarser textured in the Bt horizon and are less dark red throughout than Greenville soils.

Ruston very fine sandy loam, 0 to 2 percent slopes (RuA).—This soil is on broad flats and ridgetops. It has the profile described as representative for the series. In undisturbed areas the surface layer is typically very dark grayish-brown very fine sandy loam.

Included with this soil in mapping are areas of Greenville, Malbis, Orangeburg, and Tifton soils. Also included

are areas of Ruston soils that have mottles nearer to the surface than 23 inches and a few areas of soils that have mottles below a depth of 38 inches. Areas of soils that have a surface layer of loam also are included.

This soil can be worked throughout a wide range of moisture content. Tilth is good. Response to fertilizer is good to very good for most crops. Roots can easily penetrate the subsoil. Surface runoff is slow. The hazard of erosion is slight.

This soil is well suited to row crops, pasture, and trees. Some of the better suited crops are cotton, corn, soybeans, and small grain. This soil has very few limitations to use. Capability unit I–12; woodland suitability group 2o1.

Ruston very fine sandy loam, 2 to 5 percent slopes (RuB).—This soil is on ridgetops and side slopes. It has a surface layer of brown very fine sandy loam about 6 inches thick. The upper 3 inches of the subsoil is reddish-yellow sandy clay loam. Below this, to a depth of 46 inches, the subsoil is yellowish-red clay loam that has mottles of brownish yellow and red in the lower part. The lower part of the subsoil, to a depth of 62 inches, is mottled brownish-yellow, strong-brown, yellowish-red, and red clay loam and loam.

Included with this soil in mapping are areas of Greenville, Malbis, Orangeburg, and Tifton soils. Also included are areas of Ruston soils that have slopes of 0 to 2 percent and areas of soils that have mottles within 23 inches of the surface. Areas of soils that have a sandy loam and loam surface layer also are included.

Tilth of this soil is good in most areas. Where the subsoil is reached by plowing, however, tilth is only fair because of some clodding. Response to fertilizer is good for most crops. Roots can easily pentrate the subsoil. Surface runoff is medium, causing a moderate hazard of erosion.

This soil is well suited to row crops, pasture, and trees. Capability unit IIe–12; woodland suitability group 2o1.

Ruston very fine sandy loam, 5 to 8 percent slopes (RuC).—This soil is on ridges and side slopes. It has a surface layer of brown very fine sandy loam about 5 inches thick. The subsoil is strong-brown sandy clay loam in the upper 6 inches; yellowish-red or red sandy clay loam or clay loam to a depth of 38 inches; red or yellowish-red clay loam mottled with brownish yellow and strong brown between depths of 38 and 58 inches; and mottled sandy clay loam to a depth of 67 inches.

Included with this soil in mapping are areas of Freemanville, Greenville, Orangeburg, and Tifton soils. Also included are areas of Ruston soils that have mottles within 23 inches of the surface and a few areas of soils that have mottles below a depth of 38 inches. Areas of soils that have a sandy loam surface layer also are included.

Tilth of this soil is good, except in scattered eroded areas. Response to fertilizer is good for most crops. Roots can penetrate into the subsoil fairly deep. Surface runoff is medium to rapid, and this results in a moderate to severe hazard of erosion.

This soil is suited to row crops and pasture, but its use is somewhat limited by the hazard of erosion and degree of slopes. The soil is well suited to trees. Capability unit IIIe–12; woodland suitability group 2o1.

Saffell Series

The Saffell series consists of well-drained, very gently sloping to sloping, gravelly soils on ridgetops and side slopes. These soils formed in unconsolidated, loamy marine sediments that are high in gravel content. Slopes range from 2 to 12 percent.

In a representative profile the surface layer is about 7 inches thick. The upper 3 inches of this layer is dark grayish-brown gravelly fine sandy loam, and the lower 4 inches is grayish-brown gravelly sandy loam. The subsurface layer is 4 inches of light yellowish-brown gravelly sandy loam. The subsoil is reddish-yellow gravelly sandy clay loam to a depth of 26 inches. Below this, to a depth of 55 inches, it is yellowish-red gravelly sandy clay loam that has a few red and brownish-yellow mottles in the lower part. The lower part of the subsoil is red gravelly sandy loam to a depth of 65 inches.

Saffell soils are low in natural fertility and organic-matter content The available water capacity is medium to low. Permeability is moderate in the upper part of the profile and rapid in the lower part.

These soils are used mainly for the production of timber. A few areas, however, are used for row crops and pasture, and a few areas are used as a source of gravel. The native vegetation is longleaf and loblolly pines, various oaks, and dogwood.

Representative profile of Saffell gravelly fine sandy loam, 2 to 5 percent slopes, 1.7 miles north-northeast of bridge crossing Murder Creek at Kirkland, then about 20 feet south of road, NW¼SW¼SE¼SE¼ sec. 24, R. 10 E., T. 3 N.:

A11—0 to 3 inches, dark grayish-brown (10YR 4/2) gravelly fine sandy loam; weak, fine, granular structure; very friable; about 30 percent quartz gravel; very strongly acid; clear, wavy boundary.

A12—3 to 7 inches, grayish-brown (10YR 5/2) gravelly sandy loam; weak, fine, granular structure; very friable; about 40 percent quartz gravel; strongly acid; clear, wavy boundary.

A2—7 to 11 inches, light yellowish-brown (10YR 6/4) gravelly sandy loam; weak, fine, granular structure; very friable; about 45 percent quartz gravel; very strongly acid; clear, wavy boundary.

B21t—11 to 26 inches, reddish-yellow (7.5YR 6/6) gravelly sandy clay loam; weak, fine, subangular blocky structure; very friable; about 55 percent quartz gravel; very strongly acid; gradual, wavy boundary.

B22t—26 to 37 inches, yellowish-red (5YR 5/8) gravelly sandy clay loam; weak, fine, subangular blocky structure; friable; about 50 percent quartz gravel; very strongly acid; gradual, wavy boundary.

B23t—37 to 55 inches, yellowish-red (5YR 5/8) gravelly sandy clay loam; few, fine, distinct, red mottles and few, fine, prominent, brownish-yellow mottles; weak, medium, subangular blocky structure; friable; about 35 percent quartz gravel; very strongly acid; clear, wavy boundary.

B3—55 to 65 inches, red (2.5YR 5/8) gravelly sandy loam; weak, subangular blocky structure; friable; about 20 percent quartz gravel; very strongly acid.

The A1 horizon ranges from dark grayish brown to brown. The gravel content of this horizon ranges from 5 to 40 percent. The A2 horizon ranges from pale yellow to strong brown and from gravelly loamy sand to gravelly fine sandy loam.

The B1 horizon, where present, ranges from light yellowish brown to yellowish red. It is gravelly sandy loam and gravelly fine sandy loam. The B2t horizon ranges from brownish yellow to yellowish red and from gravelly sandy loam to gravelly sandy clay loam. The gravel content of this horizon ranges

from 35 to 60 percent or more. The B3 horizon ranges from reddish yellow to red and from gravelly sandy clay loam to stratified gravelly sandy loam and loamy sand.

Reaction is strongly acid to very strongly acid throughout the profile.

Saffell soils occur on the landscape with Benndale, Flomaton, Lucy, Orangeburg, and Troup soils. Saffell soils are more gravelly throughout than all of those soils except the Flomaton. They are finer textured in the subsoil than Flomaton soils, but soils of both series have comparable amounts of gravel.

Saffell gravelly fine sandy loam, 2 to 5 percent slopes (SaB).—This soil is on ridgetops and side slopes on uplands. It has the profile described as representative for the series.

Included with this soil in mapping are small areas of Saffell soils that have slopes of 0 to 2 and 5 to 8 percent. Also included are areas of Benndale, Flomaton, Orangeburg, and Troup soils.

Tilth of this soil is affected by the high content of quartz gravel in the surface layer. Response to fertilizer is fair to good for most crops. Roots can penetrate into the subsoil fairly easily, but available water is somewhat limited at times. Surface runoff is slow to medium. The hazard of erosion is moderate.

This soil is suited to row crops, but the gravel can interfere slightly with tillage operations. The soil is suited to deep-rooted pasture grasses, such as bahiagrass and bermudagrass. Suitability for trees is fair. Capability unit IIIe–12; woodland suitability group 4f2.

Saffell gravelly fine sandy loam, 5 to 12 percent slopes (SaC).—This soil is on uplands. The surface layer is 5 inches of dark grayish-brown gravelly fine sandy loam and the subsurface layer is 7 inches of pale-brown gravelly fine sandy loam. The subsoil is strong-brown gravelly sandy loam in the upper 4 inches. Below this, to a depth of 60 inches, it is yellowish-red gravelly sandy clay loam that has a few strata of loamy sand in the lower part. The lower part of the subsoil is stratified, reddish-yellow, pinkish-white, and red gravelly sandy loam and loamy sand to a depth of 75 inches.

Included with this soil in mapping are areas of Benndale, Flomaton, Orangeburg, and Troup soils. Also included are a few areas of soils that contain less than 35 percent gravel in the subsoil and a few areas of Saffell soils that have slopes of 2 to 5 percent and of more than 12 percent.

Tilth of this soil is fair to poor because of the high gravel content in the surface layer. Response to fertilizer is fair. Roots can penetrate into the subsoil fairly easily but are somewhat limited because of the medium to low available water capacity. Surface runoff is medium to rapid, and this results in a moderate to severe hazard of erosion.

This soil is poorly suited to row crops. It is suited to deep-rooted pasture grasses, such as bahiagrass and bermudagrass. Its use for row crops is limited because of the gravel content and somewhat droughty nature. The soil has fair suitability for trees. Capability unit IVe–12; woodland suitability group 4f2.

Sunsweet Series

The Sunsweet series consists of well-drained, very gently sloping to sloping soils that contain plinthite. These soils are on ridgetops and side slopes on uplands. They formed in unconsolidated beds of acid marine clays, sandy clays, and sandy clay loams. Slopes are dominantly 2 to 12 percent.

In a representative profile the surface layer is very dark grayish-brown fine sandy loam about 3 inches thick. The subsurface layer is brown fine sandy loam about 2 inches thick. Both layers contain iron concretions. The firm subsoil is reddish-yellow clay loam in the upper 3 inches; light-red clay that has mottles of yellow, red, and white to a depth of 20 inches; and light-red clay that has mottles of brownish yellow, white, and dusky red to a depth of 60 inches. A few pockets of sandy loam are in the lower horizon of the subsoil.

Sunsweet soils are low in natural fertility and organic-matter content. The available water capacity is medium to low. Permeability is moderately slow.

Most areas of these soils are used for woodland or are in native vegetation. The native vegetation is pine, scrub oak, sugarberry, and a few persimmon. In some areas there are scattered plants of wiregrass.

Representative profile of Sunsweet fine sandy loam, 2 to 5 percent slopes, 4.0 miles northeast of the bridge crossing Murder Creek at Kirkland, on the west side of road, NE¼NE¼SE¼ sec. 18, T. 3 N., R. 11 E.:

A1cn—0 to 3 inches, very dark grayish-brown (10YR 3/2) fine sandy loam; weak, fine, granular structure; friable; many fine roots; many iron concretions; very strongly acid; clear, wavy boundary.

A2cn—3 to 5 inches, brown (10YR 5/3) fine sandy loam; very weak, fine, subangular blocky structure; friable; many fine roots; many iron concretions; very strongly acid; clear, wavy boundary.

B21tcn—5 to 8 inches, reddish-yellow (5YR 6/6) clay loam; moderate, fine and medium, subangular blocky structure; hard, firm; common iron concretions; 8 percent plinthite; very strongly acid; clear, wavy boundary.

B22t—8 to 20 inches, light-red (2.5YR 6/6) clay; many, medium, prominent mottles of red, yellow, and white; moderate, fine and medium, subangular blocky structure; hard, firm; few iron concretions; abundant clay films on ped faces; about 8 percent plinthite; very strongly acid; gradual, wavy boundary.

B23t—20 to 60 inches, light-red (2.5YR 6/6) clay; many, medium, prominent mottles of dusky red, brownish yellow, and white; moderate, fine and medium, subangular blocky structure; hard, firm; less than 5 percent plinthite; few pockets of sandy loam; abundant clay films on ped faces; very strongly acid.

The A1cn horizon ranges from very dark grayish brown to brown. The A2cn horizon ranges from brown to light yellowish brown.

The B21tcn horizon ranges from yellowish brown to yellowish red and from sandy clay loam to clay. In places the B22t and B23t horizons are mottled in shades of red, brown, yellow, gray, and white. They range from sandy clay to clay. In some profiles pockets of sandy loam, loamy sand, and sand occur in the B21tcn, B22t, and B23t horizons.

Content of iron concretions ranges from 5 to 30 percent in the A1cn, A2cn, and B21tcn horizons. Content of plinthite ranges from 5 to 20 percent in the B21tcn and B22t horizons but is less than 5 percent below these horizons. Reaction is strongly acid to very strongly acid throughout the profile.

Sunsweet soils occur on the landscape with Benndale, Dothan, Esto, Orangeburg, and Tifton soils. Sunsweet soils are finer textured in the subsoil than all of those soils except the Esto. They contain plinthite and iron concretions that are lacking in Esto soils.

Sunsweet fine sandy loam, 2 to 5 percent slopes (SuB).—This soil is in small areas on ridgetops and side

slopes. It has the profile described as representative for the series.

Included with this soil in mapping are areas of Dothan, Esto, Orangeburg, and Tifton soils. Also included are some areas where the surface layer is less than 3 inches thick. Areas that are moderately to severely eroded and areas in which the content of iron concretions is more than 30 percent or less than 5 percent also are included.

Tilth of this soil is fair to poor. Response to fertilizer is fair. Root penetration into the subsoil is slowed by the high clay content. Surface runoff is medium to rapid, and this results in a severe hazard of erosion.

This soil is poorly suited to row crops and pasture because of the iron concretions and moderately slow to slow permeability in the subsoil. Its suitability for trees is fair. Capability unit IVe–19; woodland suitability group 3c2.

Sunsweet fine sandy loam, 5 to 12 percent slopes (SuC).—This soil is on side slopes. It has a surface layer of brown fine sandy loam 2 inches thick. The upper 10 inches of the subsoil is yellowish-red clay loam mottled with brownish yellow, red, and strong brown in the lower part. Below this, to a depth of 60 inches, the subsoil is clay mottled with shades of brown, yellow, red, gray, and white. Pockets of sandier material are in the lower part of the subsoil.

Included with this soil in mapping are severely eroded areas of soils that have a sandy clay loam surface layer. Also included are areas of Dothan, Esto, and Orangeburg soils and a few areas in which the content of concretions is more than 30 percent.

Tilth of this soil is poor, and response to fertilizer is fair. Roots penetrate the subsoil slowly. Surface runoff is medium rapid. The hazard of erosion is severe.

This soil is not suited to row crops. It is suited to pasture and trees. Erosion is the major hazard. Capability unit VIe–11; woodland suitability group 3c2.

Tifton Series

The Tifton series consists of well-drained, nearly level and very gently sloping soils that contain plinthite. These soils are on uplands. They formed in marine sediments of unconsolidated sandy clay loams, clay loams, and sandy clays. Slopes are dominantly 0 to 5 percent.

In a representative profile the surface layer is very dark gray fine sandy loam in the upper 6 inches and brown fine sandy loam in the lower 4 inches. The friable subsoil is yellowish-brown loam and clay loam in the upper 13 inches; yellowish-brown clay loam mottled with strong brown to a depth of 40 inches; and mottled yellowish-brown, light-gray, light yellowish-brown, strong-brown, and red clay loam and about 25 percent plinthite to a depth of 65 inches.

Tifton soils are low in natural fertility and organic-matter content. The available water capacity is medium to high. Permeability is moderate.

About one-half the acreage of these soils is used for row crops, some truck crops, and pasture, and the other one-half is used for trees. The native vegetation is longleaf, slash, and loblolly pines, various oaks, dogwood, and gallberry.

499-067—75——4

Representative profile of Tifton fine sandy loam, 2 to 5 percent slopes, 0.4 mile north of Freemanville, 3.0 miles west on gravel road, then 0.5 mile north on gravel road and 40 feet east in field, NE¼SE¼SE¼NE¼ sec. 5, T. 1 N., R. 5 E.:

A1cn—0 to 6 inches, very dark gray (10YR 3/1) fine sandy loam; weak, fine, granular structure; friable; many iron concretions; very strongly acid; clear, smooth boundary.

A3cn—6 to 10 inches, brown (10YR 5/3) fine sandy loam; weak, fine, granular structure; friable; many iron concretions; very strongly acid; clear, wavy boundary.

B1cn—10 to 13 inches, yellowish-brown (10YR 5/4) loam; weak, medium, subangular blocky structure; friable; many iron concretions; very strongly acid; clear, wavy boundary.

B21tcn—13 to 23 inches, yellowish-brown (10YR 5/8) clay loam; weak, medium, subangular blocky structure; friable, slightly sticky; many iron concretions; clay films around concretions and on ped faces; very strongly acid; gradual, wavy boundary.

B22tcn—23 to 40 inches, yellowish-brown (10YR 5/6) clay loam; few, fine, distinct, strong-brown mottles; weak, medium, subangular blocky structure; friable; slightly sticky; common iron concretions; clay films on ped faces and around iron concretions; less than 5 percent plinthite; very strongly acid; clear, wavy boundary.

B23t—40 to 65 inches, mottled yellowish-brown (10YR 5/8), light-gray (10YR 7/1), light yellowish-brown (2.5Y 6/4), strong-brown (7.5YR 5/8), and red (2.5YR 5/6) clay loam; moderate, medium, subangular blocky structure; friable to firm; few iron concretions; few clay films on ped faces and around iron concretions; about 25 percent plinthite; very strongly acid.

The A1cn horizon ranges from very dark gray to brown. The A3cn horizon and, where present, the A2 horizon range from brown to light olive brown to light yellowish brown and from sandy loam to loam.

The B1cn and B2tcn horizons range from brownish yellow to strong brown and from sandy clay loam to clay loam or loam. The lower part of the Bt horizon contains 10 to 30 percent plinthite. This part of the Bt horizon has mottles of red to light gray and, in places, has some dark-red mottles. It is sandy clay loam to clay loam.

Iron concretions in the A horizon and Btcn horizon range from ¼ inch to 2 inches in diameter, and their content ranges from 5 to 40 percent. Depth to plinthite ranges from 26 to 48 inches. Reaction is strongly acid to very strongly acid throughout the profile.

Tifton soils occur on the landscape with Benndale, Freemanville, Greenville, Irvington, Malbis, Poarch, and Ruston soils. Tifton soils are coarser textured in the subsoil than Freemanville and Greenville soils. They contain plinthite, whereas Greenville soils do not. Tifton soils are finer textured in the subsoil than Benndale and Poarch soils. They are better drained than Irvington soils and lack the fragipan of those soils. Tifton soils contain more iron concretions than Malbis and Ruston soils. They are browner in color and contain more plinthite than Ruston soils.

Tifton fine sandy loam, 0 to 2 percent slopes (TfA).—This soil is on broad flats and ridgetops. The surface layer is 4 inches of dark grayish-brown fine sandy loam overlying 5 inches of light olive-brown fine sandy loam. The upper 30 inches of the subsoil is brownish-yellow sandy clay loam that has yellowish-brown and pale-yellow mottles in the lower 10 inches. Below this, the subsoil is mottled strong-brown, red, brownish-yellow, and light-gray sandy clay loam and about 15 percent plinthite to a depth of 60 inches.

Included with this soil in mapping are areas of Benndale, Freemanville, Irvington, Malbis, and Ruston soils.

Also included are small areas of Grady soils and areas of soils that are similar to this Tifton soil but either contain more than 40 percent iron concretions or contain plinthite beginning at a depth below 48 inches.

This soil can be worked throughout a wide range of moisture content. Tilth is good. Response to fertilizer is good for most crops. Roots can penetrate the upper part of the subsoil fairly easily and then follow the more friable seams and cracks between the firmer plinthite zones in the lower part of the subsoil. Surface runoff is slow. The hazard of erosion is slight.

This soil is well suited to row crops, pasture, and trees. Some of the better suited crops are corn, potatoes, and soybeans. This soil does not have any limitations to use. Capability unit I–12; woodland suitability group 2o1.

Tifton fine sandy loam, 2 to 5 percent slopes (TfB).—This soil is on uplands. It has the profile described as representative for the series. In disturbed areas the surface layer is grayish-brown or brown fine sandy loam about 6 inches thick.

Included with this soil in mapping are areas of Benndale, Freemanville, Grady, Greenville, Irvington, Malbis, and Ruston soils. Also included are areas of a soil that is similar to this Tifton soil but contains plinthite beginning at a depth below 48 inches. A few eroded areas also are included.

Tilth of this soil is good, except in eroded areas. Roots can easily penetrate the subsoil downward to the slightly compact plinthite layer. They then follow the more friable seams and cracks. Response to fertilizer is good. Surface runoff is medium, and this results in a moderate hazard of erosion.

This soil is well suited to trees, row crops, and pasture. Some of the better suited crops are corn, soybeans, and cotton. The major hazard to use of this soil is erosion. Capability unit IIe–12; woodland suitability group 2o1.

Troup Series

The Troup series consists of well-drained, nearly level to gently sloping soils on uplands. These soils formed in unconsolidated marine sediments of loamy sands, sandy loams, and sandy clay loams. Slopes range from 0 to 8 percent.

In a representative profile the surface layer is very dark grayish-brown fine sand about 3 inches thick. The subsurface layer is 12 inches of yellowish-brown fine sand and 25 inches of strong-brown loamy fine sand. Below this is a transitional layer of reddish-yellow loamy sand 13 inches thick. The subsoil is red, friable sandy clay loam between depths of 53 and 119 inches.

Troup soils are very low in natural fertility and organic-matter content. The available water capacity is low or very low in the sandy layers and medium in the loamy layers. Permeability is moderately rapid or rapid in the sandy layers and moderate in the loamy layers.

Most of the acreage of these soils is used for the production of timber. The native vegetation is scrub oak, scattered longleaf or loblolly pine, and dogwood.

Representative profile of Troup fine sand, 0 to 5 percent slopes, 0.6 mile east of Hendley-Roberts school on State Route No. 4 and 1.5 miles north on paved road to Dixie, Alabama, 400 feet west of road, NW¼NW¼NW¼ sec. 5, T. 1 N., R. 13 E.:

A1—0 to 3 inches, very dark grayish-brown (10YR 3/2) fine sand; weak, fine and medium, granular structure; very friable and loose; very strongly acid; clear, wavy boundary.

A21—3 to 15 inches, yellowish-brown (10YR 5/4) fine sand; very weak, medium, granular structure; very friable and loose; 10 to 15 percent uncoated sand grains; very strongly acid; gradual, wavy boundary.

A22—15 to 40 inches, strong-brown (7.5YR 5/6) loamy fine sand; common, medium-sized areas (10 centimeters in diameter) of uncoated sand grains of pale brown (10YR 6/3); single grained; few small areas of sand grains coated and bridged with clay; very friable and loose; very strongly acid; gradual, wavy boundary.

A23&B1—40 to 53 inches, reddish-yellow (7.5YR 6/6) loamy sand; single grained; many individual clean sand grains; many, coarse, distinct, red (2.5YR 5/8) areas of sand grains coated and bridged with clay; structure of these red areas is very weak, medium and coarse, subangular blocky; very friable and loose; strongly acid; gradual, wavy boundary.

B21t—53 to 65 inches, red (10R 4/6) sandy clay loam; weak to moderate, medium, subangular blocky structure; friable; sand grains are well coated and bridged with clay; streaks, less than 2 millimeters in width, of clean sand grains of reddish yellow (7.5YR 6/6); strongly acid; gradual, wavy boundary.

B22t—65 to 119 inches, red (10R 4/6) sandy clay loam; weak, medium and coarse, subangular blocky structure; friable; sand grains are well coated and bridged with clay; few fine quartz pebbles; strongly acid; gradual, wavy boundary.

The A1 horizon ranges from very dark grayish brown to brown. The A2 horizon ranges from strong brown to yellow and from sand to loamy fine sand. It has few to common, light-gray to very pale-brown mottles. The total thickness of the A horizon ranges from 40 to 71 inches.

The B2t horizon ranges from strong brown to red and from sandy loam to sandy clay loam.

In places the content of quartz gravel is as much as 8 percent in all horizons. Reaction is strongly acid to very strongly acid throughout the profile.

Troup soils occur on the landscape with Benndale, Dothan, Lucy, Orangeburg, and Wagram soils. Troup soils have a thicker sandy A horizon (40 to 71 inches thick) than Lucy and Wagram soils. They have a coarser textured and thicker A horizon than Benndale, Dothan, and Orangeburg soils. Troup soils lack the plinthite that is in the Dothan soils.

Troup fine sand, 0 to 5 percent slopes (TrB).—This soil is on broad ridgetops and side slopes. It has the profile described as representative for the series.

Included with this soil in mapping are areas of Dothan, Lucy, Orangeburg, and Wagram soils. In about one-third of the mapped acreage, the upper part of the surface layer is sand or loamy sand. Also included are areas of soils that have sandy layers more than 71 inches thick and a few areas where the loamy subsoil has mottled horizons. These areas are mainly where the slope changes to steeper areas.

This soil can be worked throughout a wide range of moisture content. Tilth is good. Response to fertilizer is fair for most crops. Roots can penetrate deep into this soil but are scattered because of the low available water capacity. Surface runoff is slow. The hazard of erosion is slight.

This soil is poorly suited to row crops. It is well suited to deep-rooted pasture grasses, such as bahiagrass and bermudagrass. It is fairly well suited to trees. The major

limitations are the thick, sandy surface layer and low available water capacity. Capability unit IIIs–11; woodland suitability group 3s2.

Troup fine sand, 5 to 8 percent slopes (TrC).—This soil is on uplands. It has 4 inches of very dark grayish-brown fine sand overlying 5 inches of yellowish-brown fine sand. Below this is 33 inches of yellow loamy sand overlying 8 inches of brownish-yellow loamy sand. The subsoil begins at a depth of 50 inches. It is strong-brown or yellowish-red sandy loam or sandy clay loam to a depth of 63 inches and red or yellowish-red sandy clay loam or sandy loam to a depth of 85 inches.

Included with this soil in mapping are areas of Lucy, Orangeburg, and Wagram soils and areas where the sandy surface layer is more than 70 inches thick. Also included are areas, about 50 to 200 feet wide along the breaks to steeper slopes, that have thick sandy layers overlying mottled loamy layers that have a weak fragipan and contain plinthite. Soils that have a surface layer of loamy sand also are included.

This Troup soil can be worked throughout most of the year. Tilth is good. Erosion control measures should be taken if water is concentrated in one area for disposal. Roots can easily penetrate the subsoil. Surface runoff is slow. The hazard of erosion is slight.

This soil is poorly suited to row crops. Its suitability for pasture and trees is fair. Capability unit IVs–11; woodland suitability group 3s2.

Wagram Series

The Wagram series consists of well-drained, nearly level to gently sloping soils on uplands. These soils formed in unconsolidated beds of marine sandy loams and sandy clay loams. Slopes range from 0 to 8 percent.

In a representative profile the surface layer is dark grayish-brown loamy sand about 3 inches thick. The subsurface layer is loamy sand about 33 inches thick. It is light yellowish brown in the upper part and is yellow and brownish yellow in the lower part, including a few splotches of clean sand grains. The upper 5 inches of the friable subsoil is yellowish-brown sandy loam, and the lower part, to a depth of 71 inches, is yellowish-brown sandy clay loam that has a few strong-brown and red mottles. Below this, to a depth of 84 inches, is brownish-yellow sandy clay loam mottled with very pale brown, strong brown, and reddish brown.

Wagram soils are low in natural fertility and organic-matter content. The available water capacity is low in the sandy layers and medium in the loamy subsoil. Permeability is moderately rapid in the sandy layers and moderate in the loamy subsoil.

Most of the acreage of these soils is used for the production of timber, but a few areas are used for row crops and pasture. The native vegetation is scrub oak, scattered dogwood, and longleaf and slash pines.

Representative profile of Wagram loamy sand, 0 to 5 percent slopes, 0.55 mile east of Hendley-Roberts school on north side of road, in road cut in NE¼SW¼NE¼ NW¼ sec. 7, R. 13 E., T. 1 N.:

A1—0 to 3 inches, dark grayish-brown (10YR 4/2) loamy sand; single grained; loose, very friable; very strongly acid; clear, wavy boundary.

A21—3 to 10 inches, light yellowish-brown (10YR 6/4) loamy sand and about 15 percent of dark grayish-brown mixing from the A1 horizon above; single grained; loose, very friable; very strongly acid; gradual, wavy boundary.

A22—10 to 25 inches, yellow (10YR 7/6) loamy sand and about 10 percent of white (10YR 8/2) washed areas about 10 millimeters in diameter; single grained; loose, very friable; very strongly acid; gradual, wavy boundary.

A23—25 to 36 inches, brownish-yellow (10YR 6/6) loamy sand and 25 percent of white (10YR 8/2) clean sand areas 10 to 20 millimeters in diameter; single grained; loose, very friable; very strongly acid; gradual, wavy boundary.

B1—36 to 41 inches, yellowish-brown (10YR 5/6) sandy loam and 15 percent of very pale brown (10YR 7/3) clean sand areas; weak, medium, subangular blocky structure; friable; very strongly acid; gradual, wavy boundary.

B21t—41 to 59 inches, yellowish-brown (10YR 5/8) sandy clay loam; weak, medium, subangular blocky structure; friable; very strongly acid; gradual, wavy boundary.

B22t—59 to 71 inches, yellowish-brown (10YR 5/8) sandy clay loam; few strong-brown and red mottles; weak, medium, subangular blocky structure; friable; very strongly acid; gradual, wavy boundary.

B3—71 to 84 inches, brownish-yellow (10YR 6/6) sandy clay loam; distinct mottles of very pale brown, strong brown, and reddish brown; 10 percent of white clean sand areas; weak, medium, subangular blocky structure or structureless; friable; very strongly acid.

The A1 horizon ranges from very dark grayish brown to brown. It ranges from 3 to 8 inches in thickness. The A2 horizon ranges from yellowish brown to pale yellow. It is mainly loamy sand but, in places, is loamy fine sand. The total thickness of the A horizon is 20 to 40 inches.

The Bt horizon ranges from brownish yellow to yellowish brown or strong brown and has few to common, red, yellowish-red, yellowish-brown, and very pale brown mottles in the lower part. It ranges from sandy loam to sandy clay loam. In places the content of plinthite is as much as 10 percent in the lower part of the B horizon.

Some profiles contain up to 15 percent quartz gravel. Reaction is strongly acid to very strongly acid throughout the profile.

Wagram soils occur on the landscape with Benndale, Lucy, Orangeburg, and Troup soils. Wagram soils have a browner subsoil than Lucy soils. They have a thinner A horizon than Troup soils. Wagram soils have a coarser textured A horizon than Benndale and Orangeburg soils.

Wagram loamy sand, 0 to 5 percent slopes (WaB).—This soil is on broad flats and side slopes. It has the profile described as representative for the series. In plowed fields and other disturbed areas, the surface layer is typically brown or grayish-brown loamy sand.

Included with this soil in mapping are areas of Benndale, Lucy, and Troup soils. Also included are a few areas that contain more than 10 percent plinthite in the lower part of the subsoil.

This soil can be worked throughout most of the year. Tilth is good. Response to fertilizer is fair to good for most crops. Roots and water can easily penetrate into the subsoil. Surface runoff is slow, and the hazard of erosion is slight.

This soil is fairly well suited to row crops. It is well suited to deep-rooted pasture grasses. The moderately thick layer of loamy sand at the surface and the low available water capacity are the major limitations. Capability unit IIs–12; woodland suitability group 3s2.

Wagram loamy sand, 5 to 8 percent slopes (WaC).—This soil is on uplands. It has 3 inches of dark grayish-

brown loamy sand overlying 20 inches of yellowish-brown loamy sand. The subsoil is 13 inches of yellowish-brown sandy loam or sandy clay loam overlying yellowish-brown sandy clay loam mottled with strong brown, red, light yellowish brown, and very pale brown to a depth of 65 inches.

Included with this soil in mapping are areas of Benndale, Lucy, and Troup soils. Also included are areas of Wagram soils that have slopes of less than 5 percent and areas that contain more than 10 percent plinthite in the lower part of the subsoil.

This soil can be worked throughout the year. Tilth is good. Response to fertilizer is only fair, and fertilizer is leached through the soil at a medium to rapid rate. Roots can penetrate into the subsoil fairly easily but commonly lack sufficient water in the upper sandy layers. Surface runoff is slow. The hazard of erosion is slight.

This soil has fair suitability for some row crops. It is fairly well suited to trees. It is suited to deep-rooted pasture grasses and some drought-resistant row crops. Slope, low available water capacity in the upper part, and low fertility are the major limitations to use of this soil. Capability unit IIIs–17; woodland suitability group 3s2.

Weston Series

The Weston series consists of poorly drained soils on low stream terraces. These soils formed in coarse-textured to medium-textured alluvial and marine deposits. Slopes range from 0 to 2 percent.

In a representative profile the surface layer is 4 inches of very dark grayish-brown fine sandy loam overlying 7 inches of gray sandy loam. The friable subsoil is 7 inches of gray sandy loam that has a few light yellowish-brown and light-gray mottles; 35 inches of gray sandy clay loam mottled with light yellowish brown, strong brown, yellow, and light gray; and 11 inches of light-gray sandy loam that has a few gray light yellowish-brown mottles. The underlying material is mixed light brownish-gray, light-gray, and very dark grayish-brown, stratified sand to a depth of 70 inches.

Weston soils are low in natural fertility and medium in organic-matter content. The available water capacity is medium to high. Permeability is moderate.

Almost all the acreage of these soils is used for the production of timber. A few areas are used for pasture. The native vegetation is bay, various gums and oaks, baldcypress, scattered pine, and an undergrowth of gallberry and other small shrubs.

Representative profile of Weston fine sandy loam, 180 feet south of Humble Oil and L. G. Crosby oil well No. 6, then 100 feet east of gravel road in wooded area, NE¼ SE¼SW¼SE¼ sec. 12, T. 1 N., R. 8 E.:

A11—0 to 4 inches, very dark grayish-brown (10YR 3/2) fine sandy loam; weak, fine, granular structure; very friable; very strongly acid; clear, wavy boundary.

A12g—4 to 6 inches, mainly gray (10YR 5/1) sandy loam and some very dark grayish-brown fine sandy loam from the A1 horizon; weak subangular blocky structure; very friable; very strongly acid; clear, wavy boundary.

A2g—6 to 11 inches, gray (N 5/0) sandy loam; few dark yellowish-brown root stains; weak, medium, subangular blocky structure; friable; very strongly acid; gradual, wavy boundary.

B1g—11 to 18 inches, gray (10YR 5/1) sandy loam; few light yellowish-brown and light-gray mottles; weak, medium, subangular blocky structure; friable; very strongly acid; gradual, wavy boundary.

B21tg—18 to 36 inches, gray (10YR 6/1) sandy clay loam; common, medium, faint, light yellowish-brown mottles and few, medium, distinct, strong-brown mottles; weak, medium, subangular blocky structure; friable; few clay films in pores and voids; very strongly acid; gradual, wavy boundary.

B22tg—36 to 53 inches, gray (10YR 5/1) sandy clay loam; few, medium, distinct, dark-gray and yellow mottles and common, medium, faint, light-gray mottles; weak, medium, subangular blocky structure; friable; few clay films in pores and voids; very strongly acid; gradual, wavy boundary.

B3g—53 to 64 inches, light-gray (N 7/0) sandy loam; few, medium, faint, gray and light yellowish-brown mottles; weak, medium, subangular blocky structure; very friable; very strongly acid; clear, wavy boundary.

C—64 to 70 inches, mixed light brownish-gray (10YR 6/2), light-gray (2.5Y 7/2), and very dark grayish-brown (10YR 3/2) stratified sand; single grained; loose; very strongly acid.

The A1 horizon ranges from very dark gray to grayish brown. The A2g horizon ranges from dark gray to light gray and, in some profiles, has yellowish mottles. It is sandy loam to loam.

The B1g horizon ranges from dark gray to light gray. The B3g horizon is gray or light-gray sandy loam or sandy clay loam that has pale-yellow, yellow, strong-brown, light yellowish-brown, or brownish-yellow mottles.

The C horizon ranges from sand and gravel to stratified clay loam, sandy clay loam, sandy loam, and sand. This horizon is generally below a depth of 4 feet.

In some places there is as much as 10 percent quartz gravel throughout the profile. The pebbles are ¼ to 1 inch in diameter. Reaction is strongly acid to very strongly acid throughout the profile.

Weston soils occur on the landscape with Brewton, Bibb, Coxville, Dorovan, Kalmia, and Lenoir soils. Weston soils are coarser textured in the Bt horizon than Coxville, Kalmia, and Lenoir soils. They are more poorly drained than Kalmia and Lenoir soils. Weston soils are flooded less frequently than Bibb soils and are not stratified like Bibb soils. Weston soils are more poorly drained than Brewton soils, and in contrast to those soils, do not have a fragipan. They lack the thick organic layers that occur in Dorovan soils.

Weston fine sandy loam (We).—This nearly level soil is on low stream terraces along the Conecuh River and larger streams in the county.

Included with this soil in mapping are areas of Brewton, Bibb, Coxville, and Dorovan soils. Also included, along Big Escambia Creek, are areas of a similar soil that contains as much as 30 percent quartz gravel throughout the profile. Areas of soils that have a sandy loam, loam, and silt loam surface layer also are included.

Tilth of this soil is fair to good. Response to fertilizer is good where the soil is drained. Roots can penetrate into the subsoil fairly easily but are damaged by poor aeration early in spring. Surface runoff is slow. The hazard of erosion is slight.

This soil is poorly suited to row crops unless it is drained. It is fairly well suited to the more water-tolerant pasture grasses and is fairly well suited to trees. Excess water on the surface and in the profile and poor aeration are the major limitations to use of this soil. Capability unit IVw–11; woodland suitability group 2w9.

Use of the Soils for Crops and Pasture [2]

This section contains information about the use of the soils of Escambia County for crops and pasture. It does not suggest specific management for individual soils, however, or give detailed information about managing the soils. Additional information can be obtained from local representatives of the Soil Conservation Service, the Extension Service, or the Agricultural Experiment Station.

In this section some general management practices are discussed, the system of capability classification used by the Soil Conservation Service is explained, and the capability units are described. Also in this section is a table that shows predicted yields per acre of the principal crops grown in the county.

The principal crops grown in this county are corn, soybeans, cotton, wheat, oats, potatoes, Coastal bermudagrass for hay, and Coastal bermudagrass and bahiagrass for pasture.

Most of the soils in Escambia County are low or medium in organic-matter content and natural fertility. Nearly all are strongly acid or very strongly acid. The soils are subject to soil blowing and water erosion. Soil blowing is most active in large open fields late in winter and after seedbed preparation has begun in spring.

Certain practices basic to good soil management can be mentioned before discussing the capability grouping system and management by individual capability units.

Lime and fertilizer.—The amounts and analysis of lime and fertilizer needed to grow a particular crop depend on how the soil has been fertilized and managed in past years. The need for lime and fertilizer should be determined by soil testing.

Minimum tillage.—The frequent use of heavy farm machinery has resulted in compacted layers in the upper part of the subsoil of many fields that are intensively used for row crops. These compacted layers, generally referred to as plowpans or trafficpans, restrict the root development of plants and retard the movement of water through the soil. These conditions result in reduced crop yields. Minimum tillage practices that reduce the number of tillage operations are effective in preventing the formation of compacted layers. They are also effective in reducing soil erosion and loss of rainwater from runoff.

Pasture and hayland management.—Several practices for pasture and hayland apply to all capability units. Among these are proper grazing or cutting heights, weed control, proper fertilization, rotational grazing, and scattering droppings. Cool-season perennial grasses, such as tall fescue, need to be rested in summer so that food will be stored for growth in fall and early in spring. Overgrazing and low fertilization result in weak plants and poor stands that are quickly infested with weeds. The best way to prevent weeds from becoming established is to keep a good, dense ground cover with the desired pasture species.

[2] LEWIS D. WILLIAMS, conservation agronomist, Soil Conservation Service, assisted with the preparation of this section.

Capability Grouping

Capability grouping shows, in a general way, the suitability of soils for most kinds of field crops. The soils are grouped according to their limitations when used for field crops, the risk of damage when they are so used, and the way they respond to treatment. The grouping does not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils; does not take into consideration possible but unlikely major reclamation projects; and does not apply to rice, cranberries horticultural crops, or other crops requiring 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 of groups of soils for range, forest trees, or engineering.

In the capability system, the kinds of soils are grouped at three levels: the capability class, the subclass, and the unit. These are discussed in the following paragraphs.

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

- Class I soils have few limitations that restrict their use.
- Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.
- Class III soils have severe limitations that reduce the choice of plants, require special conservation practices, or both.
- Class IV soils have very severe limitations that reduce the choice of plants, require very careful management, or both.
- Class V soils are subject to little or no erosion but have other limitations, impractical to remove, that limit their use largely to pasture, range, woodland, or wildlife.
- Class VI soils have severe limitations that make them generally unsuited to cultivation and limit their use largely to pasture or range, woodland, or wildlife.
- Class VII soils have very severe limitations that make them unsuited to cultivation and that restrict their use largely to pasture or range, woodland, or wildlife.
- Class VIII soils and landforms have limitations that preclude their use for commercial production of plants and restrict their use to recreation, wildlife, water supply, or to esthetic purposes. (None in this county.)

CAPABILITY SUBCLASSES are soil groups within one class; they are designated by adding a small letter, *e*, *w*, *s*, or *c*, to the class numeral, for example, IIe. The letter *e* shows that the main limitation is risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited

mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is too cold or too dry.

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

CAPABILITY UNITS are soil groups within the subclasses. The soils in one capability unit are enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity and other responses to management. Thus, the capability unit is a convenient grouping for making many statements about management of soils. Capability units are generally designated by adding an Arabic numeral to the subclass symbol, for example, IIe–11 or IIIe–12. Thus, in one symbol, the Roman numeral designates the capability class, or degree of limitation; the small letter indicates the subclass, or kind of limitation, as defined in the foregoing paragraphs; and the Arabic numeral specifically identifies the capability unit within each subclass.

Management by capability units

In this section the soils of the county that require about the same kind of management are grouped by capability units. The significant features of the soils in each capability unit are described, and suggestions for use and management are given.

The soils assigned to each unit can be identified by referring to the "Guide to Mapping Units" at the back of this soil survey. The capability units are not numbered consecutively, because they fit into a statewide system of capability classification, and not all the capability units in this system are represented in Escambia County.

CAPABILITY UNIT I–11

This unit consists of well-drained, nearly level soils on uplands.

These soils are well suited to all locally grown crops. Cultivated row crops can be grown year after year if good management practices are applied. Most crops need large amounts of fertilizer.

Crop residue should be kept on the surface between harvest and preparation of a seedbed for the next crop. All crop residue should be returned to the soil. Cover crops should be planted and then returned to the soil as green manure if crops that produce little residue, such as silage, are to be grown. To provide good drainage, row arrangement is needed in some fields.

These soils can be tilled throughout a fairly wide range of moisture content. Good tilth is easy to maintain in the surface soil. These soils are well suited to irrigation.

CAPABILITY UNIT I–12

This unit consists of moderately well drained and well drained, nearly level soils on uplands or stream terraces. In some areas plinthite is in the lower part of the subsoil, but root penetration is not adversely affected to a depth of 50 inches or more.

These soils are used mainly for row crops, pasture (fig. 7), and woodland. A few areas are used for truck crops.

The soils in this unit are well suited to all locally grown crops. Cultivated row crops can be grown year after year if good management practices are applied.

Crop residue should be kept on the surface between harvest and preparation of a seedbed for the next crop. All crop residue should be returned to the soil. Cover crops should be planted and then returned to the soil as green manure if crops that produce little residue, such as silage, are to be grown.

These soils can be tilled throughout a wide range of moisture content. Good tilth is easy to maintain. These soils are well suited to irrigation.

CAPABILITY UNIT I–13

This unit consists of moderately well drained to well drained, nearly level soils on uplands. In some areas plinthite is in the lower part of the subsoil, but root penetration is not adversely affected.

These soils are used mainly for row crops commonly grown in the county, pasture, and woodland. A few areas are used for truck crops (fig. 8).

Soils in this unit are well suited to most locally grown crops. They are well suited to potatoes and other truck crops. Cultivated row crops can be grown year after year if good management practices are applied. A suitable crop rotation is needed where crops are subject to damage by nematodes.

Crop residue should be kept on the surface between crops. Cover crops should be planted and then returned to the soil as green manure if crops that produce little residue are grown.

These soils can be tilled throughout a wide range of moisture content. Good tilth is easy to maintain. These

***Figure 7.*—Cattle grazing wheat on Ruston very fine sandy loam, 0 to 2 percent slopes. The wheat will be turned under for green manure, and soybeans will be planted in spring. This soil is in capability unit I–12.**

Figure 8.—**Potatoes on Poarch fine sandy loam, 0 to 2 percent slopes. This soil is in capability unit I–13.**

soils are well suited to irrigation. Irrigation water should be applied frequently and at a low rate for best results.

CAPABILITY UNIT IIe–11

This unit consists of well-drained, very gently sloping soils on uplands. In some areas plinthite is in the lower part of the subsoil, but root penetration is not adversely affected.

These soils are used for row crops, pasture, and woodland.

The soils in this unit are well suited to most locally grown crops. Cultivated crops can be grown year after year if they are well protected by conservation practices, such as terraces, grassed waterways, contour farming, and management of crop residue. Cover crops should be grown following crops that produce a small amount of residue. A cropping system that includes grasses and legumes helps to reduce erosion and to improve crop growth. The soils are well suited to contour stripcropping.

These soils can be tilled throughout a medium range of moisture content. Good tilth is fairly easy to maintain. These soils are well suited to irrigation. Response to lime and fertilizer is very good.

All locally grown pasture and hay plants are well suited.

CAPABILITY UNIT IIe–12

This unit consists of well drained to moderately well drained, gently sloping soils on uplands. In some areas plinthite is in the lower part of the subsoil, but root penetration is not adversely affected.

These soils are used for row crops, pasture, and woodland.

Most areas of these soils are well suited to locally grown crops. Row crops should be grown in a cropping system that includes close-growing crops. Other conservation practices needed are terraces, contour farming, grassed waterways, and management of crop residue. These soils are suited to contour stripcropping and diversions. Cover crops should be grown following crops that produce a small amount of residue. Response to fertilizer and lime is good.

These soils can be tilled throughout a fairly wide range of moisture content. Tilth is fairly easy to maintain. The soils are suited to irrigation.

All locally grown pasture and hay plants are suited.

CAPABILITY UNIT IIe–13

This unit consists of moderately well drained to well drained, very gently sloping soils on uplands. In some areas plinthite is in the lower part of the subsoil, but root penetration is not adversely affected.

These soils are used mainly for woodland. About one-third of the acreage is used for row crops, truck crops, and pasture.

Soils in this unit are suited to all locally grown crops. They are well suited to potatoes and other truck crops. Row crops should be grown in a cropping system that includes close-growing crops. A suitable crop rotation is needed where crops are subject to damage by nematodes. Other conservation practices needed to control erosion are terraces or stripcropping, grassed waterways, contour farming, and management of crop residue.

These soils can be tilled throughout a wide range of moisture content. Good tilth is easy to maintain. The soils are suited to irrigation. Irrigation water should be applied frequently and at a low rate for best results.

Most locally grown pasture and hay crops are suited. Tall fescue can be grown, but the life of stands generally is short.

CAPABILITY UNIT IIe–16

The only soil in this unit is Irvington fine sandy loam, 2 to 5 percent slopes. This moderately well drained soil is on uplands and has a fragipan.

About one-half of the acreage of this soil is used for row crops and pasture. The remaining acreage is used for woodland.

This soil is suited to corn, soybeans, small grain, and truck crops. Cotton can be grown, but in many places planting is delayed because the soil is slow to warm up in spring. A cropping system that includes close-growing crops should be used. A suitable cropping system is 2 years of row crops and 2 years of sod crops. Row crops should not be grown more than 2 years in succession. Terraces or contour stripcropping, grassed waterways, contour farming, and management of crop residue are needed if this soil is used for row crops. In places diversions are needed to protect the soil from runoff from other areas.

Tillage generally is delayed in spring when the soil contains a large amount of free water. Irrigation is helpful in dry summers.

This soil is well suited to most locally grown pasture and hay plants.

CAPABILITY UNIT IIw–11

Only Grasmere silty clay is in this unit. This is a well-drained, nearly level soil in slight depressions and at the heads of drainageways on uplands. It is subject to occasional flooding for short periods.

About one-half the acreage of this soil is used for row crops and pasture, and the rest is used for woodland.

This soil is well suited to corn, soybeans, and truck crops. It is also well suited to cotton and small grain when flooding is not a concern. Cultivated crops can be grown year after year. Crop residue should be kept on the surface between crops and then returned to the soil.

Shallow field ditches and row arrangements are needed in some areas to prevent ponding of surface water.

This soil can be tilled only within a narrow to medium range of moisture content, but good tilth is easy to maintain. This soil is well suited to irrigation.

All locally grown pasture and hay plants are well suited.

CAPABILITY UNIT IIw–12

The only soil in this unit is Craven fine sandy loam. This is a moderately well drained soil on stream terraces.

Most areas of this soil are used for woodland.

This soil is suited to corn, soybeans, and sorghum. Cotton and small grain can be grown when water is not a concern. Cultivated crops can be grown year after year if good management practices are applied. Crop residue should be returned to the soil to help maintain a desirable organic-matter content.

In places surface drainage and land smoothing are needed to prevent ponding.

Bermudagrass, bahiagrass, and dallisgrass are well-suited pasture and hay plants. Tall fescue can be grown if management is good.

CAPABILITY UNIT IIw–16

The only soil in this unit is Irvington fine sandy loam, 0 to 2 percent slopes. This is a moderately well drained soil that has a fragipan and contains plinthite.

Woodland is the main use for this soil. About one-third of the acreage is used for row crops and pasture.

This soil is suited to corn, potatoes, soybeans, small grain, and truck crops. Cotton can be grown if good drainage systems are applied. The soil is slow to warm up in spring, and in many places planting is delayed. Row crops can be grown year after year. In many places field ditches and row arrangements are needed to remove surface water. In places diversions are needed to protect the soil from runoff from higher lying areas.

Tillage is restricted during wet periods, but good tilth is easy to maintain. There is a seasonally high water table, mainly late in winter and in spring.

All commonly grown pasture and hay plants are well suited.

CAPABILITY UNIT IIw–17

Only Escambia fine sandy loam, 0 to 3 percent slopes, is in this unit. This is a somewhat poorly drained soil that contains plinthite. It is on uplands.

About one-half the acreage of this soil is used for row crops and pasture. The remaining acreage is used for woodland.

This soil is suited to corn, soybeans, potatoes, and small grain. Cotton can be grown where surface water is not a concern. In many places planting is delayed in spring.

Cultivated crops can be grown year after year. Crop residue should be returned to the soil. In many places field ditches and row arrangements are needed to remove surface water.

Bermudagrass, bahiagrass, and white clover are well-suited pasture and hay plants.

CAPABILITY UNIT IIs–12

This unit consists of well-drained, nearly level to very gently sloping soils on uplands. These soils have a moderately thick, sandy surface layer.

Most areas of these soils are used for woodland, but some are used for row crops and pasture.

These soils are suited to peanuts, some truck crops, and small grain. Cotton, corn, and soybeans are only fairly well suited because the soils are unable to store large amounts of water for plant use. Because fertilizer is leached rapidly, split applications of fertilizer are helpful.

Row crops can be grown year after year on the more nearly level soils. Crop residue should be left on the surface between crops and then returned to the soil. A suitable cropping system should include close-growing crops. These soils are too sandy for terracing but are suitable for contour stripcropping.

Pasture and hay crops that can tolerate drought are well suited. Among these are bermudagrass and bahiagrass.

CAPABILITY UNIT IIIe–11

The only soil in this unit is Freemanville fine sandy loam, 5 to 8 percent slopes. This is a well-drained, gently sloping soil that contains plinthite. It is on uplands.

Woodland is the main use for this soil. Some areas are used for row crops, such as cotton, corn, soybeans, and small grain. A few areas are used for pasture.

This soil is suited to most of the locally grown crops. Cultivated crops should not be grown more than 1 year out of 3. Conservation practices needed to control erosion on cropland are terracing or stripcropping, grassed waterways, contour farming, and management of crop residue.

This soil can be tilled only within a narrow range of moisture content. Tilling the soil when it is wet makes the seedbed cloddy and is likely to result in a poor stand of crops. This soil is suited to irrigation, but water needs to be applied at a slow rate to prevent runoff.

All locally grown pasture and hay plants are well suited.

CAPABILITY UNIT IIIe–12

This unit consists of moderately well drained to well drained, very gently sloping and gently sloping soils on uplands. In some areas plinthite is in the lower part of the subsoil, and in some areas the subsoil is more than 35 percent quartz pebbles.

These soils are used mainly for woodland. About one-fourth of the acreage is used for row crops. Crops commonly grown on these soils are corn, cotton, soybeans, and pasture grasses. Potatoes are not commonly grown.

These soils are suited to most locally grown crops. Cultivated crops should not be grown more than 1 year out of 3. Conservation practices needed to conserve moisture and control erosion are terraces (fig. 9) or contour stripcropping, contour farming, grassed waterways, and management of crop residue. Response to fertilizer is fair to good.

These soils can be tilled throughout a medium range of moisture content. Some areas contain gravel that interferes slightly with tillage.

Suitable plants for hay and pasture are Coastal bermudagrass, bahiagrass, sericea lespedeza, and winter annual grasses and legumes.

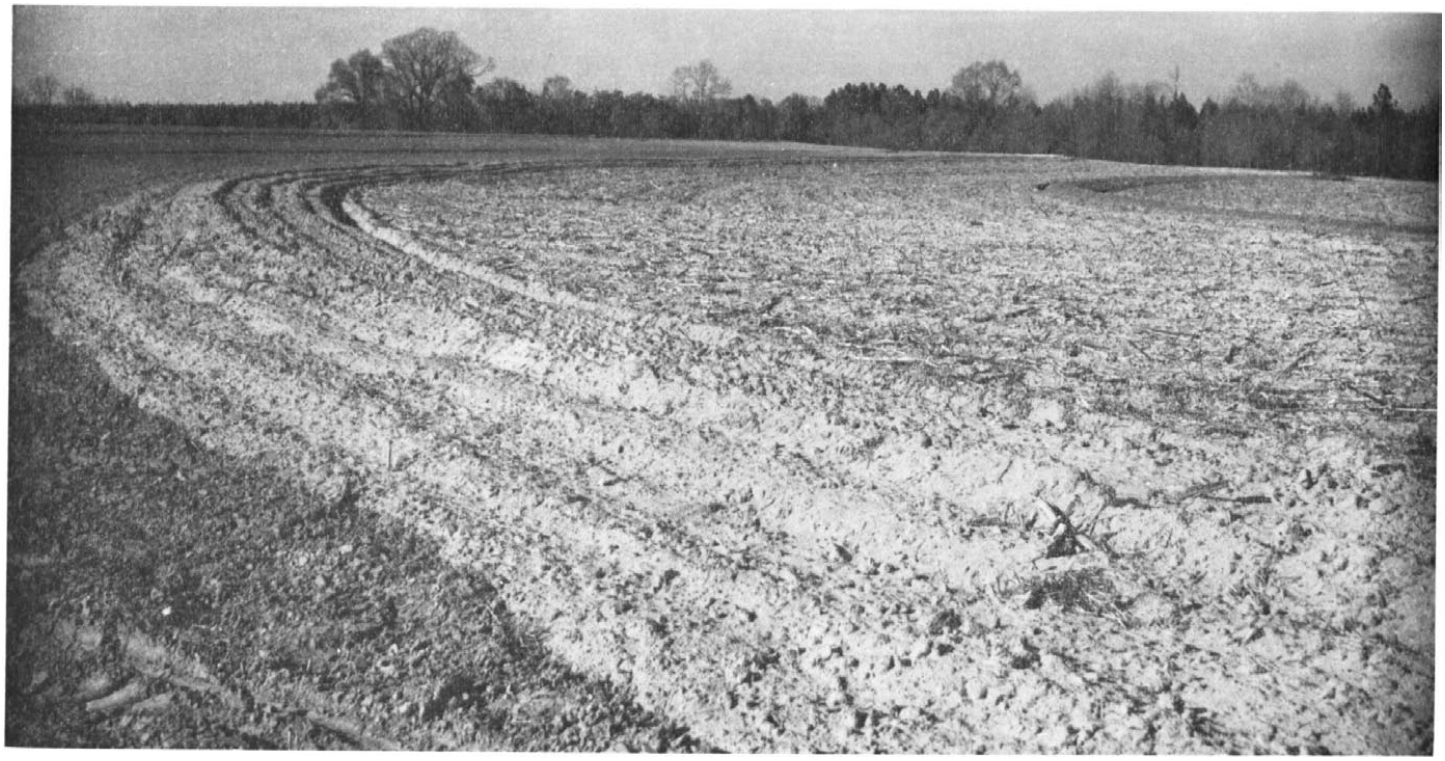

Figure 9.—**Parallel terraces on Orangeburg fine sandy loam, 5 to 8 percent slopes, and Dothan fine sandy loam, 5 to 8 percent slopes. Terracing helps to control erosion and conserve moisture. These soils are in capability unit IIIe–12.**

CAPABILITY UNIT IIIe–13

This unit consists of gently sloping, moderately well drained to well drained soils on uplands. In some areas plinthite is in the lower part of the subsoil.

About one-fourth of the acreage of these soils is used for pasture and row crops. Corn, cotton, small grain, and peanuts are the main crops.

These soils are suited to peanuts, small grain, and some truck crops. Cotton, corn, and soybeans are fairly well suited. Row crops should not be grown more than 1 year out of 4. Contour farming, grassed waterways, and management of crop residue are needed to control erosion on cropland.

The soils in this unit can be tilled throughout a medium to wide range of moisture content. Crop growth is retarded rather quickly during dry periods.

Pasture and hay plants that can tolerate drought are suitable for these soils. Coastal bermudagrass, bahiagrass, sericea, and winter annual grasses and legumes are suitable. Tall fescue is fairly suitable.

CAPABILITY UNIT IIIe–19

The only soil in this unit is Esto fine sandy loam, 2 to 5 percent slopes. This is a well-drained, gently sloping soil that has a clayey subsoil. It is on uplands.

Woodland is the main use for this soil. A few areas are used for row crops, such as corn and cotton, and for small grain and pasture.

This soil is not suitable for continuous cultivation. Because of medium to low available water capacity and low fertility, row crops and forage crops have only fair suitability.

If row crops are grown, contour farming, grassed waterways, and management of crop residue are needed to control erosion. A suitable cropping system is 4 to 5 years of sod crops followed by 1 year of row crops or small grain. Except where the soil is eroded, it can be tilled throughout a medium range of moisture content.

Bahiagrass and Coastal bermudagrass are better suited to this soil than other forage plants.

CAPABILITY UNIT IIIw–12

This unit consists of well-drained and somewhat poorly drained, nearly level soils that have a seasonal high water table. These soils are on stream terraces, uplands, and flood plains. Some of the soils have a fragipan.

Most areas of these soils are used for woodland. A few areas are used for row crops and pasture.

If these soils are properly drained, they are suited to soybeans, sorghum, and corn. Cultivated crops can be grown year after year. Crop residue should be returned to the soil.

These soils can be tilled throughout a medium range of moisture content. Good tilth is fairly easy to maintain. Tillage generally is delayed in spring because of wetness. Levees are needed to control flooding in some areas.

Suitable pasture plants are bahiagrass, dallisgrass, tall fescue, and white clover. Coastal bermudagrass can be grown if the soils are properly drained.

CAPABILITY UNIT IIIs–11

This unit consists of well-drained to excessively drained, sandy soils on stream terraces and uplands. Slopes range from 0 to 5 percent. Some areas are occasionally flooded.

These soils are used mainly for woodland. A few areas are used for pasture. Grasses grown are the deeper rooted pasture grasses.

Soils in this unit are fairly well suited to peanuts, small grain, and some truck crops. Cotton, corn, and soybeans are poorly suited. Row crops should not be grown more than 1 year out of 4. If row crops are grown, contour farming and management of crop residue are needed. Terraces are not suited. Fertilizer should be applied in split applications because leaching is a concern. Response to fertilizer is fair.

These soils can be tilled throughout a wide range of moisture content. Crops are damaged very quickly during dry weather.

Coastal bermudagrass and bahiagrass are well-suited pasture and hay plants. Tall fescue is not suited.

CAPABILITY UNIT IIIs–17

This unit consists of well-drained, gently sloping soils that have a moderately thick, sandy surface layer. These soils are on uplands.

The soils in this unit are mainly used for woodland. A few areas are used for pasture and row crops.

These soils are suited to peanuts, some truck crops, and small grain. They are only fairly well suited to cotton, corn, and soybeans. High rates of fertilizer are needed to ensure good crop growth. Fertilizer should be applied in split applications because leaching is a concern.

Cultivated row crops should not be grown more than 1 year out of 3. Tillage should be on the contour, and crop residue should be returned to the soil. These soils are too sandy for terracing, but they are suitable for contour stripcropping.

Pasture and hay crops that can tolerate drought are suited to these soils. Deep-rooted pasture grasses are well suited.

CAPABILITY UNIT IVe–12

The only soil in this unit is Saffell gravelly fine sandy loam, 5 to 12 percent slopes. This is a well-drained, gently sloping and sloping, gravelly soil on uplands.

Woodland is the main use for this soil. A few areas are used for pasture. Some of the more drought-tolerant crops are grown on the less sloping soils, but only a poor growth of forage can be expected.

This soil is poorly suited to cultivated crops. If row crops are produced, they should be grown in a long cropping system that consists mostly of grass. Cultivated crops should not be grown more than 1 year out of 5, and farming should be on the contour.

These soils are suited to Coastal bermudagrass and bahiagrass.

CAPABILITY UNIT IVe–19

The only soil in this unit is Sunsweet fine sandy loam, 2 to 5 percent slopes. This is a well-drained, very gently sloping soil that contains iron concretions and has a clayey subsoil. The subsoil contains plinthite. This soil is on uplands.

Most of the acreage of this soil is used for woodland. The soil is poorly suited to row crops, and these should not be grown more than 1 year out of 4.

Small grain, bermudagrass, and bahiagrass are poorly suited to this soil.

CAPABILITY UNIT IVw–11

This unit consists of poorly drained soils on stream terraces and uplands. Slopes range from 0 to 3 percent. These soils have a water table near the surface in winter and in spring.

The soils in this unit are used mainly for pasture or woodland. A few areas are used for row crops, such as corn, small grain, and truck crops.

If these soils are properly drained, soybeans, sorghum, corn, small grain, and some summer truck crops can be grown. Row crops can be grown year after year without causing damage to the soils. Bedding helps to improve drainage in some areas.

These soils can be tilled throughout a medium range of moisture content. In many places seedbed preparation is delayed in spring because of excess water in the profile.

Suitable pasture plants are bahiagrass, tall fescue, and white clover.

CAPABILITY UNIT IVs–11

This unit consists of well-drained and excessively drained, sandy and gravelly soils on uplands. Slopes range from 2 to 10 percent.

Woodland is the main use for these soils. A few areas are used for pasture and row crops.

These soils are suited to peanuts and some truck crops. Because the soils are highly susceptible to leaching, fertilizer should be applied frequently. Cultivated crops should not be grown more than 1 year out of 4. If row crops are grown, the cropping system should consist mostly of grass. Other practices needed are contour farming and management of crop residue. Terracing is not suitable.

Coastal bermudagrass and bahiagrass are suited pasture and hay plants.

CAPABILITY UNIT Vw–11

This unit consists of poorly drained, sandy soils on uplands. Slopes range from 0 to 12 percent. These soils have a water table at or near the surface most of the year.

Soils in this unit are used almost entirely for woodland. A few small areas have been partially drained and are used for pasture.

These soils are not suited to cultivated crops. If they are properly drained, they are suited to bahiagrass and white clover.

CAPABILITY UNIT Vw–12

Only Bibb soils are in this unit. These are poorly drained, moderately coarse textured soils on flood plains along natural drainageways throughout the county. Slopes range from 0 to 2 percent. These soils have a water table at or near the surface most of the year.

Soils in this unit are used almost entirely for woodland. A few areas have been drained and are used for pasture.

These soils are not suited to cultivated row crops. If they are properly drained, they are suited to bahiagrass and white clover.

CAPABILITY UNIT Vw–13

The only soil in this unit is Grady loam. This is a poorly drained soil that has a clay subsoil. It is in depressions. Slopes are less than 2 percent.

Most of the acreage of this soil is used for woodland. A few areas have been drained and are used for pasture and row crops, mostly corn and soybeans.

Unless this soil is drained, it is too wet for row crops and pasture. If properly drained, it is suited to soybeans, corn, sorghum, bahiagrass, dallisgrass, and white clover. Row crops can be grown year after year without causing damage to the soil.

This soil can be tilled only within a narrow range of moisture content. Seedbed preparation generally is delayed in spring because of wetness.

CAPABILITY UNIT VIe–11

This unit consists of well drained to moderately well drained soils on side slopes and small knolls. Slopes range from 5 to 12 percent. The subsoil is exposed, and shallow gullies have been formed in some areas. Many of these soils contain plinthite in the subsoil.

The soils of this unit are limited in their use to pasture and woodland, mainly because of slope and the hazard of erosion. A few areas are used for pasture.

These soils are not suited to crops. They are suited to pasture and woodland, but their suitability for pasture plants is limited to bahiagrass, bermudagrass, and others that can tolerate drought.

CAPABILITY UNIT VIIe–11

This unit consists of moderately well drained, well drained, and excessively drained, moderately steep soils on uplands. Slopes range from 10 to 25 percent. In some areas these soils have a clayey subsoil, and in some areas they are gravelly.

These soils are used mainly for woodland. They are too steep and too droughty for crops or pasture, but they are suited to trees.

CAPABILITY UNIT VIIw–11

This unit consists of very poorly drained, organic soils along streams and natural drainageways. These soils have a water table at or near the surface most of the year, and occasionally they are flooded. Slopes range from 0 to 2 percent.

Soils in this unit are used entirely for woodland. They are not suited to crops or pasture, but they are suited to trees and to use as wildlife habitat.

Predicted Yields

Table 2 shows the predicted yields per acre of the principal crops grown in the county. These predicted yields are those that can be expected under the highest level of management that is feasible to use in this county.

Under this level of management, the following practices are assumed:

1. Soil-improving crops, cover crops, and crops that produce a large amount of residue are grown in the rotation.
2. Crop residue is kept on the soil surface to help control erosion.
3. Water is conserved by using all the practices needed, including terracing and contour farming.
4. Fertilizer is applied according to crop requirements and soil tests.
5. A good program is followed for controlling insects and undesirable plants.

TABLE 2.—*Predicted yields per acre of principal crops*

[Yields are those that can be expected under the highest level of management that is feasible. Dashed lines indicate the crop is not commonly grown]

Soil	Corn	Soybeans	Cotton (lint)	Wheat	Oats	Irish potatoes	Coastal bermudagrass for hay	Pasture	
								Coastal bermudagrass	Bahiagrass
	Bu.	*Bu.*	*Lb.*	*Bu.*	*Bu.*	*100-lb. bags*	*Tons*	*A.U.M.*[1]	*A.U.M.*[1]
Atmore silt loam, 0 to 3 percent slopes	40	20	----	----	----	----	----	----	5.0
Benndale fine sandy loam, 0 to 2 percent slopes	85	35	750	40	65	135	6.0	9.0	8.0
Benndale fine sandy loam, 2 to 5 percent slopes	80	33	700	38	60	125	5.5	8.5	7.5
Benndale fine sandy loam, 5 to 8 percent slopes	70	30	600	35	55	----	5.0	8.0	7.0
Benndale-Orangeburg complex, sloping	----	----	----	----	----	----	----	6.0	5.0
Benndale-Orangeburg complex, moderately steep	----	----	----	----	----	----	----	----	----
Bibb soils	----	----	----	----	----	----	----	----	7.0
Brewton fine sandy loam	60	35	----	----	----	----	----	8.0	7.0
Bruno loamy sand	----	----	----	----	----	----	----	----	----
Cahaba fine sandy loam	80	35	750	35	75	----	5.0	9.0	8.0
Chewacla-Lenoir-Riverview association	----	----	----	----	----	----	----	----	----
Coxville fine sandy loam	45	20	----	----	----	----	----	----	6.0
Craven fine sandy loam	60	30	----	----	----	----	5.0	7.5	7.0
Dorovan muck	----	----	----	----	----	----	----	----	----
Dothan fine sandy loam, 2 to 5 percent slopes	80	35	750	35	70	----	5.5	9.0	8.0
Dothan fine sandy loam, 5 to 8 percent slopes	70	33	650	30	65	----	5.0	8.5	7.5
Escambia fine sandy loam, 0 to 3 percent slopes	100	40	----	40	65	220	5.0	8.0	7.0
Esto fine sandy loam, 2 to 5 percent slopes	40	----	450	----	40	----	----	6.0	5.0
Esto-Dothan-Wagram complex, sloping	----	----	----	----	----	----	----	6.0	5.0
Esto-Dothan-Wagram complex, moderately steep	----	----	----	----	----	----	----	----	----

See footnote at end of table.

TABLE 2.—*Predicted yields per acre of principal crops*—Continued

Soil	Corn	Soybeans	Cotton (lint)	Wheat	Oats	Irish potatoes	Coastal bermudagrass for hay	Pasture	
								Coastal bermudagrass	Bahiagrass
	Bu.	*Bu.*	*Lb.*	*Bu.*	*Bu.*	*100-lb. bags*	*Tons*	*A.U.M.*[1]	*A.U.M.*[1]
Flomaton gravelly loamy sand, 2 to 10 percent slopes	35						3.0	5.0	4.0
Flomaton gravelly loamy sand, 10 to 17 percent slopes									
Freemanville fine sandy loam, 0 to 2 percent slopes	90	40	800	35	80		6.0	9.0	8.0
Freemanville fine sandy loam, 2 to 5 percent slopes	85	35	750	35	75		6.0	9.0	7.5
Freemanville fine sandy loam, 5 to 8 percent slopes	75	30	675	30	65		5.0	8.0	7.0
Grady loam									
Grasmere silty clay	100	40	800	30	60		6.5	9.0	8.0
Greenville fine sandy loam, 0 to 2 percent slopes	90	35	800	35	70		6.5	9.0	8.0
Greenville fine sandy loam, 2 to 5 percent slopes	80	33	775	33	65		6.0	8.5	7.5
Irvington fine sandy loam, 0 to 2 percent slopes	90	40	700	35	65	200		8.0	8.0
Irvington fine sandy loam, 2 to 5 percent slopes	85	37	650	32	55	180		8.5	7.5
Kalmia fine sandy loam	80	35	750	35	65		5.0	9.0	8.0
Lakeland sand	50	25	425				4.0	7.0	6.5
Lenoir fine sandy loam	60						3.0	7.5	6.0
Lucy loamy sand, 0 to 5 percent slopes	60	25	500	25	65		6.0	8.0	7.0
Lucy loamy sand, 5 to 8 percent slopes	50	20	475	20	60		5.0	7.5	6.5
Malbis fine sandy loam, 0 to 2 percent slopes	100	38	800	40	75	200	6.0	9.5	8.5
Malbis fine sandy loam, 2 to 5 percent slopes	90	35	750	35	70	180	5.5	9.0	8.0
Orangeburg fine sandy loam, 0 to 2 percent slopes	85	35	750	35	60		6.0	9.0	8.0
Orangeburg fine sandy loam, 2 to 5 percent slopes	80	33	700	33	55		5.5	8.5	7.5
Orangeburg fine sandy loam, 5 to 8 percent slopes	75	30	600	30	50		5.0	8.0	7.0
Orangeburg-Greenville-Malbis complex, 3 to 12 percent slopes, eroded								6.0	5.5
Plummer loamy sand, 0 to 5 percent slopes									5.0
Plummer loamy sand, 5 to 12 percent slopes									
Poarch fine sandy loam, 0 to 2 percent slopes	90	40	700	35	75	200	5.5	9.0	8.0
Poarch fine sandy loam, 2 to 5 percent slopes	80	38	650	33	70	190	5.0	8.0	7.5
Poarch fine sandy loam, 5 to 8 percent slopes	65	35	575	30	65		4.5	7.0	6.5
Ponzer muck									
Red Bay fine sandy loam, 0 to 2 percent slopes	80	40	750	35	75		6.0	9.0	8.0
Riverview-Lenoir complex	80	30							7.0
Robertsdale fine sandy loam, 0 to 2 percent slopes	90	40		30	60	200			6.0
Ruston very fine sandy loam, 0 to 2 percent slopes	95	40	800	40	80		6.0	9.5	8.0
Ruston very fine sandy loam, 2 to 5 percent slopes	90	38	750	35	75		5.5	9.0	7.5
Ruston very fine sandy loam, 5 to 8 percent slopes	80	33	650	33	65		5.0	8.5	7.0
Saffell gravelly fine sandy loam, 2 to 5 percent slopes	40	25			42		4.5	7.5	6.5
Saffell gravelly fine sandy loam, 5 to 12 percent slopes	35						4.0	7.0	6.0
Sunsweet fine sandy loam, 2 to 5 percent slopes							4.0	7.0	7.0
Sunsweet fine sandy loam, 5 to 12 percent slopes							2.0	4.0	4.0
Tifton fine sandy loam, 0 to 2 percent slopes	90	40	800	40	75	200	6.0	9.0	8.0
Tifton fine sandy loam, 2 to 5 percent slopes	85	40	750	35	70	180	5.5	8.5	7.5
Troup fine sand, 0 to 5 percent slopes	60	30	400				5.0	7.5	7.0
Troup fine sand, 5 to 8 percent slopes	55	25					4.5	7.0	6.5
Wagram loamy sand, 0 to 5 percent slopes	65	25	525	25			5.5	8.5	7.5
Wagram loamy sand, 5 to 8 percent slopes	60	20	500	20			5.0	7.5	6.5
Weston fine sandy loam	40								6.5

[1] A.U.M. stands for animal-unit-month. The figures represent the number of months that 1 acre will provide grazing for one animal (1,000 pounds live weight), or the number of months the pasture can be grazed multiplied by the number of animal units an acre will support.

Use of the Soils for Woodland [3]

Escambia County has approximately 480,000 acres of woodland. This is about 78 percent of the land area in the county. Most of the woodland is owned by private individuals and corporations, but 29,200 acres, or about 6 percent, in the Conecuh National Forest is managed by the U.S. Forest Service (*10*).

The woodland cover ranges from bottom-land hardwoods in such areas as bottoms along the Conecuh and Escambia Rivers and numerous creeks to longleaf pine on loamy sand ridgetops. The major forest types (*11*) in the county are oak, sweetgum, and baldcypress on bottom lands; longleaf and slash pines; loblolly and shortleaf pines; oak and pine; and oak and hickory. All of the wooded soils are capable of producing good, merchantable timber and will justify woodland management practices that are used in the growing of trees.

Woodland Suitability Groups

The soils of Escambia County have been placed in 13 woodland suitability groups to assist owners in

[3] W. C. AIKEN, woodland conservationist, Soil Conservation Service, assisted with the preparation of this section.

planning the use of their soils for wood crops. Each group is made up of soils that are suited to the same kinds of trees; that need approximately the same kind of management when the vegetation on them is similar; and that have about the same potential productivity.

Each woodland group is identified by a three-part symbol, such as 1o7, 2w8, or 4f2. The first part of the symbol, always a number, indicates relative potential productivity of the soils in the group: 1, very high; 2, high; 3, moderately high; 4, moderate; and 5, low. These ratings are based on field determinations of average site index. Site index is the height, in feet, that the dominant trees of a given species, on a specified kind of soil, reach in a natural, unmanaged stand in a stated number of years. For the merchantable hardwoods and softwoods in this county, the site index is the height reached in 50 years, except for cottonwood, for which the index is height reached in 30 years.

The five foregoing ratings are based on field determination of average site index of an indicator forest type or species. Site indexes are grouped into site quality classes, and the classes are used to arrive at approximate expected yields per acre in cords and board feet. On the basis of research studies, site index can be converted into approximate expected growth and yield per acre in board feet. For this county, conversion of average site index into volumetric growth and yield are based on research studies of loblolly and shortleaf pines (7), cottonwood, and oaks.

The second part of the symbol is a small letter that indicates the suitability subclass. It expresses selected soil properties that impose moderate to severe hazards or limitations in woodland use or management. The subclasses are as follows:

Subclass x (*stoniness or rockiness*).—Soils having restrictions or limitations for woodland use or management because of stones or rocks. (No subclass *x* in Escambia County.)

Subclass w (*excessive wetness*).—Soils in which excess water, either seasonally or year long, causes significant limitations for woodland use or management. These soils have restricted drainage, a high water table, or a hazard of flooding that adversely affects either the development or management of the stand.

Subclass d (*restricted rooting depth*).—Soils having restrictions or limitations for woodland use or management because of restricted rooting depth. Examples are soils shallow to hard rock, a hardpan, or other layers that restrict roots. (No subclass *d* in Escambia County.)

Subclass c (*clayey soils*).—Soils having restrictions or limitations for woodland use or management because of the kind or amount of clay in the upper part of the soil profile.

Subclass s (*sandy soils*).—Sandy soils having little or no development of a textural B horizon and having moderate to severe restrictions or limitations for woodland use or management. These soils impose equipment limitations, have low available water capacity, and normally are low in available plant nutrients.

Subclass f (*fragmental or skeletal soils*).—Soils having restrictions or limitations for woodland use or management because the profile contains a large amount of coarse fragments that are more than 2 millimeters and less than 10 inches in diameter. This subclass, however, includes flaggy soils.

Subclass r (*relief or steepness of slope*).—Soils having restrictions or limitations for woodland use or management only because of steepness of slope. (No subclass *r* in Escambia County.)

Subclass o (*slight or no limitations*).—Soils having no significant restrictions or limitations for woodland use or management.

Some kinds of soil may have more than one set of subclass characteristics. Priority in placing each kind of soil into a subclass is in the order that the subclass characteristics are given in the foregoing list.

The third part of the symbol indicates the degree of hazard or limitation and the general suitability of the soils for certain kinds of trees. The three hazards or limitations considered here are the erosion hazard, equipment restrictions, and seedling mortality.

The *numeral 1* indicates soils that have no or only slight limitations and are best suited to needleleaf trees.

The *numeral 2* indicates soils that have one or more moderate limitations and are best suited to needleleaf trees.

The *numeral 3* indicates soils that have one or more severe limitations and are best suited to needleleaf trees.

The *numeral 4* indicates soils that have no or only slight limitations and are best suited to broadleaf trees.

The *numeral 5* indicates soils that have one or more moderate limitations and are best suited to broadleaf trees.

The *numeral 6* indicates soils that have one or more severe limitations and are best suited to broadleaf trees.

The *numeral 7* indicates soils that have no or only slight limitations and are suited to either needleleaf or broadleaf trees.

The *numeral 8* indicates soils that have one or more moderate limitations and are suited to either needleleaf or broadleaf trees.

The *numeral 9* indicates soils that have one or more severe limitations and are suited to either needleleaf or broadleaf trees.

The *numeral 0* indicates that the soils are not suitable for producing timber commercially.

The hazards or limitations that affect management of soils for woodland are windthrow hazard, erosion hazard, equipment limitations, seedling mortality, and plant competition.

To facilitate management, the soils of Escambia County have been placed in woodland groups, which are described in the following pages. Important parts of the description of each woodland group are the verbal ratings made for the hazard of windthrow, hazard of erosion, limitation to use of equipment, hazard of seedling mortality, and risk of competition from undesirable plants. These ratings are always *slight*, *moderate*, or *severe*. The following explanations of these ratings apply to the descriptions of all the woodland suitability groups in Escambia County.

Windthrow hazard measures the effect of the soils on root development and the ability of the soil to hold trees firmly. The hazard is slight when effective rooting is more than 20 inches and the tree withstands most wind; moderate, when effective rooting is from 10 to 20 inches and some trees are blown down during periods of excessive soil wetness and strong wind; severe, when effective rooting is 10 inches or less and trees will not stand alone in strong wind.

Erosion hazard refers to the potential hazard of soil losses in well-managed woodland. The hazard is slight if expected soil losses are small; moderate if some soil losses are expected and care is needed during logging and construction to reduce soil losses; severe if special methods of operation are necessary for preventing excessive soil losses.

Equipment limitations are rated on the basis of soil characteristics that restrict or prohibit the use of equipment commonly used in tending and harvesting the trees. In Escambia County soil characteristics that have the most limiting effect are drainage, depth to the water table, slope, and texture of the surface layer. Slight means there is no restriction in the kind of equipment or in the time of year it is used; moderate means that use of equipment is restricted for less than 3 months of the year; and severe means that special equipment is needed and its use is restricted for more than 3 months of the year.

Seedling mortality refers to the expected degree of mortality of planted seedlings as influenced by kinds of soil when plant competition is not a limiting factor. Considered in the ratings are depth to the water table, hazard of flooding, drainage, soil depth and structure, and degree of erosion. Normal rainfall, good planting stock, and proper planting are assumed. A rating of slight indicates an expected loss of less than 25 percent of the planted seedlings; moderate, a loss of 25 to 50 percent of the seedlings; and severe, a loss of more than 50 percent of the seedlings. Special preparation of the site is needed before planting for soils rated severe and for most soils rated moderate.

Plant competition is rated on the basis of the degree to which unwanted plants invade openings in the tree canopy. Considered in the ratings are available moisture capacity, fertility, drainage, and degree of erosion. A rating of slight means that competition from other plants is not a problem; moderate, that plant competition delays development of fully stocked stands of desirable trees; and severe, that plant competition prevents establishment of a desirable stand unless intensive site preparation and such practices as weeding are used to control undesirable plants.

In table 3 the soils are placed in woodland suitability groups, some of the important timber species and their average site indexes are shown, potential yearly growth in board feet is given, and most suitable trees for planting are listed.

WOODLAND SUITABILITY GROUP 1o7

This group consists of deep, well-drained to somewhat poorly drained, nearly level soils in slight depressions and on flood plains and low terraces of streams. These

TABLE 3.—*Woodland suitability groups, average site indexes, and potential yearly growth per acre of important trees*

Woodland suitability group and soil symbols	Important trees	Average site index	Potential yearly growth rate per acre	Suitable trees to plant
			Board feet (Scribner rule)	
Group 1o7: Gt, Re.	Loblolly pine	100	770	Loblolly pine, slash pine, cottonwood, sweetgum, yellow-poplar, sycamore.
	Slash pine	100	510	
	Yellow-poplar	105	550	
	Cottonwood	100	590	
	Sweetgum	100	450	
	Water oak	100	450	
Group 2o1: BeA, BeB, BeC, BgD, BgE, DtB, DtC, MaA, MaB, OrA, OrB, OrC, OvC2, PoA, PoB, PoC, Rb, RuA, RuB, RuC, TfA, TfB.	Loblolly pine	89	595	Slash pine, loblolly pine, longleaf pine.
	Slash pine	89	515	
	Shortleaf pine	70	410	
	Longleaf pine	71	280	
Group 2o7: Ca, IrA, IrB, Ka.	Loblolly pine	85	570	Slash pine, loblolly pine, yellow-poplar.
	Slash pine	87	530	
	Shortleaf pine	77	490	
	Sweetgum	85	340	
Group 2w3: PlB, PlC.	Slash pine	88	520	Slash pine, longleaf pine.
	Loblolly pine	91	520	
	Longleaf pine	70	310	
Group 2w8: Br, Cn, Cr, Es, Le, Ro.	Loblolly pine	89	600	Slash pine, loblolly pine, sweetgum, oak.
	Slash pine	89	550	
	Longleaf pine	77	340	
	Bottom-land oak	90	350	
	Sweetgum	90	400	

TABLE 3.—*Woodland suitability groups, average site indexes, and potential yearly growth per acre of important trees*—Con.

Woodland suitability group and soil symbols	Important trees	Average site index	Potential yearly growth rate per acre	Suitable trees to plant
			Board feet (Scribner rule)	
Group 2w9: Bh, Co, Gr, We.	Loblolly pine	91	630	Slash pine, loblolly pine, sweetgum, sycamore, Nuttall oak.
	Slash pine	91	600	
	Longleaf pine	74	320	
	Sweetgum	90	400	
	Bottom-land oak	89	340	
Group 3o1: EtB, EwD, EwE, FrA, FrB, FrC, GvA, GvB.	Loblolly pine	83	510	Slash pine, loblolly pine, longleaf pine.
	Slash pine	83	460	
	Longleaf pine	67	250	
Group 3w9: At.	Slash pine	85	570	Slash pine, loblolly pine, sweetgum, Nuttall oak.
	Loblolly pine	85	550	
	Longleaf pine	73	340	
	Sweetgum	85	400	
Group 3c2: SuB, SuC.	Loblolly pine	80	470	Loblolly pine, slash pine.
	Slash pine	80	430	
	Longleaf pine	65	250	
Group, 3s2: Bu, LuB, LuC, TrB, TrC, WaB, WaC.	Loblolly pine	83	510	Loblolly pine, slash pine, longleaf pine.
	Slash pine	83	470	
	Longleaf pine	67	240	
Group 4w9: Do, Pr.	Slash pine	70	----------	Slash pine.
	Tupelo	--------	----------	
Group 4s3: La.	Longleaf pine	60	230	Longleaf pine, slash pine.
	Loblolly pine	70	490	
	Slash pine	70	440	
Group 4f2: FlC, FlD, SaB, SaC.	Loblolly pine	75	410	Slash pine, longleaf pine.
	Slash pine	75	370	
	Shortleaf pine	65	360	
	Longleaf pine	60	200	

soils have a loamy to clayey surface layer and subsoil. Some areas are subject to ponding for short periods, and some are subject to flooding.

The soils of this group have no major limitations that affect management. In places harvesting is slightly limited for short periods because of flooding or ponding. At times, plant competition is a concern if the soils are managed for one species or managed to change species.

The soils of this group produce hardwoods and pines of good quality and are well suited to any species native to the southern part of the State.

WOODLAND SUITABILITY GROUP 2o1

This group consists of deep, moderately well drained to well drained, nearly level to moderately steep soils on uplands. These soils have a loamy surface layer and a loamy to clayey subsoil. Some areas have plinthite in the lower part of the profile, and this can have some effect on root penetration.

The soils of this group have only slight limitations, if any, that affect management. They produce tall pines of good quality (fig. 10). Hardwoods can be grown on these soils.

WOODLAND SUITABILITY GROUP 2o7

This group consists of deep, well drained to moderately well drained, nearly level to very gently sloping soils on uplands and stream terraces. These soils have a loamy surface layer and subsoil.

The soils of this group have only slight limitations, if any, that affect management. They produce pines and hardwoods of high quality.

WOODLAND SUITABILITY GROUP 2w3

This group consists of deep, poorly drained, nearly level to sloping soils. These soils have a thick, sandy surface layer and a loamy subsoil. The sloping soils have seepage water at the surface, and those in low-lying areas are subject to ponding.

The soils of this group have severe limitations to the use of equipment. Seedling mortality is severe.

WOODLAND SUITABILITY GROUP 2w8

This group consists of deep, well-drained to somewhat poorly drained, nearly level soils on flood plains, uplands, and low stream terraces. These soils have a loamy surface layer and a loamy to clayey subsoil.

Figure 10.—A good stand of longleaf pine on Dothan fine sandy loam, 2 to 5 percent slopes. The road serves as a firebreak. This soil is in woodland suitability group 2o1.

Most of the soils of this group are wet for 2 to 8 months per year, generally in winter and early in spring. This wetness restricts machine planting and harvesting. Plant competition is moderate for most soils in this group.

WOODLAND SUITABILITY GROUP 2w9

This group consists of deep, poorly drained, nearly level soils on flood plains, in depressions, on low stream terraces, and on uplands. These soils have a loamy surface layer and a loamy to clayey subsoil.

Some soils of this group are wet for 6 to 10 months per year, and others are wet for 1 to 4 months per year. This wetness imposes severe limitations to the use of equipment, and seedling mortality is severe.

Hardwoods reseed naturally on most of these soils, but the soils can be managed for pine trees.

WOODLAND SUITABILITY GROUP 3o1

This group consists of deep, well drained and moderately well drained, nearly level to moderately steep soils on uplands. These soils have a sandy or loamy surface layer and a loamy to clayey subsoil. In some areas they have plinthite in the lower part of the subsoil.

The soils of this group have no major limitations that affect management.

WOODLAND SUITABILITY GROUP 3w9

Atmore silt loam, 0 to 3 percent slopes, is the only soil in this group. It is a deep, poorly drained soil that has a fragipan at a depth of about 30 inches. This soil is loamy throughout the profile.

On this soil, there are severe limitations to the use of equipment. Seedling mortality is severe.

This soil is suited to pines and hardwoods.

WOODLAND SUITABILITY GROUP 3c2

This group consists of deep, well-drained soils on uplands. Slopes range from about 2 to 12 percent. These soils contain many iron concretions, have plinthite at a depth of about 5 inches, and are shallow to firm clay. They have a loamy surface layer and a clayey subsoil.

The soils of this group have no major limitations that affect management, but seedling mortality can be a hazard where small areas of the clayey subsoil are exposed.

WOODLAND SUITABILITY GROUP 3s2

This group consists of deep, well-drained to excessively drained, nearly level to gently sloping soils on flood plains and uplands. These soils have a thick, sandy surface layer and a sandy or loamy subsoil.

Because these soils are sandy, there is a moderate limitation to the use of equipment. The low available water capacity results in a moderate hazard of seedling mortality.

WOODLAND SUITABILITY GROUP 4w9

This group consists of deep, level, very poorly drained soils that have water at or on the surface much of the time. These soils have a thick mucky surface layer.

On the soils of this group, limitations to the use of equipment are severe. Seedling mortality also is severe.

WOODLAND SUITABILITY GROUP 4s3

Lakeland sand is the only soil in this group. It is a deep, excessively drained, nearly level to very gently sloping soil. It is sandy throughout the profile.

Limitations to the use of equipment are moderate. Because the available water capacity is low, seedling mortality is severe.

WOODLAND SUITABILITY GROUP 4f2

This group consists of deep, well-drained, very gently sloping to moderately steep, gravelly soils. Slopes range from about 2 to 17 percent. Some of these gravelly soils are sandy throughout the profile, and the others are loamy throughout.

On the soils of this group, seedling mortality is moderate. Limitations to use of equipment are slight to moderate.

Use of the Soils for Wildlife [4]

The wildlife population of any area depends on the availability of food, cover, and water in suitable combinations. Wildlife habitats are created, improved, or maintained by establishing desirable vegetation and by developing water supplies in suitable places.

Table 4 lists the soils in Escambia County and rates their suitability for eight elements of wildlife habitat and for three kinds of wildlife. The ratings refer to only the suitability of the soils and do not take into account climate, present land use, or the distribution and density of wildlife and human populations. The suitability of individual sites needs to be determined by onsite inspection.

Numerical ratings used in table 4 are 1, well suited; 2, suited; 3, poorly suited; and 4, unsuited. Well suited means that wildlife habitats are easily created, improved, and maintained; that the soil has few, if any, limitations that affect management; and that satisfactory results can be expected. Suited means that wildlife habitats can be created, improved, and maintained in most places; that the soil has moderate limitations that affect management; and that moderate intensity of management and fairly frequent attention may be required for satisfactory results. Poorly suited means that wildlife habitats can be created, improved, and maintained in most places; that the soil has rather severe limitations; that habitat management is difficult, is expensive, and requires intensive effort; and that results are not always satisfactory. Unsuited means that it is impractical to create, improve, and maintain wildlife habitats and that unsatisfactory results are probable.

Elements of wildlife habitats and kinds of wildlife rated in table 4 are discussed in the following paragraphs.

Grain and seed crops are grain-producing or seed-producing annual plants, such as corn, sorghum, wheat, millet, soybeans, partridge peas, annual lespedeza, and others.

Grasses and legumes are domestic grasses and herbaceous legumes that can be established by planting and that furnish food or cover, or both, for wildlife. Among the grasses are fescue, weeping lovegrass, rescuegrass, and johnsongrass. Among the legumes are bicolor lespedeza (fig. 11), sericea lespedeza, white clover, alfalfa, and vetch.

Figure 11.—A wildlife planting of bicolor lespedeza and reseeding cowpeas. In the background is a planting of bahiagrass. The soil is Benndale fine sandy loam, 2 to 5 percent slopes.

[4] ROBERT E. WATERS, biologist, Soil Conservation Service, assisted with the preparation of this section.

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

[Ratings 1, 2, 3, and 4 are explained in the text]

Soil series and map symbols	Habitat elements								Kinds of wildlife		
	Grain and seed crops	Grasses and legumes	Wild herbaceous upland plants	Hardwood woody plants	Coniferous woody plants	Wetland food and cover plants	Shallow water developments	Excavated ponds	Openland	Woodland	Wetland
Atmore: At	3	1	3	2	2	1	1	2	3	2	1
Benndale:											
BeA	1	1	1	1	3	4	2	3	1	1	4
BeB	1	1	1	1	3	4	3	3	1	1	4
BeC	2	2	1	1	3	4	3	3	1	1	4
BgD	4	4	2	1	3	4	4	4	2	1	4
BgE	4	4	2	1	3	4	4	4	2	1	4
For ratings of Orangeburg soil in units BgD and BgE, refer to Orangeburg series.											
Bibb: Bh	4	2	4	1	4	1	1	1	4	2	1
Brewton: Br	3	1	2	2	2	2	1	2	2	2	2
Bruno: Bu	4	3	2	1	3	3	3	4	3	1	3
Cahaba: Ca	1	1	1	1	3	4	3	4	1	1	4
Chewacla: Cn	3	2	2	1	3	3	1	2	3	1	2
For ratings of Lenoir and Riverview soils in this unit, refer to Lenoir and Riverview series, respectively.											
Coxville: Co	3	3	3	2	3	1	1	1	3	2	1
Craven: Cr	1	1	1	1	3	3	2	2	1	1	4
Dorovan: Do	4	4	4	1	4	1	1	2	4	2	1
Dothan:											
DtB	2	1	1	1	3	4	4	2	1	1	4
DtC	2	1	1	1	3	4	4	2	1	1	4
Escambia: Es	2	1	1	1	3	2	2	3	2	1	3
Esto:											
EtB	3	3	2	2	3	4	4	1	2	1	4
EwD	4	4	2	1	3	4	4	2	2	1	4
EwE	4	4	2	1	3	4	4	2	2	1	4
For ratings of Dotham and Wagram soils in units EwD and EwE, refer to Dothan and Wagram series, respectively.											
Flomaton:											
FlC	4	4	3	3	2	4	4	4	3	3	4
FlD	4	4	3	3	2	4	4	4	3	3	4
Freemanville:											
FrA	1	1	1	1	3	4	4	3	1	1	4
FrB	1	1	1	1	3	4	4	3	1	1	4
FrC	2	2	1	1	3	4	4	3	1	1	4
Grady: Gr	4	3	3	3	4	2	1	1	4	3	2
Grasmere: Gt	1	1	1	1	3	3	2	2	1	1	3
Greenville:											
GvA	1	1	1	1	3	4	4	3	1	1	4
GvB	1	1	1	1	3	4	4	4	1	1	4

TABLE 4.—*Suitability of the soils for wildlife habitats and for kinds of wildlife*—Continued

Soil series and map symbols	Habitat elements								Kinds of wildlife		
	Grain and seed crops	Grasses and legumes	Wild herbaceous upland plants	Hardwood woody plants	Coniferous woody plants	Wetland food and cover plants	Shallow water developments	Excavated ponds	Openland	Woodland	Wetland
Irvington:											
IrA	2	2	1	1	3	3	2	2	2	1	3
IrB	2	2	1	1	3	3	3	2	2	1	3
Kalmia: Ka	1	1	1	1	3	4	4	4	1	1	4
Lakeland: La	3	3	3	3	2	4	4	4	3	1	4
Lenoir: Le	3	2	2	1	3	2	1	1	2	1	2
Lucy:											
LuB	3	3	2	2	2	4	4	4	3	1	4
LuC	3	3	2	2	2	4	4	4	3	1	4
Malbis:											
MaA	1	1	1	1	3	4	1	2	1	1	4
MaB	1	1	1	1	3	4	2	2	1	1	4
Orangeburg:											
OrA	1	1	1	1	3	4	4	4	1	1	4
OrB	1	1	1	1	3	4	4	4	1	1	4
OrC	2	2	1	1	3	4	4	4	1	1	4
OvC2	4	4	1	2	3	4	4	4	2	2	4
For ratings of Greenville and Malbis soils in unit OvC2, refer to Greenville and Malbis series, respectively.											
Plummer:											
PlB	4	4	4	4	2	3	1	1	4	2	3
PlC	4	4	4	4	2	3	3	3	4	2	3
Poarch:											
PoA	1	1	1	1	3	4	3	3	1	1	4
PoB	1	1	1	1	3	4	4	4	1	1	4
PoC	2	2	1	1	3	4	4	4	1	1	4
Ponzer: Pr	4	4	4	1	4	1	1	2	4	2	1
Red Bay: Rb	1	1	1	1	3	4	4	4	1	1	4
Riverview: Re	2	2	1	1	3	2	2	2	2	1	2
For ratings of Lenoir soil in this unit, refer to Lenoir series.											
Robertsdale: Ro	2	2	2	2	2	2	2	2	2	1	3
Ruston:											
RuA	1	1	1	1	3	4	4	4	1	1	4
RuB	1	1	1	1	3	4	4	4	1	1	4
RuC	2	2	1	1	3	4	4	4	1	1	4
Saffell:											
SaB	2	2	1	1	3	4	4	4	1	1	4
SaC	3	3	2	1	3	4	4	4	1	1	4
Sunsweet:											
SuB	3	3	3	3	2	4	3	3	3	2	4
SuC	4	4	3	3	2	4	4	4	3	2	4
Tifton:											
TfA	1	1	1	1	3	4	3	3	1	1	4
TfB	1	1	1	1	3	4	3	3	1	1	4

TABLE 4.—*Suitability of the soils for wildlife habitats and for kinds of wildlife*—Continued

Soil series and map symbols	Habitat elements								Kinds of wildlife		
	Grain and seed crops	Grasses and legumes	Wild herbaceous upland plants	Hardwood woody plants	Coniferous woody plants	Wetland food and cover plants	Shallow water developments	Excavated ponds	Openland	Woodland	Wetland
Troup:											
TrB	3	3	2	2	2	4	4	4	3	1	4
TrC	3	3	2	2	2	4	4	4	3	1	4
Wagram:											
WaB	3	3	2	2	2	4	4	4	3	1	4
WaC	3	3	2	2	2	4	4	4	3	1	4
Weston: We	3	2	3	1	2	1	2	2	3	2	2

Wild herbaceous upland plants are native or introduced grasses and forbs (weeds) that provide food and cover for upland wildlife. Among these plants are blackberry, butterfly peas, common ragweed, dewberry, pokeweed, partridge peas, and beggarweed.

Hardwood woody plants are nonconiferous trees, shrubs, and woody vines that produce fruits, nuts, buds, catkins, twigs (for browse), or foliage that is used extensively as food by wildlife. Generally, these plants become established through natural processes, but they may be planted. Among these are oaks, beech, cherry, hawthorn, hickories, flowering dogwood, wild grapes, and Japanese honeysuckle.

Coniferous woody plants are cone-bearing trees and shrubs that are used mainly as cover for wildlife, but they may furnish food in the form of browse, seed, or fruitlike cones. Generally, these plants become established through natural processes, but they may be planted. Soils that are best suited to coniferous wildlife habitat are those on which plants grow slowly, thereby delaying closure of the canopy. It is important that branches be maintained near the ground so that cover and food are readily available to quail, rabbits, deer, and other wildlife. If the trees quickly form a dense canopy, the lower branches die and wildlife habitat deteriorates.

Wetland food and cover plants are annual and perennial wild herbaceous plants that grow on moist to wet sites. These plants furnish food and cover mostly for wetland wildlife. They include smartweed, wild millets, bulrush, sedges, cutgrass, and cattails. Submerged and floating aquatic plants are not included.

Shallow water developments are impoundments or excavations for controlling water. Generally, they are not more than 6 feet deep. These control structures include low dikes and levees, shallow dugouts, level ditches, and other devices that control the water level in areas of bottom-land hardwoods, in marshy streams, and in drainage ditches.

Excavated ponds are dug-out ponds or a combination of dug-out ponds and low dikes or dams that hold enough water of suitable quality and depth to support fish and wildlife.

Following is a discussion of the three kinds of wildlife rated in table 4.

Openland wildlife are bobwhite quail, meadowlarks, doves, cottontail rabbits, foxes, cardinals, mockingbirds, and other birds and mammals that normally live on cropland, pasture, meadow, lawns, and in other openland areas where grasses, herbs, and shrubby plants grow.

Woodland wildlife are white-tailed deer, squirrels, wild turkeys, thrushes, vireos, tanangers, woodpeckers, raccoon, skunks, and other birds and mammals that normally live in wooded areas where hardwood and coniferous trees and shrubs grow.

Wetland wildlife are ducks, geese, swamp rabbits, rails, herons, shore birds, mink, muskrats, beavers, and other birds and mammals that normally live in or near ponds, marshes, swamps, and other wet areas.

Use of the Soils in Engineering [5]

This section is useful to those who need information about soils used as structural material or as foundation material upon which structures are built. Among those who can benefit from this section are planning commissions, town and city managers, land developers, engineers, contractors, and farmers.

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

Information in this section can be helpful to those who—

1. Select potential residential, industrial, commercial, and recreational areas.

[5] GEORGE F. RISH, agricultural engineer, assisted with preparation of this section.

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 kinds of soil on which they are built, for purposes of predicting performance of structures on the same or similar kinds in other locations.
6. Predict the trafficability of soils for cross-county movement of vehicles and construction equipment.
7. Develop preliminary estimates pertinent to construction in a particular area.

Much of the information in this section is presented in the form of tables. Only the data in table 5 are from actual laboratory tests. Estimates of soil properties significant in engineering are given in table 6, and interpretations of engineering properties are given in table 7.

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 greater than 6 feet. Also, the inspection of sites, especially the small ones, is needed because many delineated areas of a given soil mapping unit may contain small areas of other kinds of soil that have strongly contrasting properties and different suitabilities or limitations for soil engineering.

Some of the terms used in this soil survey have a special meaning to soil scientists and a different meaning to engineers. The Glossary defines many of these terms according to their meaning in soil science.

Engineering Classification Systems

The two systems most commonly used in classifying samples of soils for engineering are the Unified system (*12*) used by SCS engineers, Department of Defense, and others, and the AASHO system (*2*) adopted by the American Association of State Highway Officials.

In the Unified system, soils are classified according to particle-size distribution, plasticity, liquid limit, and organic-matter content. 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, ML–CL.

The AASHO system is used to classify soils according to those properties that affect 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 capacity, 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 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 AASHO classification for tested soils, with group index numbers in parentheses, is shown in table 5; the estimated classification, without group index numbers, is given in table 6 for all soils mapped in the county.

Engineering Test Data

To help evaluate the soils for engineering purposes, selected samples from soil profiles that represent extensive soil series in the county were tested in accordance with standard procedures. The results of the tests are given in table 5. All samples were obtained at a depth of less than 6 feet. The test data, therefore, may not be adequate for estimating the characteristics of soil material where a deep cut has to be made.

The engineering soil classifications given in table 5 are based on data obtained by mechanical analysis and by tests to determine the liquid limits and plastic limits. The mechanical analysis was made by combined sieve and hydrometer methods. The percentages of clay obtained by the hydrometer method should not be used in naming textural classes of soils.

The tests to determine liquid limit and plastic limit measure the effect of water on consistence of the soil material. As the moisture content of a clayey soil increases from a very dry state, the material changes from a semisolid to a plastic state. As the moisture content is further increased, the material changes from a plastic to a liquid state. The plastic limit is the moisture content at which the soil material passes from a semisolid to a plastic state. The liquid limit is the moisture content at which the material passes from a plastic to a liquid state. 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 in a plastic condition.

Table 5 also gives compaction, or moisture-density, data for the tested soils. If a soil material is compacted at successively higher moisture content, assuming that the compactive effort remains constant, the density of the compacted material will increase until the optimum moisture content is reached. After that, the density decreases with increase in moisture content. The highest dry density obtained in the compaction test is termed "maximum dry density." Moisture-density data are important in earthwork, for as a rule, optimum stability is obtained if the soil is compacted to about the maximum dry density when it is at approximately the optimum moisture content.

For additional test data obtained from soils similar to those in Escambia County, refer to the soil survey of Baldwin County, Alabama, published in 1964.

TABLE 5.—*Engineering*

[Tests performed by the Alabama State Highway Department, Bureau of Materials and Tests, in

Soil name and location	Alabama report number	Depth from surface	Moisture-density data [1]	
			Maximum dry density	Optimum moisture
		Inches	*Lb. per cu. ft.*	*Percent*
Atmore silt loam: NE¼NE¼SE¼ sec. 24, T. 1 N., R. 5 E. (Modal)	3530	0–7	101	15
	3531	19–30	127	8
	3532	48–60	124	11
Coxville fine sandy loam: SW¼NW¼NW¼ sec. 14, T. 1 N., R. 9 E. (Modal)	3524	0–3	95	20
	3525	14–40	102	18
	3526	40–58	114	16
Malbis fine sandy loam: NE¼SE¼SW¼SE¼ sec. 28, T. 3 N., R. 6 E. (Modal)	3527	0–5	105	15
	3528	17–38	122	12
	3529	47–62	112	17
Troup fine sand: NW¼NW¼NW¼ sec. 5, T. 1 N., R. 13 E. (Modal)	3515	3–15	112	11
	3516	53–65	125	10

[1] Based on AASHO Designation T 99–57, Method A (*2*).

[2] Mechanical analysis according to AASHO Designation T 88–57(*2*). Results by this procedure may differ somewhat from results that would have been obtained by the soil survey procedure of the Soil Conservation Service (SCS). In the AASHO procedure, the fine material is analyzed by the hydrometer method, and the various grain-size fractions are calculated on the basis of all the material, including that coarser than 2 millimeters in diameter. In the SCS soil survey procedure, the fine material is analyzed by the pipette method and the

TABLE 6.—*Estimated 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. The soils tions for referring to other series that appear in the first column of this

Soil series and map symbols	Approximate depth to seasonal high water table	Depth from surface	Classification	
			USDA texture	Unified
	Inches	*Inches*		
Atmore: At	0–12	0–19	Silt loam	ML
		19–30	Silt loam	ML
		30–70	Silt loam and silty clay loam	SM or ML
*Benndale: BeA, BeB, BeC, BgD, BgE	>72	0–19	Sandy loam	SM
		19–40	Sandy loam	SM
For Orangeburg part of BgD and BgE, see Orangeburg series.		40–88	Sandy clay loam	SM–SC
Bibb: Bh	0–12	0–9	Silt loam	ML
		9–45	Sand to sandy loam	SM
		45–60	Sand to loamy sand	SM
Brewton: Br	12–18	0–21	Fine sandy loam and loam	SM
		21–60	Sandy loam	SM
The layers between depths of 60 and 96 inches are too variable to rate.				
Bruno: Bu	>72	0–74	Loamy fine sand	SM
Cahaba: Ca	>72	0–17	Sandy loam	SM
		17–39	Sandy clay loam	SM
		39–65	Loamy sand to sand	SM

See footnotes at end of table.

test data

accordance with standard procedures of the American Association of State Highway Officials (AASHO)]

Mechanical analysis [2]							Liquid limit	Plasticity index	Classification	
Percentage passing sieve—						Percentage smaller than 0.005 mm.			AASHO [3]	Unified [4]
2-in.	1-in.	No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 40 (0.42 mm.)	No. 200 (0.074 mm.)					
							Percent			
			100	95	63	10	24	0. 2	A-4(6)	ML
	100	98	96	90	60	24	17	1. 5	A-4(5)	ML
100	97	79	77	73	44	30	24	3. 0	A-4(4)	SM
			100	99	63	38	34	5. 7	A-4(6)	ML
			100	99	77	38	41	18. 0	A-7-6(11)	CL
			100	100	80	62	44	18. 0	A-7-6(11)	CL
		100	98	92	53	27	27	4. 5	A-4(4)	ML
	100	99	97	91	59	46	31	5. 8	A-4(5)	ML
	100	98	96	90	59	30	38	3. 9	A-4(5)	ML
			100	86	12	4		[5]	A-2-4(10)	SW-SM
			100	89	28	22	22	3. 7	A-2-4(0)	SM-SC

material coarser than 2 millimeters in diameter is excluded from calculations of grain-size fractions. The mechanical analysis data used in this table are not suitable for use in naming textural classes for soil.

[3] Based on AASHO Designation M 145-49 (*2*).

[4] Based on the Unified soil classification system (*12*).

[5] Nonplastic.

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in such mapping units may have different properties and limitations, and for this reason it is necessary to follow carefully the instruc- table. The symbol < means less than; the symbol > means more than]

Classification—Con.	Percentage passing sieve—				Permeability	Available water capacity	Reaction	Shrink-swell potential
AASHO	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 value*	
A-4	90–100	90–100	85–100	60–75	0. 63–2. 0	0. 13–0. 15	4. 5–5. 5	Low.
A-4	80–100	80–100	80–95	55–80	0. 63–2. 0	0. 10–0. 15	4. 5–5. 5	Low.
A-4	75–90	75–85	70–80	40–70	0. 2–0. 63	0. 10–0. 15	4. 5–5. 5	Low.
A-2	95–100	95–100	70–85	25–35	2. 0–6. 3	0. 10–0. 13	4. 5–5. 5	Low.
A-4	95–100	95–100	85–95	36–45	0. 63–2. 0	0. 12–0. 15	4. 5–5. 5	Low.
A-4	95–100	95–100	60–70	36–45	0. 63–2. 0	0. 10–0. 15	4. 5–5. 5	Low.
A-4	98–100	98–100	75–100	60–70	0. 63–2. 0	0. 15–0. 18	4. 5–5. 5	Low.
A-2	98–100	95–100	60–90	25–35	0. 63–2. 0	0. 15–0. 17	4. 5–5. 5	Low.
A-2	98–100	90–100	35–70	20–30	0. 63–2. 0	0. 10–0. 15	4. 5–5. 5	Low.
A-4	100	95–100	70–85	36–50	0. 63–2. 0	0. 12–0. 15	4. 5–5. 5	Low.
A-4	100	95–100	60–85	36–45	0. 06–0. 2	0. 08–0. 12	4. 5–5. 5	Low.
A-2	100	100	50–85	10–25	2. 0–6. 3	0. 05–0. 10	5. 1–7. 8	Low.
A-2, A-4	100	100	80–95	30–40	2. 0–6. 3	0. 10–0. 13	4. 5–5. 5	Low.
A-4	100	100	85–95	36–45	0. 63–2. 0	0. 12–0. 15	4. 5–5. 5	Low.
A-2	100	95–100	60–80	15–25	6. 3–20. 0	0. 05–0. 10	4. 5–5. 5	Very low.

TABLE 6.—*Estimated properties*

Soil series and map symbols	Approximate depth to seasonal high water table	Depth from surface	Classification	
			USDA texture	Unified
	Inches	*Inches*		
*Chewacla: Cn	12–18	0–34	Loam	ML
		34–60	Sandy loam and loamy sand	SM
For Lenoir and Riverview parts, see Lenoir and Riverview series.				
Coxville: Co	0–12	0–6	Fine sandy loam	ML
		6–65	Clay	CL
Craven: Cr	24–30	0–8	Fine sandy loam	SM
		8–38	Clay to clay loam	CH
		38–70	Sandy loam	SM or CL
Dorovan: Do	0	0–58	Muck	Pt
		58–66	Very fine sandy loam	SM or ML
Dothan: DtB, DtC	>48	0–7	Fine sandy loam	SM
		7–44	Sandy clay loam	SM–SC
		44–69	Sandy clay loam	SC
Escambia: Es	18–30	0–7	Fine sandy loam	ML
		7–35	Loam	ML
		35–72	Loam	CL
*Esto: EtB, EwD, EwE	>60	0–8	Fine sandy loam	SM
		8–60	Clay	SC or CL
For Dothan and Wagram parts of EwD and EwE, see Dothan and Wagram series.				
Flomaton: FlC, FlD	>72	0–9	Gravelly loamy sand	SM
		9–72	Gravelly loamy sand	GM or GM–GW
Freemanville: FrA, FrB, FrC	>72	0–17	Fine sandy loam to loam	SM or GM
		17–49	Clay	SC or CL
		49–72	Clay	SC or CL
Grady: Gr	0	0–8	Loam	ML
		8–96	Clay	CL
Grasmere: Gt	(1)	0–23	Silty clay loam	CL
		23–31	Silt loam and silty clay loam	CL
		31–60	Silty clay	MH
Greenville: GvA, GvB	>72	0–8	Fine sandy loam	SM or ML
		8–38	Clay to sandy clay	CL
		38–65	Clay	CL
Irvington: IrA, IrB	18–30	0–10	Fine sandy loam	SM or ML
		10–33	Sandy clay loam	SC or CL
		33–65	Sandy clay loam	SC or CL
Kalmia: Ka	>60	0–12	Fine sandy loam	SM
		12–39	Sandy clay loam	SM or SC
		39–60	Loamy sand to sand	SM
Lakeland: La	>72	0–70	Sand to fine sand	SM
		70–80	Sand	SM or SP
Lenoir: Le	12–18	0–7	Fine sandy loam	SM
		7–96	Clay	CH
Lucy: LuB, LuC	>72	0–27	Loamy sand	SM
		27–36	Sandy loam	SM
		36–84	Sandy clay loam	SM or SC
Malbis: MaA, MaB	36–70	0–9	Fine sandy loam	ML
		9–38	Sandy clay loam	ML–CL, ML
		38–70	Sandy clay loam	ML

See footnotes at end of table.

significant in engineering—Continued

Classification—Con.	Percentage passing sieve—				Permeability	Available water capacity	Reaction	Shrink-swell potential
AASHO	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 value*	
A–4	100	100	85–95	70–95	0. 63–2. 0	0. 14–0. 18	4. 5–6. 0	Low.
A–2	100	100	40–70	25–35	0. 63–2. 0	0. 10–0. 15	4. 5–6. 0	Low.
A–4	100	100	85–100	55–70	0. 63–2. 0	0. 13–0. 15	4. 5–5. 5	Low.
A–6, A–7	100	100	90–100	70–85	0. 2–0. 63	0. 08–0. 12	4. 5–5. 5	Moderate to high.
A–4	100	100	80–95	36–50	2. 0–6. 3	0. 10–0. 12	4. 5–5. 5	Low.
A–7	100	100	85–100	60–75	<0. 2	0. 12–0. 17	4. 5–5. 5	Moderate.
A–2, A–4	100	100	85–95	25–55	0. 63–6. 3	0. 10–0. 15	4. 5–5. 5	Moderate.
					<0. 06	>0. 20	4. 5–5. 5	High.
A–2, A–4	100	100	65–90	15–60	<0. 06	0. 08–0. 13	4. 5–5. 5	Low.
A–2	95–100	95–100	75–90	25–35	2. 0–6. 3	0. 10–0. 13	4. 5–5. 5	Low.
A–2, A–4	95–100	95–100	80–90	30–40	0. 63–2. 0	0. 10–0. 14	4. 5–5. 5	Low.
A–4	95–100	95–100	75–90	36–45	0. 2–0. 63	0. 12–0. 15	4. 5–5. 5	Low.
A–4	95–100	95–100	85–98	55–65	2. 0–6. 3	0. 13–0. 15	4. 5–5. 5	Low.
A–4	95–100	95–100	85–98	60–70	0. 63–2. 0	0. 10–0. 14	4. 5–5. 5	Low.
A–6	90–100	90–100	80–90	60–70	0. 06–0. 63	0. 10–0. 14	4. 5–5. 5	Low to moderate.
A–2	95–100	95–100	55–80	25–35	2. 0–6. 3	0. 10–0. 13	4. 5–5. 5	Low.
A–7	95–100	95–100	85–95	45–60	0. 06–0. 2	0. 08–0. 12	4. 5–5. 5	Moderate.
A–1	70–90	40–50	25–40	10–25	6. 3–20. 0	0. 01–0. 07	4. 5–5. 5	Low.
A–1	45–65	25–35	20–30	5–20	6. 3–20. 0	0. 05–0. 07	4. 5–5. 5	Low.
A–2	65–90	50–85	46–80	10–35	0. 63–2. 0	0. 12–0. 14	5. 1–6. 0	Low.
A–6, A–7	85–95	65–85	60–80	40–60	0. 63–2. 0	0. 12–0. 16	4. 5–5. 5	Moderate.
A–6, A–7	85–95	65–85	60–80	45–60	0. 2–0. 63	0. 12–0. 15	4. 5–5. 5	Moderate.
A–4	100	100	85–95	50–65	0. 63–2. 0	0. 10–0. 13	4. 5–5. 5	Low.
A–6, A–7	100	100	90–100	60–90	<0. 2	0. 10–0. 12	4. 5–5. 5	Moderate.
A–7	100	100	90–100	90–98	0. 63–2. 0	0. 15–0. 18	5. 1–6. 0	Moderate.
A–7	100	100	90–100	85–95	0. 63–2. 0	0. 15–0. 18	5. 1–6. 0	Moderate.
A–7	100	100	90–100	85–95	0. 2–0. 63	0. 15–0. 17	5. 1–6. 0	Moderate.
A–4	95–100	95–100	75–95	40–55	2. 0–6. 3	0. 10–0. 12	4. 5–5. 5	Low.
A–6, A–7	95–100	95–100	85–95	50–65	0. 63–2. 0	0. 12–0. 15	4. 5–5. 5	Low to moderate.
A–6, A–7	100	95–100	85–95	50–60	0. 63–2. 0	0. 12–0. 15	4. 5–5. 5	Low to moderate.
A–4	80–100	75–100	75–95	45–65	2. 0–6. 3	0. 12–0. 14	4. 5–5. 5	Low.
A–4	85–100	85–95	80–90	45–65	0. 63–2. 0	0. 12–0. 15	4. 5–5. 5	Low.
A–6	85–95	80–95	75–90	45–55	0. 06–0. 20	0. 08–0. 12	4. 5–5. 5	Low to moderate.
A–2, A–4	100	100	75–90	30–45	2. 0–6. 3	0. 10–0. 15	4. 5–5. 5	Low.
A–4, A–6	100	100	80–95	36–50	0. 63–2. 0	0. 10–0. 15	4. 5–5. 5	Low.
A–2	100	95–100	55–75	15–30	6. 3–20. 0	0. 05–0. 10	4. 5–5. 5	Very low.
A–2	100	100	70–80	10–20	6. 3–20. 0	0. 05–0. 08	4. 5–5. 0	Very low.
A–1	90–100	90–100	75–85	5–15	6. 3–20. 0	0. 05–0. 07	4. 5–5. 0	Very low.
A–4	100	100	80–90	36–50	2. 0–6. 3	0. 13–0. 15	4. 5–5. 5	Low.
A–7	100	100	85–95	55–75	0. 06–0. 2	0. 14–0. 17	4. 5–5. 5	Moderate.
A–2	100	100	80–90	20–30	6. 3–20. 0	0. 05–0. 10	4. 5–5. 5	Very low.
A–2	100	100	75–85	20–35	0. 63–2. 0	0. 10–0. 15	4. 5–5. 5	Low.
A–2, A–4	100	100	85–95	30–45	0. 63–2. 0	0. 10–0. 15	4. 5–5. 5	Low.
A–4	100	95–100	90–100	50–60	0. 63–2. 0	0. 10–0. 15	4. 5–5. 5	Low.
A–4	98–100	95–100	85–100	55–65	0. 63–2. 0	0. 10–0. 20	4. 5–5. 5	Low to moderate.
A–4	98–100	95–100	70–95	55–65	0. 2–0. 63	0. 10–0. 20	4. 5–5. 5	Low to moderate.

TABLE 6.—*Estimated properties*

Soil series add map symbols	Approximate depth to seasonal high water table	Depth from surface	Classification	
			USDA texture	Unified
	Inches	*Inches*		
*Orangeburg: OrA, OrB, OrC, OvC2—For Greenville and Malbis parts of OvC2, see Greenville and Malbis series.	>72	0–14	Sandy loam and fine sandy loam	SM
		14–87	Sandy clay loam	SM or ML
Plummer: PlB, PlC	0–15	0–42	Loamy sand	SM
		42–62	Sandy loam to sandy clay loam	SM or SC
Poarch: PoA, PoB, PoC	24–36	0–7	Fine sandy loam	ML
		7–32	Loam	ML
		32–66	Loam	ML
Ponzer: Pr	0	0–40	Muck	Pt
		40–60	Mucky sandy loam	SM
Red Bay: Rb	>72	0–14	Fine sandy loam and sandy loam	SM
		14–65	Sandy clay loam	SM or SC
		65–111	Sandy loam	SM
*Riverview: Re—For Lenoir part, see Lenoir series.	[2] >60	0–39	Silt to loam	ML
		39–70	Loamy fine sand	SM
Robertsdale: Ro	15–30	0–14	Fine sandy loam	SM or ML
		14–29	Fine sandy loam to sandy clay loam	ML–CL
		29–60	Sandy clay loam	ML–CL
Ruston: RuA, RuB, RuC	>72	0–8	Very fine sandy loam	ML
		8–41	Clay loam	CL
		41–65	Loam	CL
Saffell: SaB, SaC	>72	0–11	Gravelly sandy loam	SM
		11–55	Gravelly sandy clay loam	GM or SM
		55–65	Gravelly sandy loam	SM or GM
Sunsweet: SuB, SuC	>72	0–5	Fine sandy loam	SM
		5–60	Clay	CL or SC
Tifton: TfA, TfB	>72	0–10	Fine sandy loam	SM or ML
		10–40	Clay loam	SC or CL
		40–65	Clay loam	SC or CL
Troup: TrB, TrC	>72	0–40	Fine sand and loamy fine sand	SW–SM
		40–53	Loamy sand	SM
		53–119	Sandy clay loam	SM–SC
Wagram: WaB, WaC	>72	0–36	Loamy sand	SM
		36–84	Sandy clay loam	SM or SC
Weston: We	0–15	0–18	Fine sandy loam and sandy loam	SM or ML
		18–53	Sandy clay loam	SM or ML
		53–70	Sandy loam to sand	SM

[1] Subject to ponding in places.
[2] Subject to flooding.

significant in engineering—Continued

Classification—Con.	Percentage passing sieve—				Permeability	Available water capacity	Reaction	Shrink-swell potential
AASHO	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 value*	
A–4	100	100	70–90	36–50	2. 0–6. 3	0. 08–0. 11	4. 5–5. 5	Low.
A–4	100	100	80–95	40–55	0. 63–2. 0	0. 10–0. 13	4. 5–5. 5	Low.
A–2	100	100	80–100	15–30	6. 3–20. 0	0. 08–0. 11	4. 5–5. 5	Very low.
A–2, A–4	95–100	95–100	85–95	20–45	0. 63–2. 0	0. 10–0. 13	4. 5–5. 5	Low.
A–4	100	100	85–95	55–65	2. 0–6. 3	0. 13–0. 15	4. 5–5. 5	Low.
A–4	100	98–100	95–100	60–70	0. 63–2. 0	0. 14–0. 18	4. 5–5. 5	Low.
A–4	100	85–95	80–90	55–70	0. 63–2. 0	0. 14–0. 18	4. 5–5. 5	Low.
					0. 06–0. 2	>0. 20	4. 5–5. 0	High.
A–2, A–4	100	100	65–90	25–50	0. 06–0. 2	0. 08–0. 13	4. 5–5. 0	Low.
A–2	100	100	65–70	25–35	2. 0–6. 3	0. 08–0. 11	4. 5–5. 0	Low.
A–2 or A–4	100	98–100	70–85	30–45	0. 63–2. 0	0. 10–0. 12	4. 5–5. 0	Low.
A–2 or A–4	100	98–100	70–80	30–40	2. 0–6. 3	0. 10–0. 12	4. 5–5. 0	Low.
A–4	100	100	90–100	60–80	0. 63–2. 0	0. 10–0. 15	4. 5–5. 5	Low.
A–2, A–4	100	100	80–90	20–40	6. 3–20. 0	0. 05–0. 10	4. 5–5. 5	Very low.
A–4	90–100	90–100	85–95	45–60	2. 0–6. 3	0. 13–0. 15	4. 5–5. 5	Low.
A–4	85–100	75–95	75–90	50–60	0. 63–2. 0	0. 12–0. 17	4. 5–5. 5	Low.
A–4	85–100	70–95	70–90	50–60	0. 06–0. 63	0. 10–0. 15	4. 5–5. 5	Low to moderate.
A–4	100	100	85–95	55–65	2. 0–6. 3	0. 13–0. 15	4. 5–5. 5	Low.
A–6	100	98–100	85–95	60–75	0. 63–2. 0	0. 14–0. 17	4. 5–5. 5	Low to moderate.
A–6	100	98–100	80–90	55–70	0. 63–2. 0	0. 14–0. 18	4. 5–5. 5	Low.
A–2, A–4	80–90	65–90	40–60	30–40	2. 0–20. 0	0. 08–0. 10	4. 5–5. 5	Low.
A–4	50–70	40–65	40–55	36–50	0. 63–2. 0	0. 08–0. 13	4. 5–5. 5	Low.
A–2	65–80	40–65	35–50	25–35	6. 3–20. 0	0. 04–0. 08	4. 5–5. 5	Low.
A–4	75–95	70–95	55–75	36–45	2. 0–6. 3	0. 08–0. 10	4. 5–5. 5	Low.
A–6 or A–7	80–95	75–95	75–90	45–65	0. 20–0. 63	0. 09–0. 12	4. 5–5. 5	Moderate.
A–4	80–95	70–95	55–80	45–60	2. 0–6. 3	0. 10–0. 15	4. 5–5. 5	Low.
A–4 or A–6	85–95	75–95	60–90	40–65	0. 63–2. 0	0. 13–0. 16	4. 5–5. 5	Low.
A–6	80–95	80–95	65–90	40–65	0. 63–2. 0	0. 12–0. 15	4. 5–5. 5	Low.
A–2	100	100	85–95	10–20	6. 3–20. 0	0. 03–0. 06	4. 5–5. 5	Very low.
A–2	100	100	70–90	15–25	2. 0–6. 3	0. 05–0. 08	4. 5–5. 5	Very low.
A–2, A–4	95–100	95–100	80–90	25–45	0. 63–2. 0	0. 10–0. 13	4. 5–5. 5	Very low.
A–2	100	100	55–75	20–35	>6. 3	0. 05–0. 10	4. 5–5. 5	Very low.
A–4	100	100	60–90	36–50	0. 63–2. 0	0. 10–0. 15	4. 5–5. 5	Low.
A–2 or A–4	100	100	85–95	36–55	2. 0–6. 3	0. 12–0. 17	4. 5–5. 5	Low.
A–4	100	100	80–90	40–60	0. 63–2. 0	0. 14–0. 17	4. 5–5. 5	Low.
A–2 or A–4	90–100	90–100	70–85	20–40	2. 0–6. 3	0. 10–0. 15	4. 5–5. 5	Low.

TABLE 7.—*Engineering*

[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 referring to other series that appear

Soil series and map symbols	Suitability as a source of—				Soil features affecting engineering practices—	
	Topsoil	Sand [1]	Gravel [1]	Road fill	Highway location	Excavated ponds (runoff fed)
Atmore: At	Poor: wetness	Poor: improbable source.	Poor: improbable source.	Poor: poorly drained.	Poorly drained; high water table.	Moderate to moderately slow permeability.
*Benndale: BeA, BeB, BeC, BgD, BgE. For Orangeburg part of BgD and BgE, see Orangeburg series.	Good	Poor: improbable source.	Poor: improbable source.	Good	Fair traffic-supporting capacity; slope.	Moderate permeability.
Bibb: [3] Bh	Poor: wetness	Fair: excessive fines that need to be washed out.	Poor: improbable source.	Poor: poorly drained; high water table.	Poorly drained; hazard of flooding.	Moderate permeability; high water table.
Brewton: Br	Good	Fair to poor: excessive fines; overburden; not available in all places.	Poor: improbable source.	Fair: somewhat poorly drained.	Somewhat poorly drained; high water table.	Moderate permeability above pan, slow in pan.
Bruno: Bu	Poor: sandy	Fair: excessive fines that need to be washed out.	Poor: improbable source.	Good	Hazard of flooding.	Moderately rapid permeability.
Cahaba: Ca	Good	Fair: excessive fines that need to be washed out; overburden is over 3 feet thick.	Poor: improbable source.	Good	No adverse features.	Rapid permeability below depth of 3 feet.
*Chewacla [3]: Cn For Lenoir and Riverview parts, see Lenoir and Riverview series.	Fair: wetness	Fair to poor: thick overburden; excessive fines that need to be washed out.	Poor: improbable source.	Fair: somewhat poorly drained; fair traffic-supporting capacity.	Hazard of flooding.	Moderate permeability; hazard of flooding.

See footnotes at end of table.

interpretations

such mapping units may have different properties and limitations, and for this reason it is necessary to follow carefully the instructions for in the first column of this table]

Soil features affecting engineering practices—Continued					
Farm ponds		Agricultural drainage [2]	Irrigation	Terraces and diversions	Waterways
Reservoir area	Embankment				
Moderate permeability above pan, moderately slow in pan.	Poor resistance to piping and erosion; fair slope stability.	High water table; moderately slow permeability in fragipan.	High water table; medium available water capacity.	Nearly level; not needed.	Poorly drained; nearly level; not needed.
Moderate permeability.	Poor resistance to piping and erosion; fair slope stability.	Well drained; not needed.	Medium available water capacity; susceptible to water erosion; medium intake rate.	Easy to build and maintain; moderate hazard of erosion; difficult to build where slopes are more than 8 percent.	Vegetation easily established where slopes are less than 8 percent, difficult to establish vegetation where slopes are more than 8 percent because of severe hazard of erosion.
Moderate permeability.	Poor resistance to piping and erosion; fair slope stability.	High water table; outlets difficult to find; subject to flooding.	High water table; generally not needed.	Nearly level; not needed.	Nearly level; not needed.
Moderate permeability above pan, slow in pan.	Poor resistance to piping and erosion; fair slope stability.	Slow permeability in fragipan; high water table.	Medium available water capacity; medium intake rate; moderate permeability in upper part of subsoil, slow in lower part of subsoil.	Nearly level; not needed.	Nearly level: not needed.
Moderately rapid permeability.	Poor resistance to piping and erosion; fair slope stability; moderately rapid permeability.	Subject to flooding	Rapid intake rate; low available water capacity; subject to flooding; moderately rapid permeability.	Nearly level; hazard of flooding; not needed.	Nearly level; hazard of flooding: not needed
Rapid permeability below depth of 3 feet.	Poor resistance to piping and erosion; fair slope stability; thickness of borrow material is 2 to 5 feet.	Well drained; not needed.	Medium intake rate; medium available water capacity; nearly level.	Nearly level; not needed.	Nearly level; not needed.
Moderate permeability; permeable material at depth of 3 to 6 feet.	Poor resistance to piping and erosion; fair slope stability.	Subject to flooding	Medium to slow intake rate; medium to high available water capacity; subject to flooding.	Nearly level; hazard of flooding; not needed.	Nearly level; hazard of flooding; not needed.

TABLE 7.—*Engineering*

Soil series and map symbols	Suitability as a source of—				Soil features affecting engineering practices—	
	Topsoil	Sand [1]	Gravel [1]	Road fill	Highway location	Excavated ponds (runoff fed)
Coxville: Co	Poor: wetness	Poor: improbable source.	Poor: improbable source.	Poor: poorly drained; ponding.	Poorly drained; ponding for short periods; seasonal high water table; moderate to high shrink-swell potential.	No adverse features.
Craven: Cr	Fair: suitable material less than 20 inches thick.	Poor: improbable source.	Poor: improbable source.	Poor: poor traffic-supporting capacity.	Poor traffic-supporting capacity; moderate shrink-swell potential.	Moderate to moderately rapid permeability in lower part of subsoil.
Dorovan: Do	Poor: high organic-matter content; wetness.	Poor: improbable source.	Poor: improbable source.	Poor: very poorly drained; high organic-matter content.	Poor traffic-supporting capacity; hazard of flooding; poorly drained; high shrink-swell potential.	Excavation difficult because of high water table.
Dothan: DtB, DtC	Fair to good: wetness.	Poor: improbable source.	Poor: improbable source.	Fair: fair traffic-supporting capacity.	No adverse features.	Moderate permeability in upper part, moderately slow in plinthite layers.
Escambia: Es	Good: wetness	Poor: improbable source.	Poor: improbable source.	Fair: fair traffic-supporting capacity; somewhat poorly drained.	Fair traffic-supporting capacity; wetness; somewhat poorly drained.	Moderate to slow permeability.
*Esto: EtB, EwD, EwE. For Dothan and Wagram parts of EwD and EwE, see Dothan and Wagram series.	Fair: suitable material less than 20 inches thick.	Poor: improbable source.	Poor: improbable source.	Fair: fair traffic-supporting capacity.	Fair traffic-supporting capacity; moderate shrink-swell potential.	No adverse features.

See footnotes at end of table.

interpretations—Continued

Soil features affecting engineering practices—Continued					
Farm ponds		Agricultural drainage [2]	Irrigation	Terraces and diversions	Waterways
Reservoir area	Embankment				
No adverse features	Medium compressibility; fair to good resistance to piping nd erosion.	High water table; moderately slow permeability.	Poorly drained; possible ponding for short periods; medium intake rate; moderately slow permeability.	Nearly level to slightly depressed; not needed.	Nearly level to slightly depressed; not needed.
Slow to very slow permeability in upper part of subsoil, moderate to moderately rapid in lower part of subsoil.	High compressibility; fair slope stability.	Very slow to slow permeability; surface ditches needed in places.	Medium intake rate; medium to high available water capacity; slow to very slow permeability.	Nearly level; not needed.	Nearly level; not needed.
High water table; high organic-matter content.	Poor slope stability; high compressibility; poor resistance to piping and erosion.	High water table; outlets difficult to locate.	Saturated with water most of the year; not suited.	Nearly level; not needed.	Nearly level; not needed.
Moderate permeability in upper part, moderately slow in plinthite layers.	No adverse features	Well drained or moderately well drained; not needed.	Medium intake rate; medium available water capacity; susceptible to water erosion; permeability moderate in upper part of subsoil, moderately slow in lower part of subsoil.	Moderate to severe hazard of erosion; easy to establish and maintain where slopes are less than 8 percent, difficult where slopes are more than 8 percent.	Vegetation fairly easy to establish where slopes are less than 8 percent, difficult to establish where slopes are more than 8 percent because of hazard of erosion.
Moderate permeability above plinthite layers, moderately slow to slow in plinthite layers.	Poor resistance to piping and erosion; fair slope stability.	High water table; slow or moderately slow permeability in plinthite layers; surface ditches needed in places.	Medium intake rate; medium available water capacity; high water table; slow or moderately slow permeability in lower part of subsoil.	Nearly level; generally not needed.	Nearly level; not needed.
No adverse features	Medium compressibility.	Well drained; not needed.	Medium intake rate; slow permeability; low to medium available water capacity; not suited where slopes are more than 5 percent because of severe hazard of erosion.	Moderate to severe hazard of erosion; difficult to construct; clayey near surface.	Clayey near surface; vegetation not easily established; severe hazard of erosion where slopes are more than 5 percent; difficult to construct.

TABLE 7.—*Engineering*

Soil series and map symbols	Suitability as a source of—				Soil features affecting engineering practices—	
	Topsoil	Sand [1]	Gravel [1]	Road fill	Highway location	Excavated ponds (runoff fed)
Flomaton: FIC, FID---	Poor: more than 10 percent coarse fragments; sandy surface texture.	Fair: gravel needs to be screened out.	Fair: excessive fines that need to be washed out.	Good----------	Slope is a limitation where more than 6 percent.	Rapid permeability.
Freemanville: FrA, FrB, FrC.	Fair: suitable material less than 20 inches thick.	Poor: improbable source.	Poor: improbable source.	Fair: fair traffic-supporting capacity.	Fair traffic-supporting capacity; moderate shrink-swell potential.	Moderate permeability in upper part, moderately slow in lower part.
Grady: Gr----------	Poor: wetness.	Poor: improbable source.	Poor: improbable source.	Poor: poorly drained; hazard of ponding.	Poorly drained; possible flooding for long periods; high water table; moderate shrink-swell potential.	No adverse features.
Grasmere: Gt--------	Fair: clayey surface texture.	Poor: improbable source.	Poor: improbprobable source.	Fair to poor: fair to poor traffic-supporting capacity.	Fair traffic-supporting capacity; possible ponding for short periods; moderate shrink-swell potential.	Moderate permeability.
Greenville: GvA, GvB--	Fair: suitable material less than 20 inches thick.	Poor: poor in upper 10 to 12 feet; fairly good beds below.	Poor: poor in upper 10 to 12 feet; fairly good beds below.	Fair: fair traffic-supporting capacity.	Fair traffic-supporting capacity; slope is a limitation where more than 6 percent.	Moderate permeability in upper 6 feet.
Irvington: IrA, IrB---	Fair: suitable material less than 20 inchcs thick; wetness.	Poor: improbable source.	Poor: improbable source.	Fair: moderately well drained; fair traffic-supporting capacity.	Fair traffic-supporting capacity; moderately well drained.	Moderate permeability above pan, slow in pan.

See footnotes at end of table.

interpretations—Continued

Soil features affecting engineering practices—Continued					
Farm ponds		Agricultural drainage [2]	Irrigation	Terraces and diversions	Waterways
Reservoir area	Embankment				
Rapid permeability	Rapid permeability; poor resistance to piping and erosion; fair slope stability.	Excessively drained; not needed.	Rapid intake rate; low available water capacity; rapid permeability; gravelly soil.	High in content of sand and gravel; not suited.	Hazard of gullying; low available water capacity; very low in fertility; not suited.
Moderate permeability in upper part, moderately slow in lower part.	All features favorable.	Well drained; not needed.	Medium intake rate; medium to high available water capacity; moderately slow permeability in lower part of subsoil.	Moderate hazard of erosion; easy to establish and maintain.	Vegetation easily established; hazard of erosion on steeper slopes after construction.
No adverse features.	Medium compressibility; fair to good resistance to piping and erosion.	High water table; outlets difficult to locate; slow to very slow permeability.	Poorly drained; hazard of ponding; not suited.	Nearly level to slightly depressed; not needed.	Nearly level to slightly depressed; not needed.
Moderate permeability.	High compressibility; fair to good slope stability.	Subject to flooding in places; surface ditches needed in places.	Subject to occasional overflow; slow intake rate; high available water capacity.	Nearly level to slightly depressed; not needed.	Nearly level to slightly depressed; not needed.
Moderate permeability in upper 6 feet.	Medium compressibility; fair to good resistance to piping and erosion.	Well drained; not needed.	Medium intake rate; medium available water capacity; hazard of water erosion.	Moderate hazard of erosion; easy to establish and maintain where slopes are less than 8 percent, difficult where slopes are more than 8 percent.	Vegetation easily established where slopes are less than 8 percent, difficult to establish where slopes are more than 8 percent because of severe hazard of erosion.
Moderate permeability above pan, slow in pan.	Medium compressibility; fair to good resistance to piping and erosion.	High water table; slow permeability through fragipan; surface ditches needed in places.	Medium intake rate; medium to moderately low available water capacity; high water table; hazard of water erosion; slow permeability in fragipan.	Moderate hazard of erosion; fairly easy to establish and maintain; fragipan at depth of about 2½ feet.	Vegetation easily established.

TABLE 7.—*Engineering*

Soil series and map symbols	Suitability as a source of—				Soil features affecting engineering practices—	
	Topsoil	Sand [1]	Gravel [1]	Road fill	Highway location	Excavated ponds (runoff fed)
Kalmia: Ka	Good	Fair to poor: overburden is over 3 feet thick; excessive fines that need to be washed out of material below depth of 3 feet; not available in all places.	Poor: improbable source.	Good	No adverse features.	Rapid permeability in lower part of subsoil.
Lakeland: La	Poor: sand and fine sand texture.	Fair: excessive fines that need to be washed out.	Poor: improbable source.	Good	Excessive drainage; low stability.	Rapid permeability.
Lenoir: Le	Fair: suitable material less than 20 inches thick; wetness.	Poor: improbable source.	Poor: improbable source.	Poor: poor traffic-supporting capacity; somewhat poorly drained.	Poor traffic-supporting capacity; moderate shrink-swell potential.	No adverse features.
Lucy: LuB, LuC	Poor: loamy sand texture.	Fair in upper 2 to 3 feet; excessive fines that need to be washed out. Poor below these depths.	Poor: improbable source.	Fair: fair traffic-supporting capacity.	Fair traffic-supporting capacity	Moderate to rapid permeability.
Malbis: MaA, MaB	Fair: clay loam and sandy clay loam; wetness.	Poor: improbable source.	Poor: improbable source.	Fair: fair traffic-supporting capacity.	Fair traffic-supporting capacity.	Moderate permeability.
*Orangeburg: OrA, OrB, OrC, OvC2. For Greenville and Malbis parts of OvC2, see Greenville and Malbis series.	Good	Poor: improbable source; available below depth of 10 to 12 feet in places.	Poor: improbable source.	Good	No adverse features.	Moderate permeability.
Plummer: PlB, PlC	Poor: wetness; coarse surface texture.	Fair to poor: excessive fines that need to be washed out; high water table interferes with excavation.	Poor: improbable source.	Poor: high water table; poorly drained.	Poorly drained; high water table; seepy in places.	Moderate to rapid permeability; high water table.

See footnotes at end of table.

interpretations—Continued

Soil features affecting engineering practices—Continued					
Farm ponds		Agricultural drainage [2]	Irrigation	Terraces and diversions	Waterways
Reservoir area	Embankment				
Moderate permeability in upper subsoil, rapid in lower part of subsoil; permeable material at depth of 3 to 6 feet.	Poor resistance to piping and erosion; fair slope stability; thickness of borrow material is 2 to 5 feet.	Well drained; not needed.	Medium intake rate; medium available water capacity.	Nearly level; not needed.	Nearly level; not needed.
Rapid permeability	Rapid permeability; poor slope stability; poor resistance to piping and erosion.	Excessively drained; not needed.	Rapid intake rate; low available water capacity; rapid permeability.	Very sandy; hazard of gullying when water is concentrated; not suited.	Hazard of gullying; low available water capacity; very low in fertility; not suited.
No adverse features	High compressibility	Slow permeability; surface ponding in places.	Medium intake rate; medium to high available water capacity; high water table; slow permeability.	Nearly level; not needed.	Nearly level; not needed.
Rapid permeability in upper part of material, moderate in lower part.	Poor resistance to piping and erosion; fair slope stability.	Well drained; not needed.	Rapid intake rate; low available water capacity in upper part, medium in lower part.	Hazard of gullying when water is concentrated; not suited.	Hazard of gullying; low available water capacity; low fertility in sandy layers; not suited.
Moderate permeability.	Poor to good resistance to piping and erosion; fair to good slope stability.	Moderately well drained.	Medium to high available water capacity; medium intake rate.	Easy to build and maintain.	Easy to build and maintain.
Moderate permeability.	Poor resistance to piping and erosion; fair slope stability.	Well drained; not needed.	Medium intake rate; medium available water capacity; hazard of water erosion.	Moderate hazard of erosion; easy to establish and maintain; hazard of water erosion; difficult to establish where slopes are more than 8 percent.	Vegetation easily established where slopes are less than 8 percent, difficult to establish where slopes are more than 8 percent because of severe hazard of erosion.
Moderate to rapid permeability; high water table.	Poor resistance to piping and erosion; fair slope stability.	High water table; unstable sand in upper part; seepage from adjacent areas.	Poorly drained; high water table.	Poorly drained; high water table.	High water table; very low in fertility.

TABLE 7.—*Engineering*

Soil series and map symbols	Suitability as a source of—				Soil features affecting engineering practices—	
	Topsoil	Sand [1]	Gravel [1]	Road fill	Highway location	Excavated ponds (runoff fed)
Poarch: PoA, PoB, PoC.	Good: wetness	Poor: improbable source.	Poor: improbable source.	Fair: fair traffic-supporting capacity.	Fair traffic-supporting capacity; slope is a limitation where more than 6 percent.	Moderate permeability.
Ponzer: Pr	Poor: wetness; high organic-matter content.	Poor: improbable source.	Poor: improbable source.	Poor: very poorly drained; high water table; high organic-matter content; poor traffic-supporting capacity.	High organic-matter content; poor traffic-supporting capacity; very poorly drained; hazard of flooding; high shrink-swell potential.	Excavation difficult because of high organic-matter content and high water table.
Red Bay: Rb	Good	Poor: improbable source in upper 8 to 12 feet; available below these depths in places.	Poor: improbable source in upper 8 to 12 feet; available below these depths in places.	Good	No adverse features.	Moderately rapid permeability.
*Riverview: Re. For Lenoir part of Re, see Lenoir series.	Good	Fair: fair below depth of 3 feet; fines that need to be washed out.	Poor: improbable source.	Fair: fair traffic-supporting capacity.	Hazard of flooding.	Rapid permeability below depth of 3 feet.
Robertsdale: Ro	Fair: wetness	Poor: improbable source.	Poor: improbable source.	Fair: fair traffic-supporting capacity; somewhat poorly drained.	Fair traffic-supporting capacity; somewhat poorly drained.	Moderate to slow permeability.
Ruston: RuA, RuB, RuC.	Good to fair: very fine sandy loam and clay loam texture.	Poor: improbable source.	Poor: improbable source.	Fair: fair traffic-supporting capacity.	Slope is a limitation; fair traffic-supporting capacity.	Moderate permeability.

See footnotes at end of table.

interpretations—Continued

Soil features affecting engineering practices—Continued					
Farm ponds		Agricultural drainage [2]	Irrigation	Terraces and diversions	Waterways
Reservoir area	Embankment				
Moderate permeability.	Poor resistance to piping and erosion; fair slope stability.	Moderately well drained to well drained; not needed.	Medium intake rate; medium to high available water capacity; hazard of water erosion.	Moderate hazard of erosion; easy to establish and maintain.	Vegetation easily established; hazard of erosion in steeper areas after construction.
High water table; high organic-matter content.	Poor slope stability; rapid permeability; poor resistance to piping and erosion.	High water table; subject to overflow; outlets difficult to locate.	Very poorly drained; high water table.	Very poorly drained; high water table.	Nearly level; high water table.
Moderately rapid permeability.	Poor resistance to piping and erosion; fair slope stability.	Well drained; not needed.	Medium intake rate; medium available water capacity; moderately rapid permeability.	Nearly level; not needed.	Nearly level; not needed.
Rapid permeability below depth of about 3 feet.	Poor resistance to piping and erosion; fair slope stability; thickness of borrow material is 2 to 5 feet.	Subject to overflow in places.	Medium to slow intake rate; medium available water capacity; hazard of flooding.	Nearly level; occasional hazard of flooding; not needed.	Nearly level; occasional hazard of flooding; not needed.
Moderate permeability above pan, moderately slow to slow in pan.	Poor resistance to piping and erosion; medium compressibility; fair slope stability.	High water table; slow or moderately slow permeability in fragipan; surface ditches needed in places.	High water table; medium intake rate; medium to high available water capacity; slow to moderately slow permeability in fragipan.	Nearly level; not needed.	Nearly level; not needed.
Moderate permeability.	Medium compressibility; fair to good resistance to piping and erosion.	Well drained; not needed.	Medium intake rate; medium to high available water capacity; hazard of water erosion.	Moderate hazard of erosion; easy to establish and maintain.	Vegetation easily established; hazard of erosion in steeper areas after construction.

TABLE 7.—*Engineering*

Soil series and map symbols	Suitability as a source of—				Soil features affecting engineering practices—	
	Topsoil	Sand [1]	Gravel [1]	Road fill	Highway location	Excavated ponds (runoff fed)
Saffell: SaB, SaC	Poor: more than 10 percent fragments coarser than very coarse sand.	Fair: excessive fines that need to be washed out.	Fair: excessive fines that need to be washed out.	Good	Slope is a limitation where more than 6 percent.	Rapid permeability in lower part of profile.
Sunsweet: SuB, SuC	Poor: shallow to clayey layer.	Poor: improbable source.	Poor: improbable source.	Fair: fair traffic-supporting capacity; moderate shrink-swell potential.	Fair traffic-supporting capacity; moderate shrink-swell potential; slope is a limitation where more than 6 percent.	Moderately slow permeability in lower part.
Tifton: TfA, TfB	Good to fair: clay loam and fine sandy loam texture.	Poor: improbable source.	Poor: improbable source.	Fair: fair traffic-supporting capacity.	Fair traffic-supporting capacity.	Moderate permeability.
Troup: TrB, TrC	Poor: coarse texture.	Fair: fair to a depth of about 4 feet; excessive fines that need to be washed out.	Poor: improbable source.	Fair to good: fair to good traffic-supporting capacity.	Low stability in upper 3½ to 6 feet.	Moderately rapid to rapid permeability in upper 3½ to 6 feet.
Wagram: WaB, WaC	Poor: coarse texture.	Fair: fair in upper 2 to 3 feet; excessive fines that need to be washed out.	Poor: improbable source.	Fair to good: fair to good traffic-supporting capacity.	Fair traffic-supporting capacity; slope is a limitation.	Moderately rapid permeability in upper part, moderate in lower part.
Weston: We	Poor: wetness	Fair to poor: fair to poor below depth of 3 feet; excessive fines that need to be washed out.	Fair to poor: fair to poor below depth of 3 feet; excessive fines that need to be washed out.	Poor: poorly drained.	Poorly drained	Moderately rapid permeability in lower part of profile; fluctuating water table.

[1] Estimates of suitability are based on studies of the upper 4 to 6 feet.
[2] Features that affect drainage are shown only for those soils that may need drainage for maximum use.

interpretations—Continued

Soil features affecting engineering practices—Continued					
Farm ponds		Agricultural drainage [2]	Irrigation	Terraces and diversions	Waterways
Reservoir area	Embankment				
Rapid permeability in lower part of profile.	Poor resistance to piping and erosion; fair slope stability; moderate permeability.	Well drained; not needed.	Moderately rapid intake rate; low to medium available water capacity; gravelly soil.	Moderate to severe hazard of erosion; difficult to establish and maintain.	Medium to low available water capacity; vegetation not easily established; moderate to severe hazard of erosion after construction.
No adverse features	Medium compressibility; fair to good resistance to piping and erosion.	Well drained; not needed.	Medium intake rate; medium to low available water capacity; hazard of water erosion; moderately slow permeability.	Moderate hazard of erosion; difficult to establish and maintain; clay layer near surface.	Clay layer near surface; medium to rapid surface runoff; vegetation not easily established.
Moderate permeability.	No adverse features	Well drained; not needed.	Medium to high available water capacity; hazard of water erosion; medium intake rate.	Moderate hazard of erosion; easy to establish and maintain.	Vegetation easily established.
Moderately rapid to rapid permeability in upper 3½ to 6 feet, moderate below.	Rapid permeability; fair to poor resistance to piping and erosion; fair slope stability.	Well drained; not needed.	Rapid intake rate; low available water capacity; rapid permeability in sandy layers, moderate in loamy layers.	Sandy; hazard of gullying if water is concentrated.	Hazard of gullying; low available water capacity; low or very low fertility in sandy layers.
Moderately rapid permeability in upper part, moderate in lower part.	Poor resistance to piping and erosion; fair slope stability.	Well drained; not needed.	Rapid intake rate; low avaliable water capacity in sandy layers.	Hazard of gullying if water is concentrated.	Hazard of gullying; low available water capacity.
Moderate to moderately rapid permeability in lower part of profile; permeable material at depth of 3 to 6 feet.	Poor resistance to piping and erosion; fair slope stability.	High water table; surface ponding in places; surface ditches needed in places.	Poorly drained; high water table; not suited.	Nearly level; not needed.	Nearly level; not needed.

[3] The composition of these mapping units is more variable than that of other units in the county, but it has been controlled well enough that reliable interpretations can be made for the expected use of the soils.

Estimated Engineering Properties

In table 6 the soil series and the symbol for each mapping unit in the county are listed, and estimates of properties significant in engineering are given. The estimates are for a representative soil and, in general, apply to the depths given in the table. They are based on available test data and on comparisons with similar soils in other counties. The depth to bedrock is not shown in the table, because it is more than 5 feet in most soils of the county.

Table 6 gives the depth to a seasonally high water table. This depth is based on field observation and examination. The table also lists, for the principal horizons of a representative profile, the USDA texture and the estimated AASHO and Unified classification of the soil material, the percentage of material passing sieves of various sizes, and some characteristics of soil material significant in engineering.

USDA texture was estimated on the basis of field examinations and some laboratory data. Because the soils in a given series may vary slightly in texture, in places soil texture is likely to be slightly different from that shown in table 6.

Permeability is the estimated rate that water moves downward through undisturbed soil material. The estimates in table 6 are based on a consideration of the soil structure, consistence, and porosity, and on field observations.

Available water capacity is 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 capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil.

Reaction is the estimated range in pH values that gives the intensity of the acidity or alkalinity of the soil. A pH value of 7.0 indicates a neutral soil, a lower pH value indicates acidity, and a higher value indicates alkalinity. The pH value in table 6 is estimated on the basis of field and laboratory tests.

The shrink-swell potential indicates the change in volume to be expected of the soil material with a change in moisture content. It is estimated primarily on the amount and types of clay a soil contains. In general, soils classified as A-7 and CH have a high shrink-swell potential. Clean sands and gravels and those soils that have a small amount of non-plastic to slightly plastic fines have a low shrink-swell potential, as does most other nonplastic to slightly plastic soil material.

Engineering Interpretations

Table 7 rates the soils in Escambia County according to their suitability as a source of topsoil, sand, gravel, and road fill. It also indicates soil features that affect the suitability of the soils for highway locations and for excavated ponds, farm ponds, agricultural drainage, irrigation, terraces and diversions, and waterways.

The ratings given for suitability as a source of topsoil indicate if the material is suitable for promoting the growth of plants. Except for poorly drained soils and soils that have a gravelly surface layer, most of the soils in the county are rated fair or good as a source of topsoil. In places the Cahaba, Flomaton, Lakeland, Saffell, and other soils are underlain by sand and gravel.

In rating the suitability of the soils as a source of road fill, the plastic, fine-textured soils that have a high content of silt and clay and are highly erodible were rated as poor. The moderately fine textured soils that have a medium amount of clay were rated as fair, and the medium-textured and coarse-textured soils that have a small amount of clay were rated as good.

Soil properties that most affect the location, design, and construction of highways are load-supporting capacity and stability of the subgrade, and the workability and quantity of cut and fill material available. The AASHO and Unified classifications of the soil material, and also the shrink-swell potential, indicate traffic-supporting capacity. Wetness and flooding affect stability of the material. Slope, depth to hard rock, content of stones and rock, and wetness affect ease of excavation and amount of cut and fill needed to reach an even grade.

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

The most limiting factor that affects agricultural drainage in the county is lack of suitable outlets.

Features affecting the suitability of the soils for irrigation are slope, depth of soil, available water capacity, presence of coarse fragments on the surface, infiltration, and permeability. Irrigation is not widely practiced within the county, even though many areas are well suited to irrigation.

Features affecting the suitability of the soils for terraces, diversions, and waterways are the thickness of the surface layer, a shallow root zone, depth of soil, steep slopes, slow infiltration and permeability, and a high hazard of erosion.

Some soils in the county, such as the Brewton, Irvington, and Robertsdale soils have a perched water table above the fragipan during part of the year. This can result in a decrease in the bearing capacity of the foundation soil below structures.

The soils on low terraces of streams, such as the Lenoir and Weston; the soils on first bottoms, such as the Bibb; and the soils on poorly drained uplands, such as the Plummer, are all adversely affected by a high water content, a perched water table, and the hazard of flooding. Such soils require extensive study and investigation if they are to be used for major construction purposes.

The well-drained, medium-textured soils on uplands generally are fair to good material for construction. If sound engineering procedures and good construction

practices are followed, no serious problems should arise in the use of these soils for engineering purposes.

Town and Country Planning

This section was prepared chiefly for planners, builders, landowners, and others interested in the use of the soils of Escambia County for town and country planning. The population of this county is increasing steadily, and many areas once used for farming are now used for other purposes, such as housing developments, schools, and parks and other recreational developments.

In selecting a site for a home, an industry, recreational use, or other purpose, the limitations of the soils at the site need to be determined. Some of the more common properties that affect the use of the soils for town and country planning are soil texture, reaction, and depth; shrink-swell potential; steepness of slope; permeability; depth to hard rock and to the water table; and hazard of flooding. On the basis of these and related characteristics, soil scientists and engineers rated the soils of Escambia County for specific purposes. The ratings and the nature of the soil limitations that influenced the ratings are shown in table 8.

The ratings used are slight, moderate, and severe, and they are applied as the soils occur naturally. If the rating is slight, the soils have properties favorable for the rated use. Limitations are so minor that they can be easily overcome. Good performance and low maintenance can be expected from these soils. A rating of moderate means the soils have properties moderately favorable for the rated use. Limitations can be overcome or modified with planning, design, or special maintenance. A rating of severe means the soils have one or more properties unfavorable for the rated use. Limitations are difficult and costly to modify or overcome, requiring major soil reclamation, special design, or intense maintenance.

In the paragraphs that follow, each specific use is defined and the important properties considered in rating the limitations of the soils for such use are given. The information can be used, along with table 8, with information in other parts of the survey, and with the soil map at the back of the survey, as a guide in planning the use of the soils for town and country planning. Before beginning most construction projects, however, an investigation needs to be made at the site being considered.

Streets and low-cost roads.—These are trafficways, exclusive of highways, that consist of the underlying local soil material, either cut or fill material, called the subgrade; the base material called the subbase; and the road surface. The important soil properties considered in rating the soils for this use are traffic-supporting capacity, shrink-swell potential, wetness, hazard of flooding, slope, depth to bedrock, stoniness, and rockiness.

Buildings for light industry.—These structures are used for stores, offices, and small industries. They are not more than three stories high. The important soil properties considered in rating the soils for this use are wetness, hazard of flooding, bearing capacity, shrink-swell potential, slope, depth to bedrock, stoniness, rockiness, and corrosivity on uncoated steel. Sewage disposal facilities are not considered in the rating.

Foundations for low buildings.—The ratings and limitations for foundations in table 8 are for homes that are no more than three stories high. The most important soil properties considered in rating the soils are bearing capacity, shrink-swell potential, wetness, hazard of flooding, slope, depth to hard rock, stoniness, and rockiness. The kind of sewage system is not a part of the evaluation for residences.

Septic tank filter fields.—Septic tank filter fields are subsurface tile systems that distribute effluent from a septic tank into the natural soil. The tile system is laid at least 18 inches deep. The most important soil properties considered in rating the soils for this use are permeability, depth to water table, percolation rate, depth to rock, hazard of flooding, and slope.

Sewage lagoons.—A sewage lagoon is a shallow pond that is constructed to hold sewage within a depth of 2 to 5 feet for the time required for the bacterial decomposition of solids. The lagoon consists of a nearly level floor and an embankment, or dike, that forms the sides of the pond. The most important soil properties considered in rating the soils for this use are permeability; depth to bedrock; slope; kind of reservoir site material (Unified grouping); content of coarse fragments less than 6 inches in diameter, by volume; percent of surface area covered by coarse fragments more than 6 inches in diameter; and organic-matter content.

Camp or picnic areas.—These are areas used intensively for tents, small camp trailers, park-type picnic areas, and the accompanying activities of outdoor living. Generally, little site preparation is required other than the shaping and leveling of areas to be used for tents and parking. These areas are subject to heavy foot traffic and limited vehicular traffic. The important soil properties considered in rating the soils for camp and picnic areas are wetness, hazard of flooding, permeability, slope, texture of surface soil, coarse fragments on the surface, stoniness, and rockiness.

Intensive play areas.—These are areas used intensively for play, such as for baseball, football, badminton, and other organized games. These areas are subject to intensive foot traffic. Soil properties that affect the use of the soils for playgrounds are wetness, hazard of flooding, permeability, slope, texture of surface soil, depth to bedrock, coarse fragments on the surface, stoniness, and rockiness.

Paths and trails.—These are local and cross-county footpaths and trails and bridle paths. The important soil properties considered in rating the soils for these uses are wetness, hazard of flooding, slope, texture of surface soil, coarse fragments on the surface, rockiness, and stoniness.

Sanitary landfills.—A sanitary landfill is an area used to dispose of household trash and garbage by burying it in the soil. The most important soil properties considered in the construction and operation of such a system are depth to hard rock, depth to seasonal high water table, slope, dominant texture of the soil profile, stoniness, and hazard of flooding.

TABLE 8.—*Limitations of the soils*

[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 referring to other series that appear

Soil series and map symbols	Streets and low-cost roads	Buildings for light industry [1]	Foundations for low buildings [1]	Septic tank filter fields
Atmore: At	Severe: wetness	Severe: wetness	Severe: wetness	Severe: high water table; moderately slow permeability in lower part of profile.
*Benndale:				
BeA	Slight to moderate: fair to good traffic-supporting capacity.	Moderate: fair bearing capacity.	Moderate: fair bearing capacity.	Slight
BeB	Slight to moderate: fair to good traffic-supporting capacity.	Moderate: fair bearing capacity.	Moderate: fair bearing capacity.	Slight
BeC	Slight to moderate: fair to good traffic-supporting capacity; slope.	Moderate: slope; fair bearing capacity.	Moderate: fair bearing capacity; slope.	Moderate: slope
BgD Ratings apply to all components.	Moderate: good to fair traffic-supporting capacity; slope.	Moderate where slopes are less than 8 percent: fair bearing capacity. Severe where slopes are more than 8 percent.	Moderate: fair bearing capacity; slope.	Moderate to severe: slope.
BgE For Orangeburg part, see Orangeburg series.	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Bibb: [3] Bh	Severe: hazard of flooding; wetness.	Severe: wetness; hazard of flooding.	Severe: wetness; subject to flooding.	Severe: high water table; hazard of flooding.
Brewton: Br	Moderate: wetness	Moderate to severe: wetness; fair bearing capacity.	Severe: wetness	Severe: high water table; moderate to slow permeability.
Bruno: Bu	Severe: hazard of flooding.	Severe: hazard of flooding.	Severe: hazard of flooding.	Severe [4]: hazard of flooding.
Cahaba: Ca	Slight	Moderate: fair bearing capacity.	Slight	Slight
*Chewacla: [3] Cn For Lenoir and Riverview parts, see Lenoir and Riverview series.	Severe: hazard of flooding.	Severe: hazard of flooding.	Severe: hazard of flooding.	Severe: hazard of flooding; high water table.
Coxville: Co	Severe: wetness	Severe: wetness	Severe: wetness	Severe: high water table; moderately slow permeability.
Craven: Cr	Severe: poor traffic-supporting capacity.	Moderate: fair bearing capacity; moderate shrink-swell potential.	Moderate: moderate shrink-swell potential; fair bearing capacity.	Severe: slow to very slow permeability.
Dorovan: Do	Severe: poor traffic-supporting capacity; hazard of flooding; wetness.	Severe: wetness; poor bearing capacity; hazard of flooding.	Severe: hazard of flooding; very high organic-matter content; very poorly drained; high water table above depth of 2 feet.	Severe: high water table; hazard of flooding; very slow permeability.

See footnotes at end of table.

for town and country planning

such mapping units may have different properties and limitations, and for this reason it is necessary to follow carefully the instructions for in the first column of this table]

Sewage lagoons	Camp or picnic areas	Intensive play areas	Paths and trails	Sanitary landfills [2]
Slight to moderate: moderate to moderately slow permeability.	Severe: wetness	Severe: wetness	Severe: wetness	Severe: high water table.
Moderate: moderate permeability; reservoir site material.	Slight	Slight	Slight	Slight.
Moderate: moderate permeability; slope; reservoir site material.	Slight	Moderate: slope	Slight	Slight.
Moderate: moderate permeability; slope; reservoir site material.	Slight	Severe: slope	Slight	Slight.
Severe: slope	Slight to moderate: slope.	Severe: slope	Slight	Moderate: slope.
Severe: slope	Severe: slope	Severe: slope	Moderate: slope	Severe: slope.
Moderate: moderate permeability; potential flood damage to embankment.	Severe: wetness; hazard of flooding.	Severe: wetness; hazard of flooding.	Severe: wetness; hazard of flooding.	Severe: high water table; hazard of flooding.
Moderate: reservoir site material.	Moderate: wetness; slow permeability.	Moderate: wetness; slow permeability.	Moderate: wetness	Severe: high water table.
Severe: moderately rapid permeability.	Severe: hazard of flooding.	Severe: hazard of flooding.	Moderate: hazard of flooding; loamy sand surface layer.	Severe: hazard of flooding.
Severe: rapid permeability in lower part of profile.	Slight	Slight	Slight	Moderate to severe: porous material at depth of 36 to 51 inches.
Moderate to severe: moderate permeability; hazard of flooding.	Severe: hazard of flooding; wetness.	Severe: hazard of flooding; wetness.	Moderate: hazard of flooding; wetness.	Severe: hazard of flooding.
Moderate: organic-matter content.	Severe: wetness	Severe: wetness	Severe: wetness	Severe: high water table.
Slight	Moderate to severe: slow to very slow permeability.	Moderate to severe: slow to very slow permeability.	Slight	Severe: high water table.
Severe: high organic-matter content; hazard of flooding in places.	Severe: wetness; hazard of flooding; highly organic surface layer.	Severe: wetness; hazard of flooding; highly organic surface layer.	Severe: very poorly drained; high water table; hazard of flooding; highly organic surface layer.	Severe: high water table; hazard of flooding; organic soil.

TABLE 8.—*Limitations of the soils*

Soil series and map symbols	Streets and low-cost roads	Buildings for light industry [1]	Foundations for low buildings [1]	Septic tank filter fields
Dothan:				
DtB	Slight to moderate: good to fair traffic-supporting capacity.	Moderate: fair bearing capacity.	Moderate: fair bearing capacity.	Severe: moderately slow permeability in lower profile.
DtC	Slight to moderate: good to fair traffic-supporting capacity; slope over 6 percent.	Moderate: slope; fair bearing capacity.	Moderate: fair bearing capacity.	Severe: moderately slow permeability in lower profile.
Escambia: Es	Moderate: fair traffic-supporting capacity; wetness.	Moderate: fair bearing capacity; wetness.	Moderate: fair bearing capacity; wetness.	Severe: moderately slow or slow permeability in lower part; high water table.
*Esto:				
EtB	Moderate: fair traffic-supporting capacity; moderate shrink-swell potential.	Moderate: fair bearing capacity; moderate shrink-swell potential.	Moderate: fair bearing capacity; moderate shrink-swell potential.	Severe: slow permeability.
EwD For Dothan and Wagram parts, see Dothan and Wagram series.	Moderate: slope; fair traffic-supporting capacity; moderate shrink-swell potential.	Moderate: fair bearing capacity; moderate shrink-swell potential; slope. Severe where slopes are more than 8 percent.	Moderate: fair bearing capacity; slope; moderate shrink-swell potential.	Moderate to severe: slope; moderate to slow permeability.
EwE For Dothan and Wagram parts, see Dothan and Wagram series.	Severe: slope	Severe: slope	Severe: slope	Severe: slope; moderate to slow permeability.
Flomaton:				
FlC	Slight to moderate: slope.	Slight to moderate: slope.	Slight to moderate: slope.	Slight to moderate: slope.[4]
FlD	Moderate to severe: slope.	Severe: slope	Moderate to severe: slope.	Severe: slope [4]
Freemanville:				
FrA	Moderate: fair traffic-supporting capacity.	Moderate: fair bearing capacity.	Moderate: fair bearing capacity.	Moderate to severe: moderate permeability in upper part, moderately slow in lower part.
FrB	Moderate: fair traffic-supporting capacity.	Moderate: fair bearing capacity.	Moderate: fair bearing capacity.	Moderate to severe: moderate permeability in upper part, moderately slow in lower part.
FrC	Moderate: fair traffic-supporting capacity; slope.	Moderate: fair bearing capacity; slope.	Moderate: fair bearing capacity; slope.	Moderate to severe: slope; moderate permeability in upper part, moderately slow in lower part.

See footnotes at end of table.

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Sewage lagoons	Camp or picnic areas	Intensive play areas	Paths and trails	Sanitary landfills [2]
Moderate: moderate to moderately slow permeability.	Slight	Moderate: slope	Slight	Moderate: high water table.
Moderate: slope; moderate to moderately slow permeability.	Slight	Severe: slope	Slight	Moderate: slope; high water table.
Moderate: moderate permeability above plinthite; reservoir site material.	Moderate: wetness; moderately slow or slow permeability.	Moderate: wetness; moderately slow to slow permeability.	Moderate: wetness	Severe: high water table.
Moderate: slope	Moderate: slow permeability.	Moderate: slope; slow permeability.	Slight	Severe: dominantly clay texture in soil profile.
Severe: slope	Slight to moderate: slope; moderate to slow permeability.	Severe: slope	Slight	Moderate to severe: dominantly clay texture in soil profile for some soils; slope.
Severe: slope	Moderate to severe: slope.	Severe: slope	Moderate: slope	Severe: slope.
Severe: rapid permeability	Moderate: gravelly loamy sand surface layer; fragments on surface.	Moderate to severe: slope; fragments on surface.	Moderate: gravelly loamy sand surface layer; fragments on surface.	Moderate: dominantly gravelly loamy sand texture in soil profile; slope.
Severe: rapid permeability; slope.	Moderate to severe: slope; gravelly loamy sand surface layer; fragments on surface.	Severe: slope	Moderate: gravelly loamy sand surface layer; fragments on surface.	Moderate to severe: slope.
Slight to moderate: moderate permeability in upper part, moderately slow in lower part.	Slight to moderate: moderate permeability in upper part, moderately slow in lower part.	Slight to moderate: moderate permeability in upper part, moderately slow in lower part.	Slight	Severe: dominantly clay texture in soil profile.
Slight to moderate: moderate permeability in upper part, moderately slow in lower part; slope.	Slight to moderate: moderate permeability in upper part, moderately slow in lower part.	Moderate: slope	Slight	Severe: dominantly clay texture in soil profile.
Moderate: moderate permeability in upper part, moderately slow in lower part; slope.	Slight to moderate: moderate permeability in upper part, moderately slow in lower part.	Severe: slope	Slight	Severe: dominantly clay texture in soil profile.

TABLE 8.—*Limitations of the soils*

Soil series and map symbols	Streets and low-cost roads	Buildings for light industry [1]	Foundations for low buildings [1]	Septic tank filter fields
Grady: Gr	Severe: wetness; hazard of flooding.	Severe: wetness; hazard of flooding.	Severe: wetness; hazard of ponding or flooding.	Severe: high water table; slow to very slow permeability; hazard of ponding or flooding.
Grasmere: Gt	Moderate to severe: hazard of flooding; poor to fair traffic-supporting capacity.	Severe: hazard of flooding.	Severe: hazard of flooding in places.	Severe: hazard of flooding.
Greenville:				
GvA	Moderate: fair traffic-supporting capacity.	Moderate: fair bearing capacity.	Moderate: fair bearing capacity.	Slight to moderate: moderate permeability.
GvB	Moderate: fair traffic-supporting capacity.	Moderate: fair bearing capacity.	Moderate: fair bearing capacity.	Slight to moderate: moderate permeability.
Irvington:				
IrA	Moderate: fair traffic-supporting capacity; wetness.	Moderate: fair bearing capacity; wetness.	Moderate: fair bearing capacity; wetness.	Severe: slow permeability in lower part; high water table.
IrB	Moderate: fair traffic-supporting capacity; wetness.	Moderate: fair bearing capacity; wetness.	Moderate: fair bearing capacity; wetness.	Severe: slow permeability in lower part; high water table.
Kalmia: Ka	Slight to moderate: fair to good traffic-supporting capacity.	Moderate: fair bearing capacity.	Moderate: fair bearing capacity.	Slight
Lakeland: La	Slight	Slight to moderate: good to fair bearing capacity.	Slight to moderate: good to fair bearing capacity.	Slight [4]: rapid permeability.
Lenoir: Le	Severe: poor traffic-supporting capacity.	Severe: wetness; poor traffic-supporting capacity.	Severe: wetness	Severe: high water table; slow permeability.
Lucy:				
LuB	Slight to moderate: fair to good traffic-supporting capacity.	Moderate: fair bearing capacity.	Moderate: fair bearing capacity.	Slight
LuC	Moderate: slope; fair to good traffic-supporting capacity.	Moderate: fair bearing capacity; slope.	Moderate: fair bearing capacity; slope.	Moderate: slope
Malbis:				
MaA	Moderate: fair traffic-supporting capacity.	Moderate: fair bearing capacity.	Moderate: fair bearing capacity.	Moderate: moderate permeability.
MaB	Moderate: fair traffic-supporting capacity.	Moderate: fair bearing capacity.	Moderate: fair bearing capacity.	Moderate: moderate permeability.

See footnotes at end of table.

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Sewage lagoons	Camp or picnic areas	Intensive play areas	Paths and trails	Sanitary landfills [2]
Moderate: organic-matter content.	Severe: wetness; hazard of flooding; slow to very slow permeability.	Severe: wetness; hazard of flooding; slow to very slow permeability.	Severe: wetness; hazard of flooding.	Severe: high water table; hazard of flooding.
Moderate: moderate permeability.	Severe: hazard of flooding; silty clay surface layer.	Severe: silty clay surface texture; hazard of flooding.	Severe: silty clay surface layer.	Severe: hazard of flooding.
Moderate: moderate permeability.	Slight	Slight	Slight	Moderate to severe: dominantly sandy clay or clay texture in soil profile.
Moderate: moderate permeability; slope.	Slight	Moderate: slope	Slight	Moderate to severe: dominantly sandy clay or clay texture in soil profile.
Slight to moderate: moderate permeability in upper part, slow in lower part.	Slight to moderate: moderate permeability in upper part, slow in lower part.	Slight	Slight	Severe: high water table.
Moderate: slope; moderate permeability in upper part, slow in lower part.	Slight to moderate: moderate permeability in upper part, slow in lower part.	Moderate: slope	Slight	Severe: high water table.
Moderate to severe: moderate permeability in upper part, rapid in lower part.	Slight	Slight	Slight	Moderate to severe: porous material at depth of 32 to 67 inches.
Severe [4]: rapid permeability	Moderate: sand surface layer.	Severe: sand surface layer.	Severe: sand surface layer.	Severe: [4] dominantly sand or fine sand texture in soil profile.
Slight	Moderate: wetness; slow permeability.	Moderate: wetness; slow permeability.	Moderate: wetness	Severe: high water table.
Moderate to severe: rapid permeability in upper part; slope.	Moderate: loamy sand surface layer.	Moderate: loamy sand surface layer; slope.	Moderate: loamy sand surface layer.	Moderate: dominantly loamy sand texture in upper soil profile.
Severe: rapid permeability in upper part; slope.	Moderate: loamy sand surface layer.	Severe: slope	Moderate: loamy sand surface layer.	Moderate: slope; dominantly loamy sand texture in upper soil profile.
Moderate: moderate permeability.	Slight	Slight	Slight	Moderate: high water table.
Moderate: moderate permeability; slope.	Slight	Moderate: slope	Slight	Moderate: high water table.

TABLE 8.—*Limitations of the soils*

Soil series and map symbols	Streets and low-cost roads	Buildings for light industry [1]	Foundations for low buildings [1]	Septic tank filter fields
*Orangeburg:				
OrA	Slight to moderate: good to fair traffic-supporting capacity.	Moderate: fair bearing capacity.	Moderate: fair bearing capacity.	Slight
OrB	Slight to moderate: good to fair traffic-supporting capacity.	Moderate: fair bearing capacity.	Moderate: fair bearing capacity.	Slight
OrC	Moderate: slope	Moderate: fair bearing capacity; slope.	Moderate: fair bearing capacity; slope.	Moderate: slope
OvC2 For Greenville and Malbis parts, see Greenville and Malbis series.	Moderate: good to fair traffic-supporting capacity; slope.	Moderate: fair bearing capacity. Severe where slopes are more than 8 percent.	Moderate: fair bearing capacity; slope.	Moderate: moderate permeability. Severe where slopes are 10 percent.
Plummer:				
PlB	Severe: wetness	Severe: wetness	Severe: wetness	Severe: high water table; seepy areas.
PlC	Severe: wetness	Severe: wetness	Severe: wetness	Severe: high water table; seepy areas.
Poarch:				
PoA	Moderate: fair traffic-supporting capacity.	Moderate: fair bearing capacity.	Moderate: fair bearing capacity.	Moderate: moderate permeability.
PoB	Moderate: fair traffic-supporting capacity.	Moderate: fair bearing capacity.	Moderate: fair bearing capacity.	Moderate: moderate permeability.
PoC	Moderate: fair traffic-supporting capacity; slope.	Moderate: fair bearing capacity; slope.	Moderate: fair bearing capacity; slope.	Moderate: slope; moderate permeability.
Ponzer: Pr	Severe: poor traffic-supporting capacity; hazard of flooding; wetness.	Severe: wetness; hazard of flooding.	Severe: hazard of flooding; wetness; poor bearing capacity.	Severe: high water table; hazard of flooding; very slow permeability.
Red Bay: Rb	Slight to moderate: fair to good traffic-supporting capacity.	Moderate: fair bearing capacity.	Moderate: fair bearing capacity.	Slight
*Riverview: Re For Lenoir part, see Lenoir series.	Moderate to severe: fair traffic-supporting capacity; hazard of flooding in places.	Severe: hazard of flooding.	Severe: hazard of flooding.	Moderate to severe: hazard of flooding.
Robertsdale: Ro	Moderate: fair traffic-supporting capacity; wetness.	Moderate: fair bearing capacity.	Severe: wetness	Severe: high water table; moderate to slow permeability.

See footnotes at end of table.

for town and country planning—Continued

Sewage lagoons	Camp or picnic areas	Intensive play areas	Paths and trails	Sanitary landfills [2]
Moderate: moderate permeability; reservoir site material.	Slight	Slight	Slight	Slight.
Moderate: moderate permeability; reservoir site material; slope.	Slight	Moderate: slope	Slight	Slight.
Moderate: moderate permeability; reservoir site material; slope.	Slight	Severe: slope	Slight	Slight.
Moderate: moderate permeability. Severe where slopes are more than 7 percent.	Slight to moderate: slope; sandy clay loam surface layer in more severely eroded areas.	Moderate where slopes are less than 6 percent. Severe where slopes are more than 6 percent.	Slight to moderate: sandy clay loam surface layer in more severely eroded areas.	Slight to severe: high water table in some places; slope.
Moderate: moderate to rapid permeability; slope; reservoir site material.	Severe: wetness	Severe: wetness	Severe: wetness	Severe: high water table.
Severe: slope	Severe: wetness	Severe: wetness	Severe: wetness	Severe: high water table.
Moderate: reservoir site material; moderate permeability.	Slight	Slight	Slight	Severe: high water table.
Moderate: reservoir site material; slope; moderate permeability.	Slight	Moderate: slope	Slight	Severe: high water table.
Moderate: reservoir site material; moderate permeability; slope.	Slight	Severe: slope	Slight	Severe: high water table.
Severe: high organic-matter content; hazard of flooding.	Severe: wetness; hazard of flooding; organic soil.	Severe: wetness; hazard of flooding; organic soil.	Severe: high water table; hazard of flooding; very poorly drained; organic soil.	Severe: high water table; organic soil.
Severe: moderately rapid permeability.	Slight	Slight	Slight	Slight.
Moderate: moderate permeability in upper 3 feet. Severe: rapid permeability below depth of 3 feet; hazard of flooding.	Moderate to severe: hazard of flooding.	Moderate: hazard of flooding	Slight	Severe: hazard of flooding.
Slight to moderate: moderate to slow permeability.	Moderate: wetness; moderate to slow permeability.	Moderate: wetness; moderate to slow permeability.	Moderate: wetness	Severe: high water table.

TABLE 8.—*Limitations of the soils*

Soil series and map symbols	Streets and low-cost roads	Buildings for light industry [1]	Foundations for low buildings [1]	Septic tank filter fields
Ruston:				
RuA	Moderate: fair traffic-supporting capacity.	Moderate: fair bearing capacity.	Moderate: fair bearing capacity.	Slight
RuB	Moderate: fair traffic-supporting capacity.	Moderate: fair bearing capacity.	Moderate: fair bearing capacity.	Slight
RuC	Moderate: fair traffic-supporting capacity; slope.	Moderate: fair bearing capacity; slope.	Moderate: fair bearing capacity; slope.	Moderate: slope
Saffell:				
SaB	Slight	Slight	Slight	Slight
SaC	Moderate: slope	Moderate to severe: slope.	Moderate: slope	Moderate to severe: slope.
Sunsweet:				
SuB	Moderate: fair traffic-supporting capacity; moderate shrink-swell potential.	Slight to moderate: fair to good bearing capacity; moderate shrink-swell potential.	Moderate: moderate shrink-swell potential.	Severe: moderately slow permeability.
SuC	Moderate: fair traffic-supporting capacity; moderate shrink-swell potential; slope.	Moderate to severe: slope.	Moderate: slope; moderate shrink-swell potential.	Severe: moderately slow permeability; slope more than 10 percent.
Tifton:				
TfA	Moderate: fair traffic-supporting capacity.	Moderate: fair bearing capacity.	Slight to moderate: good to fair bearing capacity.	Moderate: moderate permeability.
TfB	Moderate: fair traffic-supporting capacity.	Moderate: fair bearing capacity.	Slight to moderate: good to fair bearing capacity.	Moderate: moderate permeability.
Troup:				
TrB	Slight	Slight	Slight: fair bearing capacity.	Slight [4]
TrC	Moderate: slope	Moderate: slope	Moderate: slope	Moderate: [4] slope
Wagram:				
WaB	Slight to moderate: fair to good traffic-supporting capacity.	Moderate: fair bearing capacity.	Moderate: fair bearing capacity.	Slight
WaC	Moderate: slope; fair to good traffic-supporting capacity.	Moderate: fair bearing capacity; slope.	Moderate: fair bearing capacity; slope.	Moderate: slope
Weston: We	Severe: wetness	Severe: wetness	Severe: wetness	Severe: high water table.

[1] Engineers and others should not apply specific values to estimates given for bearing capacity of soils.

[2] Onsite deep studies of the underlying strata, water tables, and hazard of aquifer pollution should be made for land fills deeper than 5 feet.

for town and country planning—Continued

Sewage lagoons	Camp or picnic areas	Intensive play areas	Paths and trails	Sanitary landfills [2]
Moderate: moderate permeability.	Slight	Slight	Slight	Slight.
Moderate: moderate permeability; slope.	Slight	Moderate: slope	Slight	Slight.
Moderate: slope; moderate permeability	Slight	Severe: slope	Slight	Slight.
Moderate to severe: moderate to rapid permeability; reservoir site material; slope.	Slight to moderate: fragments on surface.	Moderate to severe: fragments on surface.	Slight to moderate: fragments on surface.	Moderate: porous material in lower part of profile.
Severe: moderate to rapid permeability; slope.	Moderate: slope; fragments on surface.	Severe: slope	Slight to moderate: fragments on surface.	Moderate: porous material in lower part of profile; slope more than 8 percent.
Moderate: slope	Moderate: moderately slow permeability.	Moderate: slope; moderately slow permeability.	Slight	Severe: dominantly clay texture in soil profile.
Severe: slope	Moderate: slope; moderately slow permeability.	Severe: slope	Slight	Severe: dominantly clay texture in soil profile.
Moderate: moderate permeability.	Slight	Slight	Slight	Moderate: high water table.
Moderate: moderate permeability; slope.	Slight	Moderate: slope	Slight	Moderate: high water table.
Severe: moderately rapid or rapid permeability.	Moderate: fine sand surface layer.	Severe: fine sand surface layer.	Severe: fine sand surface layer.	Slight.
Severe: moderately rapid or rapid permeability.	Moderate: fine sand surface layer.	Severe: fine sand surface layer; slope.	Severe: fine sand surface layer.	Slight.
Moderate: moderately rapid permeability in upper part, moderate in lower part; slope.	Moderate: loamy sand surface layer.	Moderate: loamy sand surface layer.	Moderate: loamy sand surface layer.	Slight.
Moderate: slope; moderately rapid permeability in upper part, moderate in lower part.	Moderate: loamy sand surface layer.	Moderate to severe: loamy sand surface layer; slope.	Moderate: loamy sand surface layer.	Slight.
Moderate: moderate permeability; reservoir site material.	Severe: wetness	Severe: wetness	Severe: wetness	Severe: high water table.

[3] The composition of these mapping units is more variable than that of the other units in the county, but is has been controlled well enough that reliable interpretations can be made for the expected use of the soils.

[4] Contamination of ground water supply is possible.

Formation and Classification of the Soils

This section discusses briefly the five principal factors that affect soil formation. It also gives the classification of the soils under the system currently used by the National Cooperative Soil Survey and classifies the soil series in Escambia County according to that system.

Factors of Soil Formation

Soil is a natural body having properties that have resulted from the effects of climate and vegetation acting on parent material that has been modified by relief over a period of time. It is produced by soil-forming processes acting on material deposited or accumulated by geologic agencies. The characteristics of the soil at any given point of formation are determined by (1) the physical and mineralogical composition of the parent material; (2) the climate under which the soil material has accumulated and existed since accumulation; (3) the plant and animal life on and in the soil; (4) the relief, or lay of the land; and (5) the length of time the forces of soil formation have acted on the soil material.

Climate and plant and animal life, chiefly plants, are active factors of soil formation. They act on the parent material that has accumulated through the weathering of rocks and slowly change it to a natural body that has genetically related horizons. The effects of climate and plant and animal life are modified by relief. The kind of parent material also affects the kind of soil profile that is formed. Finally, time is needed for changing the parent material into a soil profile. It may be considerable or very little, but some time is always required for development of soil horizons. Generally, a long time is required for the development of distinct horizons. Many of the processes of soil development are unknown.

Parent material

Parent material is an unconsolidated mass of material in which a soil forms. The parent material in which most of the soils in Escambia County formed consists of marine sediments and those sediments transported and deposited by streams that eventually flow into the Gulf of Mexico.

The soils on uplands formed in place from these marine sediments. Such soils as Benndale, Greenville, Malbis, Orangeburg, and Troup soils are examples of those that formed in place. The soils that formed in material transported by water are along most of the larger streams in the county. They are on first bottoms and terraces of streams. Those on first bottoms are Bibb, Bruno, Chewacla, and Riverview soils. Those on terraces of streams are Cahaba, Craven, Kalmia, Lenoir, and Weston soils.

The geologic formations exposed in Escambia County (*1*) include deposits of Tertiary and Quaternary ages. Formations of Tertiary age exposed in Escambia County are the Miocene, Oligocene, and Pliocene Series. The Oligocene Series crops out in scattered areas in the extreme northeastern part of the county. The Byrarm Formation or Glendon limestone crops out near the McGowin bridge in the northeastern part of the county. The Miocene Series, undifferentiated, crops out extensively in the eastern and central parts of Escambia County. These areas are characterized by rolling to hilly topography. This series also is exposed in the western part of the county along the Little and Big Escambia Creeks. The Pliocene Series, last of the Tertiary age material exposed in Escambia County, includes only the Citronelle Formation. It is exposed primarily in the western part of the county. It is characterized by typically flat to gently rolling topography. It consists primarily of sand, clay, and gravel derived from the erosion of older sediments of the Coastal Plain. The sand is locally crossbedded and generally consists of fine-grained to very coarse grained, rounded and subangular quartz. The sand is white to gray in the unweathered state and ranges up to red, depending on the degree of weathering. The Citronelle Formation caps part of the Miocene Series in the south-central part of the county.

The deposits of Quaternary age include the terrace deposits of the Pliestocene Series and the river alluvium of the Recent Series. The soil series of the Recent Series are weakly developed and are still receiving new soil material after each flood. The soils of the Pliestocene and Tertiary Series, on the other hand, are well developed because they have been in place longer. They have been subjected to the effects of plant and animal life, climate, and relief for a longer period of time, and this has promoted soil formation.

Climate

Climate is an important factor in the formation of soils in Escambia County through its influence on vegetation, micro-organisms, and the physical condition of the soil material.

The climate is temperate, bordering on subtropical. It is warm and humid. Rainfall averages about 61 inches a year. Summers are fairly long and hot. Winters are fairly short and mild, and only a few days each year have a temperature that stays below freezing. The ground rarely freezes to a depth of more than a few inches. Because there are no extreme variations in the climate of Escambia County, climate causes very few differences in the soils.

Because of the high amount of rainfall each year and the warm, mild temperatures, chemical reactions in the soils go on at a rapid rate. These conditions are also favorable for the rapid breakdown or decomposition of organic matter. Most of the soluble bases and plant nutrients are leached out of the rooting zone by the large amount of rainfall. Many of the less soluble, finer particles are also moved downward into the B horizon, resulting in a moderately coarse textured surface soil. The major part of the soil material is quartz and does not weather even in this warm, moist climate. Many of the finer clay particles are kaolinite or gibbsite materials and have gone through the weathering cycle. These materials, along with others of similar type, have accumulated in the subsoil of most of the soils in this county. As a result, most of the soils have a definite clay increase in the subsoil. These materials were moved and are still being moved primarily by water.

The warm, moist climate was the primary reason for the aforementioned actions within the soils. As a result

of these actions, most of the soils are low in natural fertility and in organic-matter content; they are leached, acid in reaction, and strongly weathered; and many of them are sandy.

Plant and animal life

Trees, grasses, rodents, earthworms, micro-organisms, and other forms of plant and animal life are important factors in the processes of soil formation. The effects of climate and relief acting on parent material throughout a period of time affect the degree to which plant and animal life contribute to soil formation. If the effects are favorable, plants and animals can grow.

As a result of root penetration into the soil, water and air can move into the soil more rapidly. This improves soil structure and contributes to more chemical reactions. The roots also help in recycling needed plant nutrients. Bases are returned to the surface rather than being lost into the ground water by leaching if there are sufficient amounts of roots to take them up as they pass through the soil in the soil solution. The sandier soils in Escambia County, such as Lakeland, Lucy, and Troup soils, generally have sparse vegetation in wooded areas, and leaching has removed all but trace amounts of soluble bases from these soils. Grasses reduce leaching more than certain trees and recycle calcium more efficiently than trees.

The animal life in the soil generally is confined to the surface layer. Earthworms and rodents continuously mix the soil. This helps water infiltration, which in turn helps chemical weathering. The micro-organisms, such as fungi and bacteria are important in the formation of soils. They help the weathering of the parent material, which affects the amount of minerals in the soil. They also help in the breakdown of organic matter, returning organic acids and inorganic acids as well as plant nutrients into the soil. These are then used by the plants, or they are leached out of the soil.

Relief

The relief of Escambia County ranges from level or nearly level to moderately steep. Elevations range from about 65 feet above sea level near Pollard to about 345 feet above sea level near Huxford. Much of the nearly level and gently sloping relief is in the western one-third of the county and along the bottoms and terraces of streams. The relief in the eastern two-thirds of the county is mainly gently sloping or sloping. Some of the ridgetops in this area are nearly level. The relief is moderately steep on slopes adjacent to streams throughout the county.

Relief affects the formation of soils through its influence on drainage, plant cover, runoff, and erosion. In flat areas, water is removed slowly, and in some areas, it stands for long periods. In these areas, soil formation is affected by excess wetness. On the other hand, where the relief is nearly level to gently sloping, water moves off and through the soil. This enhances the growth of plants and chemical weathering of the parent material, both of which are necessary for soil formation. The degree of soil formation that takes place within a given time from a particular parent material under the same vegetation depends largely on the amount of water moving through the soil. This depends primarily on the relief. Soils formed under these conditions are Dothan, Malbis, Ruston, and Wagram soils.

As relief increases in steepness, the velocity of runoff increases and less water enters the soil for plant growth and chemical weathering. This results in an increased amount of erosion and slower soil formation. Where slopes are steep, erosion proceeds at about the same rate as that of soil formation. The soils having these slopes generally are weakly developed. These soils have less available water for plants, and the vegetative cover, therefore, is more sparse than that on more nearly level soils.

Time

Time is an important factor in soil formation, but the effect of time depends largely on the other soil-forming factors, which are parent material, plant and animal life, climate, and relief. Soil development is stronger in areas where these factors have been active for a long period than in areas where they have been active for a short period. Based on this, the relative age of a soil can be determined by observing and studying the degree of horizon development. In determining the degree of development, the type of parent material needs to be established and the effect of the other soil-forming processes considered.

Geologically, most of the soils in Escambia County are fairly young, but if soil development is considered, some of the soils may be fairly old. Soils of the Troup series are among those that would be considered old from the standpoint of soil development. Geologically, the youngest soils are the alluvial soils along the streams. These soils, such as the Bibb and Bruno soils, have a weakly developed profile. They generally receive and accumulate new sediment each time they are flooded.

The soils that are next to the youngest in the county are those on terraces along the Conecuh River and the larger creeks in the county. These soils formed in alluvium along streams and are no longer flooded. Many of them such as the Cahaba, Craven, and Kalmia soils, show a fairly strong degree of soil development. Others, such as the Coxville and Weston soils, have weakly developed horizons that were affected to some degree by drainage or the type of parent material in their formation.

The oldest soils are on uplands. These soils formed in marine sediment. They have undergone a considerable degree of weathering and show horizon development that is fairly strong. In general, these older or mature soils have reached an equilibrium with their environment. It is doubtful, however, if most soils ever reach an absolute equilibrium with their environment.

Classification of the Soils

Two systems of classifying soils have been used in the United States in recent years. The older system was adopted in 1938 (*3*). The system currently used (*9*) was adopted for general use by the National Cooperative Soil Survey in 1965. The current system is under continual study. Therefore, readers interested in developments of the current system should search the available

literature. (*6*). The soil series represented in Escambia County are placed in some of the higher categories of the current classification system in table 9.

In the current classification system, the criteria used as a basis for classification are soil properties that are observable and measurable. The properties are chosen, however, so that the soils of similar genesis or mode of origin are grouped together. The current system consists of six broad categories. Beginning with the broadest, these categories are order, suborder, great group, subgroup, family, and series. The classes of the current system are briefly defined in the following paragraphs.

ORDER.—Ten soil orders are recognized. They are Entisols, Vertisols, Inceptisols, Aridisols, Mollisols, Spodosols, Alfisols, Ultisols, Oxisols, and Histosols. The properties used to differentiate these soil orders are those that tend to give broad climatic groupings of soils. The exceptions to this, the Entisols, Histosols, and Inceptisols, occur in many different kinds of climate. Table 9 shows the four soil orders in Escambia County: Entisols, Inceptisols, Ultisols, and Histosols.

Entisols are light-colored soils that do not have natural genetic horizons or that have only very weakly expressed beginnings of such horizons.

Inceptisols are mineral soils that have weakly developed horizons. The materials in the soil have been altered or removed but have not accumulated. They are usually on young land surfaces.

Ultisols are mineral soils that have distinct horizons and are commonly on old land surfaces. They contain a clay-enriched B horizon that has low base saturation. The base saturation decreases with depth.

Histosols are wet, organic (peat and muck) soils. This soil order includes soils in which the decomposition of plant residue ranges from highly decomposed to not decomposed. Histosols generally are more than 50 percent organic matter in the upper 32 inches.

SUBORDER.—Each order has been subdivided into suborders that are primarily based on the characteristics that seem to produce classes having the greatest genetic similarity. Suborders narrow the broad climatic range permitted in the orders. The soil properties used to separate suborders are mainly those that reflect the presence or absence of waterlogging or soil differences that resulted from the effects of climate or vegetation.

GREAT GROUP.—Suborders are separated into great groups on the basis of uniformity in the kinds and sequence of major soil horizons and features. The hori-

TABLE 9.—*Classification of soil series by higher categories*

Series	Family	Subgroup	Order
Atmore	Coarse-loamy, siliceous, thermic	Plinthic Paleaquults	Ultisols.
Benndale	Coarse-loamy, siliceous, thermic	Typic Paleudults	Ultisols.
Bibb	Coarse-loamy, siliceous, acid, thermic	Typic Fluvaquents	Entisols.
Brewton	Coarse-loamy, siliceous, thermic	Fragiaquic Paleudults	Ultisols.
Bruno	Sandy, mixed, thermic	Typic Udifluvents	Entisols.
Cahaba	Fine-loamy, siliceous, thermic	Typic Hapludults	Ultisols.
Chewacla	Fine-loamy mixed, thermic	Fluvaquentic Dystrochrepts	Inceptisols.
Coxville	Clayey, kaolinitic, thermic	Typic Paleaquults	Ultisols.
Craven [1]	Clayey, mixed, thermic	Aquic Hapludults	Ultisols.
Dorovan	Dysic, thermic	Typic Medisaprists	Histosols.
Dothan	Fine-loamy, siliceous, thermic	Plinthic Paleudults	Ultisols.
Escambia	Coarse-loamy, siliceous, thermic	Plinthaquic Paleudults	Ultisols.
Esto	Clayey, kaolinitic, thermic	Typic Paleudults	Ultisols.
Flomaton	Sandy-skeletal, siliceous, thermic	Psammentic Paleudults	Ultisols.
Freemanville	Clayey, kaolinitic, thermic	Plinthic Paleudults	Ultisols.
Grady	Clayey, kaolinitic, thermic	Typic Paleaquults	Ultisols.
Grasmere	Clayey, mixed, thermic	Cumulic Haplumbrepts	Inceptisols.
Greenville	Clayey, kaolinitic, thermic	Rhodic Paleudults	Ultisols.
Irvington	Fine-loamy, siliceous, thermic	Plinthic Fragiudults	Ultisols.
Kalmia	Fine-loamy, siliceous, thermic	Typic Hapludults	Ultisols.
Lakeland	Siliceous, thermic, coated	Typic Quartzipsamments	Entisols.
Lenoir	Clayey, mixed, thermic	Aeric Paleaquults	Ultisols.
Lucy	Loamy, siliceous, thermic	Arenic Paleudults	Ultisols.
Malbis	Fine-loamy, siliceous, thermic	Plinthic Paleudults	Ultisols.
Orangeburg	Fine-loamy, siliceous, thermic	Typic Paleudults	Ultisols.
Plummer	Loamy, siliceous, thermic	Grossarenic Paleaquults	Ultisols.
Poarch	Coarse-loamy, siliceous, thermic	Plinthic Paleudults	Ultisols.
Ponzer	Loamy, mixed, dysic, thermic	Terric Medisaprists	Histolsols.
Red Bay	Fine-loamy, siliceous, thermic	Rhodic Paleudults	Ultisols.
Riverview	Fine-loamy, mixed, thermic	Fluventic Dystrochrepts	Inceptisols.
Robertsdale	Fine-loamy, siliceous, thermic	Plinthaquic Fragiudults	Ultisols.
Ruston	Fine-loamy, siliceous, thermic	Typic Paleudults	Ultisols.
Saffell	Loamy-skeletal, siliceous, thermic	Typic Hapludults	Ultisols.
Sunsweet	Clayey, kaolinitic, thermic	Plinthic Paleudults	Ultisols.
Tifton	Fine-loamy, siliceous, thermic	Plinthic Paleudults	Ultisols.
Troup	Loamy, siliceous, thermic	Grossarenic Paleudults	Ultisols.
Wagram	Loamy, siliceous, thermic	Arenic Paleudults	Ultisols.
Weston	Coarse-loamy, siliceous, thermic	Typic Ochraquults	Ultisols.

[1] In this county, soils of the Craven series having a Bt horizon that is redder than 5YR are considered taxadjuncts to the Craven series because they are outside the defined range of the series.

zons used to make separations are those in which clay, iron, or humus has accumulated or those that contain a pan that interferes with the growth of roots or movement of water. Among the features used are the self-mulching properties of clays, soil temperature, and major differences in chemical composition (mainly calcium, sodium, and potassium). The great group is not shown separately in table 9, because it is the last word in the name of the subgroup.

SUBGROUP.—Great groups are subdivided into subgroups. One represents the central, or typic, segment of the group. Other subgroups, called intergrades, have properties of the group and also one or more properties of another great group, suborder, or order. Subgroups may also be made in those instances where soil properties intergrade outside of the range of any other group, suborder, or order. The names of subgroups are derived by placing one or more adjectives before the name of the great group.

FAMILY.—Families are separated within a subgroup primarily on the basis of properties important to the growth of plants or behavior of soils when used for engineering. Among the properties considered are texture, mineralogy, reaction, soil temperature, permeability, thickness of horizons, and consistence.

SERIES.—The series consists of a group of soils that formed in a particular kind of parent material and that have genetic 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, structure, reaction, consistence, and mineralogical and chemical composition.

New soil series need to be established and concepts of some established series, especially older ones that have been used little in recent years, need to be revised in the course of the soil survey program across the country. A proposed new series has tentative status until review of the series concept at the State, regional, and National levels of responsibility for classification results in a judgment that the new series needs to be established. Most of the soil series decribed in this publication were established earlier, but the Atmore, Benndale, Brewton, Dorovan, Escambia, Flomaton, Freemanville, Poarch, and Riverview soil series have been established in Escambia County.

General Nature of the County

This section was prepared primarily for those not very familiar with Escambia County. Physiography and drainage, farming, water and natural resources, climate, and other general information about the county are briefly discussed.

Physiography and Drainage

Escambia County is entirely in the Coastal Plain Province in the southeastern part of the United States. The Coastal Plain is a broad belt consisting primarily of unconsolidated sands, silts, and clays that were deposited in the sea before the shoreline of the United States reached its present position.

Most of the county is drained by streams that flow in a southerly direction and eventually empty into the Gulf of Mexico. The largest stream, the Conecuh River, enters the county in the northeastern part, flows southwesterly, and enters Florida near Pollard. Murder and Burnt Corn Creeks and their tributaries form the drainage system of the east-central part of the county north of the Conecuh River. Big and Little Escambia Creeks and their tributaries form the drainage system for the west-central part of the county. The southwestern part of the county is drained by Perdido and Brushy Creeks. All of these streams flow in a southerly direction. The northwestern part of the county is drained by Little River that flows in a westerly direction into the Alabama River in north Baldwin County.

The topography of the county is generally nearly level to sloping. Most of the county east of Big Escambia Creek is gently sloping or sloping and has well-defined drainage systems. The area west of Big Escambia Creek is nearly level to gently sloping and has a few well-defined drainage systems. This part of the county is characterized by a number of small, rounded or elongated depressions. Locally, these are called Grady or Cypress ponds. Many hold water all year. This area west of Big Escambia Creek is intensively farmed.

Farming

Escambia County was formed in December 1868 from parts of Baldwin and Conecuh Counties (*5*). Lumbering and turpentining became the dominant industries in the county and remained so for many years. The economy of the county now depends on farming and wood products. The main crops grown are soybeans, corn, cotton, wheat, oats, Irish potatoes, and a few truck crops, such as sweet corn, cucumbers, string beans, and tomatoes. The 1964 Census of Agriculture lists soybeans, corn, and cotton as the most extensively grown crops. It lists 20,029 acres of soybeans harvested for beans, compared to 9,920 acres in 1959; 12,513 acres of corn harvested for grain, compared to 18,056 acres in 1959; and 8,019 acres of cotton and 9,181 bales harvested, compared to 7,977 acres in 1959 and 6,282 bales harvested. The total acreage considered cropland is approximately 89,000 acres, or about 11 percent of the county.

Livestock raised in the county consists primarily of beef cattle and hogs. There are a number of feedlot operations where steers are fed out to a marketable weight. The number of dairies is less than 10 and is decreasing. Pastures used for feeding livestock consist mainly of bahiagrass, Coastal bermudagrass, and fescuegrass. Many of the hogs are grown out by "hogging off" corn or by feeding them out. Coastal bermudagrass is the main grass cut for hay (fig. 12).

Woodland covers about 78 percent of the county. About 359,000 acres is in stands of loblolly, longleaf, and slash pines, and 125,000 acres is in bottom-land hardwoods. About 362,000 acres of this has been certified in the Tree Farm System. Lumber, pulpwood, and poles and pilings are the major wood products. A small part is used for veneer, and a few individuals are in the naval stores business.

About one-half of the woodland is owned by six large timber companies, about 29,000 acres is in the Conecuh National Forest, and the rest is owned by private individuals.

Water and Natural Resources

Water is one of the greatest resources in the county. The Conecuh River, Little River, Burnt Corn Creek, Murder Creek, and Big and Little Escambia Creeks are the major streams in the county. Ground water is plentiful throughout the county. Most of the domestic, industrial, and municipal water supplies are obtained from wells. Most of the domestic wells tap sand and gravel beds at depths generally less than 100 feet. These water-bearing beds generally furnish adequate amounts of water for private use. The wells for industrial and municipal use generally are more than 100 feet deep.

Many artesian wells are in the eastern two-thirds of the county (*4*). The artesian wells range in depth from 65 to about 940 feet. Measured flow ranges from 0.4 to 205 gallons per minute in the Brewton area. These artesian wells generally tap two or more aquifers. Most of these wells are in lowland areas adjacent to the Conecuh River and its larger tributaries.

Mineral resources of the county include oil, sand, gravel, and limestone. Oil was discovered in the south-central part of the county near Pollard in 1952. This oil field is known as the Pollard Oilfield. The wells are about 6,000 feet deep. Sand and gravel deposits are along most of the large tributaries to the Conecuh River. These deposits have been mined most extensively along Big Escambia Creek north of Flomaton. The quality of the sand and gravel is good. Limestone crops out in the northeastern part of the county.

Climate [6]

Escambia County, located within 50 to 75 miles of the Gulf of Mexico, has a temperate climate that borders on subtropical. Rainfall is abundant and generally well distributed throughout the year. There is a wide range in temperature extremes. Except for summer, day-to-day weather is controlled largely by the flow of pressure systems and air masses across the nation. In summer, relatively few changes in air masses occur and maritime tropical air persists for long periods.

Weather in spring is very changeable. Wintry weather persists in March, and most days are cold, windy, and rainy. Late in April and in May, the days generally are sunny, warm, and pleasant. Locally, heavy thunderstorms and tornadoes are most likely to occur in spring. The range in temperature is wide. Freezing temperatures extend well into March, and then daytime readings reach the 90's in May. March and April are the wettest months of the year, and flooding of streams is more likely to occur in these months. Table 10 gives temperature and precipitation data obtained from records kept at Brewton. Table 11 gives the probabilities of the last low temperatures in spring and the first low temperatures in fall.

[6] By C. C. Wooden, climatologist for Alabama, National Weather Service, U.S. Department of Commerce.

Figure 12.—Coastal bermudagrass cut for hay. The soil is Orangeburg fine sandy loam, 2 to 5 percent slopes.

Summer is quite long. Hot weather begins in May and generally continues through September. Breaks in the hot weather are few in midsummer, and only the frequency of thundershowers distinguishes one day from another. Thundershowers provide most of the rainfall in summer and are likely to affect some part of the county on half of the days. Measureable rain can be expected at any one location on the average of a little more than a third of the days. July is the most dependable of the summer months for rain. Maximum temperatures of 90° F. or more occur almost daily throughout the summer. On an average, 100 days a year have a maximum temperature of 90° or more, and 3 out of 4 years have at least 1 day with a temperature of 100° or more. Humidity is highest in summer, averaging about 90 percent at daybreak and about 55 percent in the early afternoon.

Fall is a season of transition in which temperatures as high as 100° occur late in September and as low as 15° in November. In October, the hot, humid weather of summer gradually gives way to the dry, mild, and sunny days of autumn. Prewinter cold spells begin late in October and in November, and frost is likely. Rainfall generally is light during this season, except for the occasional influence of Gulf disturbances and tropical storms. Droughts are more likely during this season.

Winter is characterized by frequent shifts between mild air that has been warmed and moistened by travel over the Gulf of Mexico and dry, cold air that has travelled south from Canada. The interaction between the contrasting air masses results in considerable cloudiness and precipitation. Snow is a rarity, and measurable rainfall occurs on an average of less than 1 day in 3. About 45 days in the year have temperatures of 32° or less, and the minimum has been as low as 6° in December and January. Severe cold is infrequent, and only one winter in three is likely to have a temperature of less than 15°. Even on the coldest day, it is rare for the temperature to remain below 32° throughout the day.

TABLE 10.—*Temperature and precipitation data*

[All data from Brewton]

Month	Temperature				Precipitation				
	Average daily maximum	Average daily minimum	Two years in 10 will have at least 4 days with—		Average total	One year in 10 will have—		Number of days with 0.01 inch or more	Average snowfall
			Maximum temperature equal to or higher than—	Minimum temperature equal to or lower than—		Less than—	More than—		
	°F.	°F.	°F.	°F.	Inches	Inches	Inches		Inches
January	64	38	79	20	4.6	1.7	8.1	9	(1)
February	67	40	80	21	5.2	1.8	9.8	9	0.2
March	73	45	84	28	6.1	1.4	11.6	9	(1)
April	81	52	90	36	5.8	1.5	10.5	7	0
May	87	59	95	44	4.4	.8	9.2	7	0
June	91	65	99	57	5.2	1.5	8.8	10	0
July	92	68	98	65	7.2	2.3	12.6	13	0
August	92	68	99	61	5.4	1.7	8.1	11	0
September	88	63	96	52	5.1	1.7	11.0	8	0
October	80	51	90	32	2.9	.1	7.9	5	0
November	71	42	84	25	4.4	.7	9.2	6	0
December	64	38	79	20	5.0	1.9	7.9	9	0
Year	79	52	[2] 100	[3] 15	61.3	46.6	76.9	103	.2

[1] Trace. [2] Average annual highest temperature. [3] Average annual lowest temperature.

TABLE 11.—*Probabilities of last low temperatures in spring and first in fall*

[All data based on records at Brewton]

Probability	Dates for given probability and temperature						
	16° F. or less	20° F. or less	24° F. or less	28° F. or less	32° F. or less	36° F. or less	40° F. or less
Spring:							
1 year in 10 later than	January 15	February 7	March 8	March 23	April 14	April 21	May 3
1 year in 4 later than	January 15	February 2	February 22	March 15	April 9	April 17	April 22
1 year in 3 later than	January 14	January 31	February 16	March 10	April 7	April 15	April 21
2 years in 3 later than	January 7	January 17	January 29	February 22	March 22	March 31	April 12
3 years in 4 later than	January 6	January 16	January 27	February 20	March 20	March 30	April 9
9 years in 10 later than	January 4	January 11	January 17	February 9	March 12	March 22	March 31
Fall:							
1 year in 10 earlier than		December 3	November 18	November 1	October 21	October 12	October 8
1 year in 4 earlier than		December 10	November 29	November 8	October 28	October 18	October 14
1 year in 3 earlier than		December 12	December 1	November 9	October 29	October 22	October 15
2 years in 3 earlier than		December 20	December 7	November 16	November 9	November 2	October 26
3 years in 4 earlier than		December 23	December 8	November 18	November 10	November 7	October 28
9 years in 10 earlier than		December 24	December 19	December 1	November 17	November 11	November 2

Precipitation generally is well distributed throughout the year, but wet periods and droughts of varying intensity are not unknown. Generally, about 80 days each year have 0.10 inch or more of rain, and about 37 days have 0.50 inch or more. Dry periods of 2 to 3 weeks occur one or more times each year, but severe droughts resulting in crop failure are infrequent. Since the drought of 1931, the only severe and prolonged drought occurred in 1954.

Wind data are not available for Escambia County, but generally northwesterly winds prevail in winter and southerly winds in summer. Average velocities are higher in March than in other months, but sustained winds of 25 miles per hour or more are infrequent.

Escambia County has about 2,800 hours of sunshine each year, or 65 percent of the possible amount.

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Glossary

Alluvium. Soil material, such as sand, silt, or clay, that has been deposited on land by streams.

Aquifer. A porous soil or geological formation that yields ground water to wells and springs.

Available water capacity (formerly termed 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 capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil.

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 clay on the surface of a soil aggregate. Synonyms: clay coat, clay skin.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrations of compounds, or of soil grains cemented together. The composition of some concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are examples of material commonly found in concretions.

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

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

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

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

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

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

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

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

Cemented.—Hard and brittle; little affected by moistening.

Drainage class (natural). Refers to the conditions of frequency and duration of periods of saturation or partial saturation that existed during the development of the soil, 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 different classes of natural soil drainage are recognized.

Excessively drained soils are commonly very porous and rapidly permeable and have a low water-holding capacity.

Somewhat excessively drained soils are also very permeable and are free from mottling throughout their profile.

Well-drained soils are nearly free from mottling and are commonly of intermediate texture.

Moderately well drained soils commonly have a slowly permeable layer in or immediately beneath the solum. They have uniform color in the A and upper B horizons and have mottling in the lower B and the C horizons.

Somewhat poorly drained soils are wet for significant periods but not all the time, and some soils commonly have mottling at a depth below 6 to 16 inches.

Poorly drained soils are wet for long periods and are light gray and generally mottled from the surface downward, although mottling may be absent or nearly so in some soils.

Very poorly drained soils are wet nearly all the time. They have a dark-gray or black surface layer and are gray or light gray, with or without mottling, in the deeper parts of the profile.

Erosion. The wearing away of the land surface by wind (sandblast), running water, and other geological agents.

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

Fragipan. A loamy, brittle, subsurface horizon that is very low in organic-matter content and clay but is rich in silt or very fine sand. The layer is seemingly cemented. When dry, it is hard or very hard and has a high bulk density in comparison with the horizon or horizons above it. When moist, the fragipan tends to rupture suddenly if pressure is applied, rather than to deform slowly. The layer is generally mottled, is slowly or

very slowly permeable to water, and has few or many bleached fracture planes that form polygons. Fragipans are a few inches to several feet thick; they generally occur below the B horizon, 15 to 40 inches below the surface.

Gleyed soil. A soil in which waterlogging and lack of oxygen have caused the material in one or more horizons to be neutral gray in color. The term "gleyed" is applied to soil horizons with yellow and gray mottling caused by intermittent waterlogging.

Horizon, soil. A layer of soil, approximately parallel to the surface, that has distinct characteristics produced by soil-forming processes. These are the major horizons:

O horizon.—The layer of organic matter on the surface of a mineral soil. This layer consists of decaying plant residues.

A horizon.—The mineral horizon at the surface or just below an O horizon. This horizon is the one in which living organisms are most active and therefore is marked by the accumulation of humus. The horizon may have lost one or more of soluble salts, clay, and sesquioxides (iron and aluminum oxides).

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 some combination of these; (2) by prismatic or blocky structure; (3) by redder or stronger colors than the A horizon; or (4) by some combination of these. Combined A and B horizons are usually called the solum, or true soil. If a soil lacks a B horizon, the A horizon alone is the solum.

C horizon.—The weathered rock material immediately beneath the solum. In most soils this material is presumed to be like that from which the overlying horizons were formed. If the material is known to be different from that in the solum, a Roman numeral precedes the letter C.

R layer.—Consolidated rock beneath the soil. The rock usually underlies a C horizon but may be immediately beneath an A or B horizon.

Infiltration. The downward entry of water into the immediate surface of the soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Landscape. All the characteristics that distinguish an area and give it a pattern that contrasts with the pattern of other areas. Any one kind of soil is said to have a characteristic natural landscape.

Lamellae, soil. Thin layers, generally in the subsoil, of finer textured material than the surrounding soil. The layers generally are parallel and range from ¼ inch to about 1 foot apart.

Leached soil. A soil in which most of the soluble materials have been removed from the entire profile or have been removed from one part of the profile and accumulated in another part.

Marine deposits. Material deposited in the water of oceans and seas and exposed by geological uplift of the land or lowering of the water level.

Pan. A layer in a soil that is firmly compacted or is very rich in clay. Frequently the word "pan" is combined with other words that more explicitly indicate the nature of the layers; for example, hardpan, traffic pan.

Parent material. Disintegrated and partly weathered rock from which soil has formed.

Ped. An individual natural soil aggregate, such as a crumb, a prism, or a block, in contrast to a clod.

Permeability. The quality that enables the soil to transmit water or air. Terms used to describe permeability are as follows: *very slow, slow, moderately slow, moderate, moderately rapid, rapid,* and *very rapid.*

Plinthite. The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents that commonly shows as red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to hardpan or to irregular aggregates upon repeated wetting and drying, or it is the hardened relicts of the soft, red mottles. It is a form of laterite.

Profile, soil. A vertical section of the soil through all its horizons and extending 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 precisely neutral in reaction because it is neither acid nor alkaline. An acid, or "sour," soil is one that gives an acid reaction; an alkaline soil is one that is alkaline in reaction. In words, the degrees of acidity or alkalinity are expressed thus:

	pH		*pH*
Extremely acid	Below 4.5	Mildly alkaline	7.4 to 7.8
Very strongly acid	4.5 to 5.0	Moderately alkaline	7.9 to 8.4
Strongly acid	5.1 to 5.5	Strongly alkaline	8.5 to 9.0
Medium acid	5.6 to 6.0	Very strongly alkaline	9.1 and higher
Slightly acid	6.1 to 6.5		
Neutral	6.6 to 7.3		

Relief. The elevations or inequalities of a land surface, considered collectively.

Sand. Individual rock or mineral fragments in a soil that range in diameter from 0.05 to 2.0 millimeters. Most sand grains consist of quartz, but they may be of any mineral composition. The textural class name of any soil that contains 85 percent or more sand and not more than 10 percent clay.

Silt. Individual mineral particles in a soil that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). Soil of the silt textural class is 80 percent or more silt and less than 12 percent clay.

Soil. A natural, three-dimensional body on the earth's surface that supports plants and that 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 parent material, in which the processes of soil formation are active. The solum in mature soil includes 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 characteristic of the soil are largely confined to the solum.

Structure, soil. The arrangement of primary soil particles into compound particles or clusters that are separated from adjoining aggregates and have properties unlike those of an equal mass of unaggregated primary soil particles. 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 together without any regular cleavage, as in many claypans and hardpans).

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Substratum. Technically, the part of the soil below the solum.

Surface soil. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, about 5 to 8 inches in thickness. The plowed layer.

Terrace (geological). An old alluvial plain, ordinarily flat or undulating, bordering a river, lake, or the sea. Stream terraces are frequently called second bottoms, as contrasted to flood plains, and are seldom subject to overflow. Marine terraces were deposited by the sea and are generally wide.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay.* The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Tilth, soil. The condition of the soil in relation to the growth of plants, especially soil structure. Good tilth refers to the friable state and is associated with high noncapillary porosity and stable, granular structure. A soil in poor tilth is nonfriable, hard, nonaggregated, and difficult to till.

Topsoil. A presumed fertile soil or soil material, or one that responds to fertilization, ordinarily rich in organic matter, used to topdress roadbanks, lawns, and gardens.

Understory. A layer of foliage in a forest below the level of the main canopy; also, the vegetation forming such a layer.

Upland (geologic). Land consisting of material unworked by water in recent geologic time and lying, in general, at a higher elevation than the alluvial plain or stream terrace. Land above the lowland along rivers.

Water table. The highest part of the soil or underlying rock material that is wholly saturated with water. In some places an upper, or perched, water table may be separated from a lower one by a dry zone.

For a full description of a mapping unit, read both the description of the mapping unit and that of the soil wildlife group, read the introduction to the section it is in for general information about its management.

Acreage and extent, table 1, p. 8.
Predicted yields, table 2, p. 49.
Woodland, table 3, p. 52.

Map symbol	Mapping unit	Described on page	Capability unit		Woodland suitability group	
			Symbol	Page	Symbol	Page
At	Atmore silt loam, 0 to 3 percent slopes	9	IVw-11	48	3w9	54
BeA	Benndale fine sandy loam, 0 to 2 percent slopes	10	I-13	44	2o1	53
BeB	Benndale fine sandy loam, 2 to 5 percent slopes	10	IIe-13	45	2o1	53
BeC	Benndale fine sandy loam, 5 to 8 percent slopes	10	IIIe-13	47	2o1	53
BgD	Benndale-Orangeburg complex, sloping	10	VIe-11	49	2o1	53
BgE	Benndale-Orangeburg complex, moderately steep	10	VIIe-11	49	2o1	53
Bh	Bibb soils	11	Vw-12	48	2w9	54
Br	Brewton fine sandy loam	12	IIIw-12	47	2w8	53
Bu	Bruno loamy sand	13	IIIs-11	47	3s2	55
Ca	Cahaba fine sandy loam	13	I-12	44	2o7	53
Cn	Chewacla-Lenoir-Riverview association	14	IIIw-12	47	2w8	53
Co	Coxville fine sandy loam	15	IVw-11	48	2w9	54
Cr	Craven fine sandy loam	16	IIw-12	46	2w8	53
Do	Dorovan muck	16	VIIw-11	49	4w9	55
DtB	Dothan fine sandy loam, 2 to 5 percent slopes	17	IIe-12	45	2o1	53
DtC	Dothan fine sandy loam, 5 to 8 percent slopes	17	IIIe-12	46	2o1	53
Es	Escambia fine sandy loam, 0 to 3 percent slopes	19	IIw-17	46	2w8	53
EtB	Esto fine sandy loam, 2 to 5 percent slopes	19	IIIe-19	47	3o1	54
EwD	Esto-Dothan-Wagram complex, sloping	20	VIe-11	49	3o1	54
EwE	Esto-Dothan-Wagram complex, moderately steep	20	VIIe-11	49	3o1	54
FlC	Flomaton gravelly loamy sand, 2 to 10 percent slopes	21	IVs-11	48	4f2	55
FlD	Flomaton gravelly loamy sand, 10 to 17 percent slopes	21	VIIe-11	49	4f2	55
FrA	Freemanville fine sandy loam, 0 to 2 percent slopes	22	I-11	44	3o1	54
FrB	Freemanville fine sandy loam, 2 to 5 percent slopes	22	IIe-11	45	3o1	54
FrC	Freemanville fine sandy loam, 5 to 8 percent slopes	22	IIIe-11	46	3o1	54
Gr	Grady loam	23	Vw-13	48	2w9	54
Gt	Grasmere silty clay	23	IIw-11	45	1o7	52
GvA	Greenville fine sandy loam, 0 to 2 percent slopes	24	I-11	44	3o1	54
GvB	Greenville fine sandy loam, 2 to 5 percent slopes	24	IIe-11	45	3o1	54
IrA	Irvington fine sandy loam, 0 to 2 percent slopes	25	IIw-16	46	2o7	53
IrB	Irvington fine sandy loam, 2 to 5 percent slopes	25	IIe-16	45	2o7	53
Ka	Kalmia fine sandy loam	26	I-12	44	2o7	53
La	Lakeland sand	26	IIIs-11	47	4s3	55

series to which the mapping unit belongs. In referring to a capability unit, woodland suitability group, or Other information is given in tables as follows:

Wildlife, table 4, p. 56.
Use of the soils in engineering, tables 5, 6, and 7, pp. 60 through 77.
Town and country planning, table 8, p. 80.

Map symbol	Mapping unit	Described on page	Capability unit		Woodland suitability group	
			Symbol	Page	Symbol	Page
Le	Lenoir fine sandy loam	27	IIIw-12	47	2w8	53
LuB	Lucy loamy sand, 0 to 5 percent slopes	28	IIs-12	46	3s2	55
LuC	Lucy loamy sand, 5 to 8 percent slopes	28	IIIs-17	48	3s2	55
MaA	Malbis fine sandy loam, 0 to 2 percent slopes	29	I-12	44	2o1	53
MaB	Malbis fine sandy loam, 2 to 5 percent slopes	29	IIe-12	45	2o1	53
OrA	Orangeburg fine sandy loam, 0 to 2 percent slopes	30	I-12	44	2o1	53
OrB	Orangeburg fine sandy loam, 2 to 5 percent slopes	30	IIe-12	45	2o1	53
OrC	Orangeburg fine sandy loam, 5 to 8 percent slopes	30	IIIe-12	46	2o1	53
OvC2	Orangeburg-Greenville-Malbis complex, 3 to 12 percent slopes, eroded	31	VIe-11	49	2o1	53
PlB	Plummer loamy sand, 0 to 5 percent slopes	32	Vw-11	48	2w3	53
PlC	Plummer loamy sand, 5 to 12 percent slopes	32	Vw-11	48	2w3	53
PoA	Poarch fine sandy loam, 0 to 2 percent slopes	33	I-13	44	2o1	53
PoB	Poarch fine sandy loam, 2 to 5 percent slopes	33	IIe-13	45	2o1	53
PoC	Poarch fine sandy loam, 5 to 8 percent slopes	33	IIIe-13	47	2o1	53
Pr	Ponzer muck	34	VIIw-11	49	4w9	55
Rb	Red Bay fine sandy loam, 0 to 2 percent slopes	34	I-12	44	2o1	53
Re	Riverview-Lenoir complex	35	IIIw-12	47	1o7	52
Ro	Robertsdale fine sandy loam, 0 to 2 percent slopes	36	IIIw-12	47	2w8	53
RuA	Ruston very fine sandy loam, 0 to 2 percent slopes	36	I-12	44	2o1	53
RuB	Ruston very fine sandy loam, 2 to 5 percent slopes	37	IIe-12	45	2o1	53
RuC	Ruston very fine sandy loam, 5 to 8 percent slopes	37	IIIe-12	46	2o1	53
SaB	Saffell gravelly fine sandy loam, 2 to 5 percent slopes	38	IIIe-12	46	4f2	55
SaC	Saffell gravelly fine sandy loam, 5 to 12 percent slopes	38	IVe-12	48	4f2	55
SuB	Sunsweet fine sandy loam, 2 to 5 percent slopes	38	IVe-19	48	3c2	55
SuC	Sunsweet fine sandy loam, 5 to 12 percent slopes	39	VIe-11	49	3c2	55
TfA	Tifton fine sandy loam, 0 to 2 percent slopes	39	I-12	44	2o1	53
TfB	Tifton fine sandy loam, 2 to 5 percent slopes	40	IIe-12	45	2o1	53
TrB	Troup fine sand, 0 to 5 percent slopes	40	IIIs-11	47	3s2	55
TrC	Troup fine sand, 5 to 8 percent slopes	41	IVs-11	48	3s2	55
WaB	Wagram loamy sand, 0 to 5 percent slopes	41	IIs-12	46	3s2	55
WaC	Wagram loamy sand, 5 to 8 percent slopes	41	IIIs-17	48	3s2	55
We	Weston fine sandy loam	42	IVw-11	48	2w9	54

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