SOIL SURVEY OF

Jefferson Davis County, Mississippi

United States Department of Agriculture
Soil Conservation Service
In cooperation with
Mississippi Agricultural and Forestry
Experiment Station

This is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and agencies of the States, usually the Agricultural Experiment Stations. In some surveys, other Federal and local agencies also contribute. The Soil Conservation Service has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in the period 1965–71. Soil names and descriptions were approved in 1972. Unless otherwise indicated, statements in the publication refer to conditions in the county in 1971. This survey was made cooperatively by the Soil Conservation Service and the Mississippi Agricultural and Forestry Experiment Station. It is part of the technical assistance furnished to the Jefferson Davis County Soil and Water Conservation District.

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 Jefferson Davis 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.

Jefferson Davis County adjoins Covington County. The Covington County Soil Survey was published in 1961. The soils of Jefferson Davis County do not always join those in Covington County because of changes in series concept, the advent of soil taxonomy, and improved mapping techniques.

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 woodland group in which the soil has been placed.

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

Foresters and others can refer to the section "Use of Soils for Woodland," where the soils of the county are grouped according to their suitability for trees and forage production. The names of many of the plants that grow on each forage site are listed.

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

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

Engineers and builders can find, under "Engineering Uses of Soils," 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 Jefferson Davis 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: Cattle grazing a bahiagrass pasture on Ruston sandy loam, 2 to 5 percent slopes. Pond in background furnishes water for livestock, fishing, and recreation. Trees in background are on Ruston sandy loam, 8 to 12 percent slopes.

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UNITED STATES DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE, IN COOPERATION WITH THE MISSISSIPPI AGRICULTURAL AND FORESTRY EXPERIMENT STATION

JEFFERSON DAVIS COUNTY is in the south-central part of Mississippi (fig. 1). It has a land area of 264,960 acres, or 414 square miles. The center of the county is 130 miles northeast of Baton Rouge, Louisiana; 55 miles south of Jackson, Mississippi; 145 miles southwest of Mississippi State University; 50 miles west of Hattiesburg, Mississippi; and 90 miles southwest of Meridian, Mississippi.

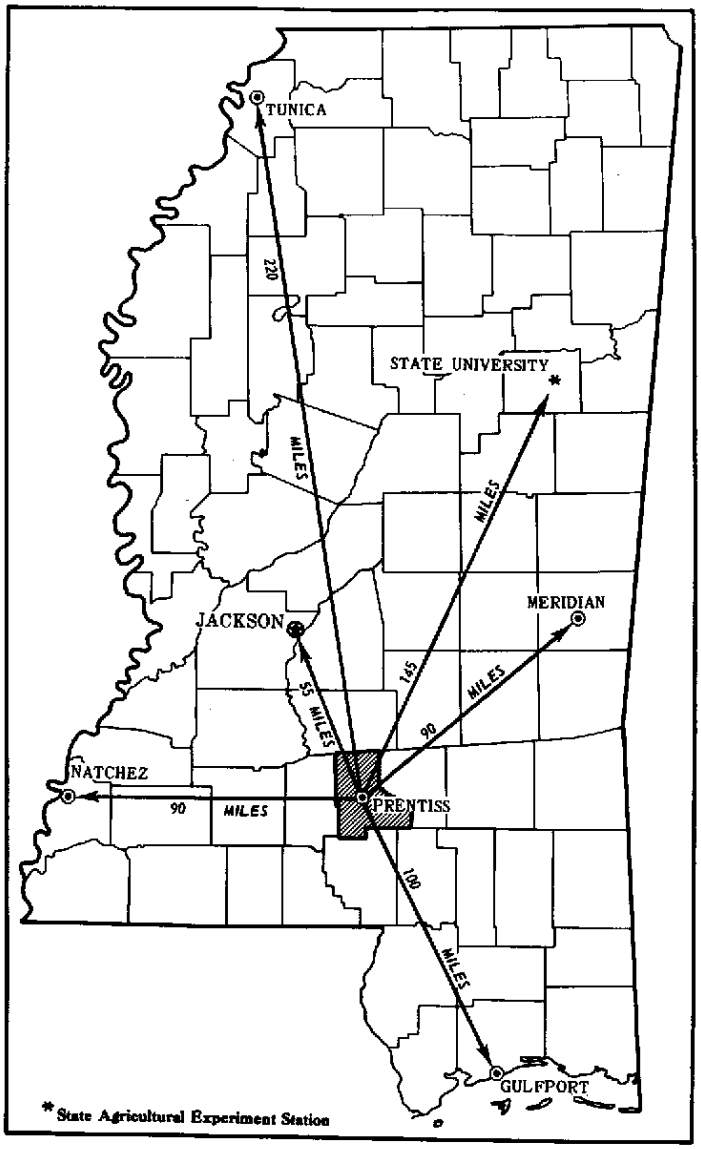

Figure 1.—**Location of Jefferson Davis County in Mississippi.**

From north to south the county is 30 miles long, and from east to west it is 12 miles wide in the southern part and 14 miles wide in the northern part. The county is bordered on the north by Simpson County; on the east by Covington County; on the south by Marion and Lamar Counties, and on the west by Lawrence County, Mississippi.

Beef cattle, field crops, and forest products are the chief sources of farm income in Jefferson Davis County, and dairying is a secondary source. Industry and oil produce a large amount of income. Garment factories and wood-using plants are the largest industrial installations in the county. Many industrial workers are also part-time farmers.

How This Survey Was Made

Soil scientists made this survey to learn what kinds of soil are in Jefferson Davis 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. Ora and Ruston, 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 differ-

ences, a soil series is divided into phases. The name of a soil phase indicates a feature that affects management. For example, Ora sandy loam, 2 to 5 percent slopes, is one of several phases within the Ora 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 Jefferson Davis 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. Smithdale-Udorthents complex, 5 to 25 percent slopes, severely eroded, 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. Cadeville-Freestone association, hilly, 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. If there are two or more dominant series represented in the group, the name of the group ordinarily consists of the names of the dominant soils, joined by "and." Ruston and Bassfield soils, low terrace, 0 to 2 percent slopes, is an example.

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 kind 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 kind of soil. Yields under defined management are estimated for all suitable 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 to its 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 Jefferson Davis 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.

The seven soil associations in Jefferson Davis County are discussed in the following pages. The terms for texture used in the title for each of the associations apply to the texture of the surface layer. For example, in the title for association 1, the word "loamy" refers to the texture of the surface layer.

1. Kirkville-Bibb-Mantachie Association

Nearly level, moderately well drained to poorly drained loamy soils on flood plains

This association consists of loamy alluvial soils on wide to narrow flood plains along the major streams throughout the county. It makes up about 10 percent of the county.

About 22 percent of this association is Kirkville soils, 21 percent is Bibb soils, 20 percent is Mantachie soils, and 37 percent of this association consists of Bassfield, Jena, Nugent, Prentiss, Ruston and Stough soils, and Trebloc soils, thick surface variant.

Kirkville soils are moderately well drained. They have a dark-brown and brown silt loam surface layer 12 inches thick. Below the surface layer is mottled pale-brown and light brownish-gray sandy loam about 5 inches thick. The next layer is mottled brown, yellow, red, and gray loam that extends to a depth of 48 inches. It is underlain by mottled gray and brown sandy loam that extends to a depth of 80 inches.

The poorly drained Bibb soils have a dark grayish-brown silt loam surface layer about 5 inches thick. The surface layer is underlain by about 5 inches of light-gray silt loam mottled brown. The next layer is 8 inches of light brownish-gray loam that is mottled brown. Underlying this layer is gray loam or sandy loam mottled in shades of yellowish brown and light olive brown. It extends to a depth of 70 inches. These layers become grayer with depth.

Mantachie soils are somewhat poorly drained and have a dark-brown silt loam surface layer about 4 inches thick. The surface layer is underlain by about 4 inches of dark-brown loam that is mottled grayish brown. The next layer is about 22 inches of grayish-brown loam mottled brown and yellowish brown. Below this layer is about 22 inches of light brownish-gray loam or sandy loam that is mottled yellowish brown and brownish yellow. The next layer is sandy loam mottled in shades of gray, brown, and yellow. It extends to a depth of about 80 inches.

Most of this association is still in hardwoods and pines. Some acreage, however, is in pasture, and a few areas are in row crops. Farms average about 100 acres in size, but several farms are 500 acres or more. Operators of the farms on this association derive most of their income from farming.

These soils are suited to general farming and pastures. Hardwoods and pines are well suited to these soils. Frequent flooding prevents the use of some areas of this association for crops and pasture. The wetness and flooding severely limit these soils for buildings and nonfarm uses. The large wooded areas are suited to woodland wildlife.

2. Jena-Kirkville-Mantachie Association

Nearly level, dominantly well drained loamy soils on flood plains

This association consists of loamy alluvial soils on narrow flood plains. It is along Dry Creek, Hooker Hollow Creek, and a small, unnamed creek near Terrell. It makes up about 7 percent of the county.

About 65 percent of this association is Jena soils, 10 percent is Kirkville soils, 6 percent is Mantachie soils, and 19 percent of this association consists of Bassfield, Bibb, Darco, Nugent, and Ruston soils.

The well-drained Jena soils have a brown sandy loam surface layer about 9 inches thick. Below the surface layer is dark yellowish-brown loam 9 inches thick. The next layer is dark-brown or strong-brown sandy loam, 47 inches thick, that has reddish-yellow mottles in the lower part. Underlying this is a layer of mixed very pale brown and strong-brown loamy sand that extends to a depth of 80 inches.

The moderately well drained Kirkville soils have a dark-brown and brown silt loam surface layer about 12 inches thick. Below the surface layer is pale-brown and light brownish-gray sandy loam about 5 inches thick. The next layer is mottled brown, yellow, red, and gray loam that extends to a depth of 48 inches. Underlying this is sandy loam that extends to a depth of 80 inches and that is mottled in shades of gray and brown.

The somewhat poorly drained Mantachie soils have a dark-brown silt loam surface layer about 4 inches thick. The surface layer is underlain by about 4 inches of dark-brown loam that has grayish-brown mottles. The next layer is about 22 inches of grayish-brown loam that has brown and yellowish-brown mottles. Below this is about 22 inches of light brownish-gray loam or sandy loam that has yellowish-brown mottles. The next layer is sandy loam mottled in shades of gray, brown, and yellow. It extends to a depth of about 80 inches.

Most of this association is in pasture or row crops. A few areas are in stands of hardwoods and loblolly pines. The farms average less than 100 acres, but a few farms are more than 500 acres. Operators of these farms derive most of their income from farming.

These soils are suited to general farming and pasture. Most cultivated crops are suited to these soils, and hardwoods and pine trees are well suited. A few areas are suited mostly to trees because of the frequency of overflow. The wetness and flooding severely limit these soils for general buildings and nonfarm uses. The wooded areas are suited to woodland wildlife.

3. Ruston-Ora-Smithdale Association

Dominantly gently sloping to steep, well drained and moderately well drained loamy soils; some have a fragipan; on uplands

This association consists of loamy soils mostly on broad ridges and strongly sloping to steeply sloping side slopes. It is mainly in the western section of the county and on a broad ridge on a divide between Carson and Bassfield. It makes up about 32 percent of the county.

About 50 percent of this association is Ruston soils, 20 percent is Ora soils, 16 percent is Smithdale soils, and 14 percent of this association consists of Paden, Providence, Saffell, and Savannah soils.

Ruston soils are well drained. They have a dark grayish-brown sandy loam surface layer about 6 inches thick. Below the surface layer is yellowish-red sandy loam about 3 inches thick. The next layer is red sandy clay loam 18 inches thick. Below this is a layer of yellowish-red sandy loam, 28 inches thick, that has reddish-brown mottles in the lower part. It is underlain by red sandy clay loam that extends to a depth of 80 inches.

The moderately well drained Ora soils have a dark-brown sandy loam surface layer about 6 inches thick. The surface layer is underlain by 20 inches of yellowish-red loam. The next layer is a brittle and compact sandy loam or sandy clay loam mottled in shades of brown and red that extends to a depth of 64 inches. Underlying this is a layer of friable sandy clay loam that extends to a depth of 79 inches and that is mottled in shades of yellow, red, and brown.

The well-drained Smithdale soils have a very dark gray sandy loam surface layer about 3 inches thick. The surface layer is underlain by strong-brown sandy loam 6 inches thick. The next layer is 49 inches of red sandy clay loam. It is underlain by yellowish-red sandy loam that extends to a depth of 80 inches.

The soils on the ridges in this association are equally in pasture, row crops, and trees. The very steep side slopes are mostly in pine and hardwood trees, and hardwoods grow in the narrow drainageways. The farms are operated by families and generally are 100 acres or less in size, but a few farms are 500 acres or more. Operators of the farms in this association derive most of their income from farming.

The soils on the broad ridges in this association are suited to general farming and pasture. Pines and adapted hardwoods are well suited to all the soils of the association. The soils on the ridges are suited to residential and commercial development. The large wooded areas are suited to some kinds of recreation and are well suited to woodland wildlife. The towns of Prentiss, Carson, and Bassfield are in this association.

4. Smithdale-Ruston-Ora Association

Dominantly steep to gently sloping, well drained and moderately well drained loamy soils; some have a fragipan; on uplands

This association consists of loamy soils on broad and narrow ridges and sloping to steeply sloping side slopes. It is throughout the central and eastern parts of the county. It makes up about 40 percent of the county.

About 38 percent of this association is Smithdale soils, 22 percent is Ruston soils, 15 percent is Ora soils, and 25 percent of this association consists of Bassfield, Paden, Prentiss, Providence, Cadeville, and Falkner soils.

The well-drained Smithdale soils have a very dark gray sandy loam surface layer about 3 inches thick. The surface layer is underlain by strong-brown sandy loam 6 inches thick. The next layer is 49 inches of red sandy clay loam. It is underlain by yellowish-red sandy loam that extends to a depth of 80 inches.

The well-drained Ruston soils have a dark grayish-brown sandy loam surface layer about 6 inches thick. The surface layer is underlain by yellowish-red sandy loam about 3 inches thick. The next layer is red sandy clay loam 18 inches thick. Below this is yellowish-red sandy loam, 28 inches thick, that has reddish-brown mottles in the lower part. It is underlain by red sandy clay loam that extends to a depth of 80 inches.

The moderately well drained Ora soils have a dark-brown sandy loam surface layer about 6 inches thick. The surface layer is underlain by 26 inches of yellowish-red loam. The next layer is a brittle and compact sandy loam or sandy clay loam mottled in shades of brown and red that extends to a depth of 64 inches. Underlying this is a layer of friable sandy clay loam that extends to a depth of 79 inches and that is mottled in shades of yellow, red, and brown.

Most of this association is used for pasture and row crops. Most trees grow on the steeper side slopes. The farms are generally less than 100 acres in size. They are family operated, and the farmers derive most of their income from farming.

These soils are well suited to general farming and pine trees. Soils on the broad ridgetops and sloping sides are well suited to row crops, pasture plants, and forage crops. The gently sloping soils are suited to playgrounds, camp areas, and wildlife habitat. They are also good sites for houses and commercial buildings because they provide stable foundations. The large wooded areas are well suited to some kinds of recreation and are well suited to woodland wildlife.

5. Savannah-McLaurin Association

Gently sloping to hilly, moderately well drained and well drained loamy soils; some have a fragipan; on uplands

This association consists of loamy soils on broad ridges and hilly side slopes. It is on the uplands in the southeastern part of the county. It makes up about 4 percent of the county.

About 55 percent of this association is Savannah soils, 30 percent is McLaurin soils, and 15 percent of this association consists of Smithdale, Ora, and Falkner soils.

The moderately well drained Savannah soils have a dark grayish-brown silt loam surface layer about 6 inches thick. Below the surface layer is yellowish-brown silt loam 6 inches thick. The next layer is strong-brown loam 10 inches thick. Below this is a layer of brittle and compact loam or silt loam mottled in shades of brown, gray, and red that extends to a depth of 65 inches. It is underlain by sandy loam that extends to a depth of 70 inches and that is mottled in shades of brown and gray.

The well-drained McLaurin soils have a dark-gray sandy loam surface layer about 3 inches thick. Below the surface layer is 7 inches of brown or yellowish-brown fine sandy loam that has brownish mottles. The next layer is strong-brown sandy loam, 5 inches thick, that has pale-brown mottles. Below this is a layer of red or yellowish-red loam or sandy loam that has reddish-yellow mottles and that extends to a depth of 44 inches. The next layer is strong-brown loamy sand 24 inches thick. Underlying this layer is red sandy loam that extends to a depth of 80 inches.

Most of this association is in trees, but a few areas on ridges are in pasture or are used for row crops. The farms are generally less than 100 acres in size, but a few farms are more than 300 acres. The farms are family operated, and most farmers derive their income from farming. Some large, commercially-owned woodlands are in this association.

These soils are suited to general farming and pine trees. The gently sloping and moderately sloping soils are well suited to row crops and pasture plants, and all soils in this association are well suited to pine trees. The gently sloping ridges are suitable for playgrounds, camp areas, recreational sites, buildings, and commercial building sites. The wooded areas are well suited to woodland wildlife.

6. Falkner-Cadeville-Freestone Association

Gently sloping to hilly, somewhat poorly drained and moderately well drained loamy soils; some have clayey lower layers; on uplands

This association consists of loamy soils on narrow and broad ridges and hilly side slopes. It is throughout the county in small areas. It makes up about 6 percent of the county.

About 44 percent of this association is Falkner soils, 33 percent is Cadeville soils, 7 percent is Freestone soils, and 16 percent of the association consists of Ruston, Savannah, Smithdale, and Stough soils.

The somewhat poorly drained Falkner soils have a dark grayish-brown silt loam surface layer about 3 inches thick. Below the surface layer is mottled very pale brown, light brownish-gray, and light yellowish-brown silt loam about 3 inches thick. The next layer is mottled yellowish-brown, strong-brown, and light brownish-gray silt loam 8 inches thick. Below this is a layer of brownish-yellow silty clay loam, 6 inches thick, that is mottled with strong brown. The next layer is mottled red and gray silty clay 7 inches thick. It is underlain by light-gray or light brownish-gray silty clay that extends to a depth of 80 inches and that is mottled in shades of red, brown, or yellow.

The somewhat poorly drained Cadeville soils have a very dark gray sandy loam surface layer about 3 inches thick. The subsurface layer is pale-brown sandy loam 8 inches thick. Below this layer is yellowish-red clay, about 7 inches thick, that is mottled with strong brown. The next layer is red clay mottled with pale brown and light gray that extends to a depth of 31 inches. Below this is a layer of clay mottled in shades of red and gray that extends to a depth of 50 inches. It is underlain by light brownish-gray silty clay loam that extends to a depth of 85 inches and that is mottled in shades of yellowish red and red.

The moderately well drained to somewhat poorly drained Freestone soils have a dark grayish-brown and very pale brown sandy loam surface layer about 4 inches thick. The subsurface layer is yellowish-brown sandy loam, 3 inches

thick, that is mottled in shades of dark grayish brown. The next layer is yellowish-red clay loam 16 inches thick. Below this is mottled weak-red, light-gray, white, and brownish-yellow silty clay that extends to a depth of 42 inches. It is underlain by mottled light-gray, weak-red, and brownish-yellow clay loam or silty clay loam that extends to a depth of 80 inches.

Most of the soils in this association are in trees, but a small acreage is in pasture and row crops. Pine trees are adapted to these soils. Farms in this association are mostly less than 100 acres in size. They are farmer owned, and the farmer receives most of his income from farming. Some large, commercially-owned woodlands are in this association.

The soils on the gently sloping ridges are fairly well suited to general farming and pasture. All soils of this association are well suited to pine trees. Use of the soils of this association for building sites for residential and commercial developments is risky, because the soils are clayey and have high shrink-swell potential and steep slopes. The large wooded areas are suited to some kinds of recreation, and they are well suited to woodland wildlife.

7. Trebloc-Ruston-Bassfield Association

Nearly level, poorly drained and well drained loamy soils on stream terraces and flood plains

This association consists of loamy soils on broad level flats in the Pearl River bottom. It is in the extreme southwestern part of the county. It makes up about 1 percent of the county.

About 32 percent of this association is Trebloc soils, thick surface variant, 20 percent is Ruston soils, 20 percent is Bassfield soils, and 28 percent of this association is Bibb, Kirkville, Mantachie, and Stough soils.

The poorly drained Trebloc soil, thick surface variant, has a mottled dark grayish-brown and dark yellowish-brown silt loam surface layer about 6 inches thick. Below the surface layer is light-gray and light brownish-gray silt loam, about 19 inches thick, that is mottled in shades of brown and yellow. The next layer is light brownish-gray silt loam mottled in shades of brown that extends to a depth of 55 inches. Below this is loam mottled in shades of gray, brown, and red that extends to a depth of 65 inches. It is underlain by light-gray loam that has brownish mottles and that extends to a depth of 80 inches.

The well-drained Ruston soils have a dark grayish-brown sandy loam surface layer about 6 inches thick. The surface layer is underlain by yellowish-red sandy loam about 3 inches thick. The next layer is red sandy clay loam 18 inches thick. Below this is yellowish-red sandy loam, 28 inches thick, that has reddish-brown mottles in the lower part. It is underlain by red sandy clay loam that extends to a depth of 80 inches.

The well-drained Bassfield soils have a mottled dark grayish-brown and brown sandy loam surface layer about 7 inches thick. Below the surface layer is mottled dark-brown and strong-brown sandy loam about 5 inches thick. The next layer is yellowish-red sandy loam 8 inches thick. Below this is red sandy loam 22 inches thick. The next layer is light-red sand that extends to a depth of 63 inches. It is underlain by mottled white and yellowish-red sand that extends to a depth of 80 inches.

Most of this association is in hardwoods and pines. A very small acreage is in pasture and row crops. The farms in this association are less than 200 acres in size. They are farmer operated, and the farmers derive most of their income from farming.

Adapted hardwoods and pines are well suited to the soils of this association. General farming and pasture are suitable only on the Bassfield and Ruston soils of this association. The Bassfield and Ruston soils are fairly well suited to building sites if they are above flood level, and the wooded areas are well suited to woodland wildlife.

Descriptions of the Soils

This section describes the soil series and mapping units in Jefferson Davis County. Each soil series is described in detail, and then, briefly, each mapping unit in that series is described. Unless it is specifically mentioned otherwise, it is to be assumed 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. The description of each mapping unit contains suggestions on how the soil can be managed for crops and pasture.

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 they are differences that are apparent in the name of the mapping unit. Color terms are for moist soil unless otherwise stated.

As mentioned in the section "How This Survey Was Made," not all mapping units are members of a soil series. Udorthents, for example, do not belong to a soil series, but they are listed in alphabetic order along with the soil series.

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 are 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 found by referring to the "Guide to Mapping Units" at the back of this survey.

The acreage and proportionate extent of each mapping unit are shown in table 1. Many of the terms used in describing soils can be found in the Glossary at the end of this survey, and more detailed information about the terminology and methods of soil mapping can be obtained from the Soil Survey Manual (*12*).[1]

Bassfield Series

The Bassfield series consists of well-drained soils that formed in loamy material on low terraces.

In a representative profile the surface layer is mottled dark grayish-brown and brown sandy loam about 7 inches thick. Below this is mottled dark-brown and strong-brown sandy loam about 5 inches thick. The next layer is yellowish-red sandy loam 8 inches thick. Below it is a layer of red sandy loam 22 inches thick. The next layer is light-red sand that extends to a depth of 63 inches. It is underlain by

[1] Italic numbers in parentheses refer to Literature Cited, p. 53.

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

Soil	Acres	Percent
Bibb and Mantachie soils, frequently flooded	11,900	4.6
Cadeville-Freestone association, hilly	6,609	2.6
Darco loamy sand, 0 to 5 percent slopes	407	.1
Falkner and Cadeville soils, 2 to 5 percent slopes	6,510	2.3
Falkner and Cadeville soils, 5 to 12 percent slopes	6,703	2.4
Jena sandy loam	12,499	4.8
Kirkville and Mantachie soils, frequently flooded	13,498	5.0
McLaurin sandy loam, 2 to 5 percent slopes	2,180	.9
McLaurin sandy loam, 12 to 17 percent slopes	2,884	1.1
Nugent soils, frequently flooded	632	.2
Ora sandy loam, 0 to 2 percent slopes	650	.2
Ora sandy loam, 2 to 5 percent slopes	28,580	10.9
Ora sandy loam, 5 to 8 percent slopes	4,949	2.0
Paden silt loam, 0 to 2 percent slopes	1,981	.7
Prentiss silt loam, 0 to 2 percent slopes	2,246	.9
Providence silt loam, 2 to 5 percent slopes	5,903	2.2
Providence silt loam, 5 to 8 percent slopes	596	.2
Ruston sandy loam, 2 to 5 percent slopes	42,580	16.1
Ruston sandy loam, 5 to 8 percent slopes	9,886	3.7
Ruston sandy loam, 4 to 8 percent slopes, severely eroded	5,414	2.1
Ruston sandy loam, 8 to 12 percent slopes	7,433	2.7
Ruston sandy loam, 8 to 12 percent slopes, severely eroded	2,489	.9
Ruston and Bassfield soils, low terrace, 0 to 2 percent slopes	4,248	1.6
Saffell gravelly sandy loam, 2 to 8 percent slopes	676	.2
Savannah silt loam, 2 to 5 percent slopes	10,997	4.0
Savannah silt loam, 5 to 8 percent slopes	1,146	.6
Smithdale sandy loam, 12 to 17 percent slopes	13,819	5.2
Smithdale sandy loam, 17 to 40 percent slopes	43,275	16.4
Smithdale-Udorthents complex, 5 to 25 percent slopes, severely eroded	2,000	.7
Smithdale soils, 15 to 30 percent slopes, severely eroded	6,745	2.5
Smithton silt loam	1,819	.7
Stough silt loam	2,243	.9
Trebloc silt loam, thick surface variant	1,463	.6
Total	264,960	100.0

mottled white and yellowish-red sand that extends to a depth of 80 inches.

Representative profile of Bassfield sandy loam in an area of Ruston and Bassfield soils, low terrace, 0 to 2 percent slopes, approximately 2 miles north of Bassfield; 1.5 miles east of State Highway 35, 300 yards south of creek, and 200 yards west of paved road in the SE¼NE¼ sec. 32, T. 7 N., R. 17 W.:

Ap—0 to 7 inches, mottled dark grayish-brown (10YR 4/2) and brown (10YR 4/3) sandy loam; weak, fine, granular structure; very friable; many fine roots; strongly acid; clear, wavy boundary.

A1—7 to 12 inches, mottled dark-brown (10YR 4/3) and strong-brown (7.5YR 5/8) sandy loam; weak, fine, granular structure; very friable; many fine roots; strongly acid; abrupt, smooth boundary.

B1—12 to 20 inches, yellowish-red (5YR 5/8) sandy loam; few, fine, prominent mottles of yellowish brown; weak, fine, granular structure; very friable; many fine roots; strongly acid; clear, wavy boundary.

B2t—20 to 42 inches, red (2.5YR 4/8) sandy loam; moderate, medium, subangular blocky structure; friable; few fine roots; few thin patchy clay films on faces of peds, sand grains bridged and coated with clay and oxides; strongly acid; abrupt, smooth boundary.

IIC1—42 to 63 inches, light-red (2.5YR 6/6) sand; single grained; loose; strongly acid; clear, wavy boundary.

IIC2—63 to 80 inches, mottled white (10YR 8/1) and yellowish-red (5YR 5/8) sand; single grained; loose; strongly acid.

The solum ranges from 40 to 55 inches in thickness. In undisturbed areas the A1 horizon is 1 to 3 inches thick, and it ranges in color from very dark grayish brown to brown. The Ap horizon is dark brown, brown, or dark grayish brown, or a mixture of these colors. It is sandy loam or fine sandy loam. The B2t horizon is yellowish-red or red sandy loam. Content of clay in the upper 20 inches of the Bt horizon ranges from 8 to 16 percent. The IIC horizons range in color from light red to mottled white and yellowish red, and in texture from loamy sand to sand. Reaction is strongly acid or very strongly acid, except in places where the A horizons have been limed.

Bassfield soils are associated with Darco, Jena, and Ruston soils. They have a thinner and less sandy A horizon than Darco soils. They have redder B horizons than Jena soils. They have thinner and less clayey B horizons than Ruston soils.

In Jefferson Davis County this soil is mapped only with Ruston soils.

Bibb Series

The Bibb series consists of poorly drained soils that formed in loamy material on flood plains.

In a representative profile the surface layer is dark grayish-brown silt loam about 5 inches thick. Below this is light-gray silt loam, mottled with dark brown, that is 5 inches thick. The next layer is 8 inches of light brownish-gray loam mottled with dark brown. This layer is underlain by gray loam and sandy loam that extend to a depth of 70 inches and that are mottled in shades of brown.

Representative profile of Bibb silt loam, in an area of Bibb and Mantachie soils, frequently flooded, approximately 7 miles northwest of Prentiss; 2.5 miles southeast of New Hebron and 300 yards east of the Lawrence County line in the NE¼NE¼ sec. 1, T. 8 N., R. 20 W.:

Ap—0 to 5 inches, dark grayish-brown (10YR 4/2) silt loam; weak, fine, granular structure; very friable; many fine roots; strongly acid; clear, wavy boundary.

B21g—5 to 10 inches, light-gray (10YR 7/1) silt loam; common, medium, faint mottles of dark brown (10YR 4/3); weak, fine, granular structure; friable; many fine roots; strongly acid; clear, wavy boundary.

B22g—10 to 18 inches, light brownish-gray (10YR 6/2) loam; common, medium, faint mottles of dark brown (10YR 4/3); weak, fine and medium, subangular blocky structure; friable; many fine roots; few fine concretions; strongly acid; clear, wavy boundary.

B23g—18 to 36 inches, gray (10YR 6/1) loam; common, medium, faint mottles of yellowish brown (10YR 5/6); weak, fine and medium, subangular blocky structure; friable; pockets of uncoated sand grains; few fine concretions; strongly acid; clear, wavy boundary.

B24g—36 to 48 inches, gray (10YR 6/1) loam; common, medium, faint mottles of yellowish brown (10YR 5/6) and common, medium, distinct mottles of strong brown (7.5YR 5/6); weak, fine and medium, subangular blocky structure; friable; pockets of uncoated sand grains; few fine concretions; strongly acid; clear, wavy boundary.

B25g—48 to 60 inches, gray (10YR 6/1) loam; common, medium, distinct mottles of light olive brown (2.5Y 5/4); weak, fine and medium, subangular blocky structure; friable; pockets of uncoated sand grains; few fine concretions; strongly acid; clear, wavy boundary.

B26g—60 to 70 inches, gray (10YR 6/1) sandy loam; weak, fine and medium, subangular blocky structure; friable; few fine concretions; strongly acid.

The Ap horizon is dark grayish brown, grayish brown, light gray, gray, or light brownish gray. The A1 horizon is very dark grayish-brown, dark grayish-brown, or grayish-brown silt loam or fine sandy loam. The B2g horizons are light-gray, gray, or light brownish-gray silt loam, loam, or sandy loam and are mottled with dark brown, yellowish brown, brownish yellow, strong brown, or light olive brown. Content of clay between depths of 10 and 40 inches ranges from 12 to 18 percent. Reaction is strongly acid or very strongly acid throughout.

Bibb soils are associated with Mantachie soils and Trebloc soils, thick surface variant. They are more poorly drained than Mantachie soils. They are not so silty in the A and B horizons as are Trebloc soils, thick surface variant.

Figure 2.—**Typical vegetation on Bibb and Mantachie soils, frequently flooded. Drainage is needed on these soils.**

These soils are outside of the range defined for the Bibb series in that they have weak structure between depths of 10 and 40 inches. Use, management, and behavior are similar to those of the Bibb series.

Bibb and Mantachie soils, frequently flooded (Bm).—This mapping unit is on flood plains. Slopes are 0 to 2 percent. This mapping unit is made up of poorly drained Bibb soils and somewhat poorly drained Mantachie soils that are associated in an irregular pattern. Some areas are either Bibb soils or Mantachie soils, but most areas are both.

This mapping unit is about 50 percent Bibb soils, 30 percent Mantachie soils, and 20 percent Kirkville and Stough soils, and Trebloc soils, thick surface variant.

Bibb soils are strongly acid or very strongly acid. Available water capacity is high, and permeability is moderate. Runoff is slow to very slow.

Mantachie soils have a very dark brown silt loam surface layer about 4 inches thick. This is underlain by mottled brown and grayish-brown loam about 4 inches thick. The next layer is mottled light brownish-gray, grayish-brown, and dark grayish-brown loam about 6 inches thick. This is underlain by layers of gray and brown loam, sandy loam, sandy clay loam, or clay loam mottled in shades of yellow and brown.

Mantachie soils are strongly acid or very strongly acid. Available water capacity is high, and permeability is moderate. Runoff is slow.

The soils in this mapping unit are mostly wooded (fig. 2). Only a small acreage is in pasture or crops. Selected pasture plants, pine trees, and selected hardwoods are well suited to these soils. These soils flood frequently for short periods in winter and in spring. They are easy to till, but they crust and pack when cultivated. Surface drainage, dragline ditches, arrangement of crop rows, proper tillage, and adequate fertilization are needed. Erosion is not a hazard. Capability unit Vw-1; Woodland suitability group: Bibb part 2w9, Mantachie part 1w9.

Cadeville Series

The Cadeville series consists of moderately well drained soils that formed in clayey material on uplands. Slopes range from 2 to 40 percent.

In a representative profile the surface layer is very dark gray sandy loam about 3 inches thick. The subsurface layer is pale-brown sandy loam about 8 inches thick. Below the subsurface layer is about 7 inches of yellowish-red clay mottled strong brown. The next layer is red clay extending to a depth of 31 inches. It is mottled pale brown and light gray. This layer is underlain by clay that is mottled in shades of red and gray to a depth of 50 inches. Light brownish-gray silty clay loam mottled yellowish red and red is between depths of 50 and 85 inches.

Representative profile of Cadeville sandy loam, in an area of Falkner and Cadeville soils, 2 to 5 percent slopes, approximately 13 miles south of Prentiss; ½ mile north of Marion County line, ½ mile east of Highway 13, ⅛ mile north of a gravel road, and 300 yards north of Transco pipeline in the SE¼NE¼ sec. 14, T. 5 N., R. 19 W.:

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

A2—3 to 11 inches, pale-brown (10YR 6/3) sandy loam; common, fine, faint, light brownish-gray mottles; weak, fine, granular structure; friable; many fine roots; very strongly acid; clear, wavy boundary.

B21t—11 to 18 inches, yellowish-red (5YR 5/6) clay; common, medium, faint, strong-brown (7.5YR 5/6) mottles; moderate, medium, angular and subangular blocky structure; firm, very plastic and very sticky; few fine roots; clay films or pressure faces on peds; strongly acid; clear, wavy boundary.

B22t—18 to 31 inches, red (2.5YR 4/8) clay; common, medium, distinct, pale-brown (10YR 6/3) and light-gray (10YR 7/2) mottles; strong, medium, angular blocky structure; firm, very plastic and very sticky; few fine roots; clay films or pressure faces on peds; very strongly acid; clear, wavy boundary.

B23t—31 to 50 inches, mottled light brownish-gray (2.5Y 6/2), weak-red (10R 4/4), and red (2.5YR 5/8) clay; strong, medium, angular blocky structure; firm, very plastic and very sticky; clay films or pressure faces on peds; few slickensides that do not intersect; very strongly acid; clear, wavy boundary.

B3t—50 to 85 inches, light brownish-gray (2.5Y 6/2) silty clay loam; few, fine, prominent mottles of reddish yellow and red; weak, fine and medium, angular blocky structure; firm, plastic and sticky; clay films or pressure faces on peds; very strongly acid.

The A1 or Ap horizon is dark brown, dark grayish brown, very dark grayish brown, or very dark gray. The A2 horizon, where present, is very pale brown, pale-brown, pale-yellow, or reddish-yellow sandy loam or fine sandy loam. The upper part of the Bt horizon is red, yellowish-red, or reddish-brown clay, silty clay, silty clay loam, or clay loam. It contains few to many gray and brown mottles in the upper 10 inches. The upper 20 inches of the Bt horizon is 35 to 60 percent clay. The lower part is gray silty clay loam or silt loam mottled in shades of gray, brown, and red. In unlimed areas, the profile is strongly acid or very strongly acid throughout.

Cadeville soils are associated with Falkner soils and Freestone soils. They are more clayey in the upper part of the Bt horizon than are the Falkner and Freestone soils.

Cadeville-Freestone association, hilly (CFF).—This association is made up of moderately well drained Cadeville soils and moderately well drained to somewhat poorly drained Freestone soils on uplands. Slopes range from 17 to 40 percent.

Areas of this mapping unit are typically larger and more generalized than areas of most other mapping units in the county. They range in size from 80 to 200 acres. The pattern and extent of the Cadeville and Freestone soils are fairly uniform throughout the mapping unit. The Freestone soils are on the upper and middle parts of ridges, and the Cadeville soils are on the lower parts. The ridges are commonly less than 300 feet wide.

This association is about 49 percent Cadeville soils and 29 percent Freestone soils. Included in places in mapping are areas of well-drained Ruston and Saffell soils.

The upper part of the surface layer of the Cadeville soils is

dark grayish-brown fine sandy loam about 5 inches thick. The lower part is about 7 inches of red silty clay that contains yellow mottles. The upper part of the subsoil is mottled red, gray, and yellow silty clay extending to a depth of about 33 inches. The middle is about 11 inches of light-gray silty clay mottled in shades of red, brown, and yellow. The lower part is light-gray silt loam extending to a depth of 80 inches. Cadeville soils are strongly acid or very strongly acid throughout. Available water capacity is high, and permeability is very slow. Runoff is rapid.

Freestone soils are strongly acid or very strongly acid. Available water capacity is medium, and permeability is slow. Runoff is rapid.

Almost all of this association is in mixed hardwoods and pines. This association is too steep and the hazard of erosion is too severe for any other use but timber. Loblolly pine, shortleaf pine, longleaf pine, and hardwoods are suited to these soils. Capability unit VIIe-1; Woodland suitability group: Cadeville part 3c2, Freestone part 2w8.

Darco Series

The Darco series consists of well-drained soils that formed in loamy material on broad terrace flats.

In a representative profile the surface layer is dark-brown loamy sand 13 inches thick. The subsurface layer is dark-brown and pale-brown loamy sand 29 inches thick. Below the subsurface layer is yellowish-red sandy loam 6 inches thick. The next layer is yellowish-red loam that is mottled very pale brown to a depth of 70 inches. Loam mottled in shades of brown and red is between depths of 70 and 80 inches.

Representative profile of Darco loamy sand, 0 to 5 percent slopes, 8 miles east of Prentiss and 5 miles north of Bassfield; ⅜ mile west of Bowie River and ⅜ mile east of paved road in the NW¼NE¼ sec. 8, T. 7 N., R. 17 W.:

Ap—0 to 9 inches, dark-brown (10YR 4/3) loamy sand; weak, fine, granular structure; very friable; many fine roots; very strongly acid; clear, wavy boundary.

A12—9 to 13 inches, dark-brown (10YR 4/3) loamy sand; weak, fine, granular structure; very friable; many fine roots; strongly acid; clear, wavy boundary.

A21—13 to 24 inches, dark-brown (7.5YR 4/4) loamy sand; weak, fine, granular structure; very friable; many fine roots; strongly acid; clear, wavy boundary.

A22—24 to 42 inches, pale-brown (10YR 6/3) loamy sand; single grained; very friable; few fine roots; few fine pebbles; strongly acid; clear, wavy boundary.

B1—42 to 48 inches, yellowish-red (5YR 5/6) sandy loam; few, medium, distinct mottles of very pale brown (10YR 7/4); weak, fine, granular structure; very friable; sand grains coated and bridged with clay; strongly acid; clear, wavy boundary.

B21t—48 to 60 inches, yellowish-red (5YR 4/8) loam; few, medium, distinct mottles of very pale brown (10YR 7/4); weak, fine, granular and subangular blocky structure; friable; sand grains coated and bridged with clay; strongly acid; clear, wavy boundary.

B22t—60 to 70 inches, yellowish-red (5YR 4/8) loam; common, medium, distinct, very pale brown (10YR 7/3) mottles; weak, fine and medium, subangular blocky structure; friable; few patchy clay films on faces of peds; very strongly acid; clear, wavy boundary.

B23t—70 to 80 inches, mottled strong-brown (7.5YR 5/6), very pale brown (10YR 7/3), and yellowish red (5YR 4/8) loam; weak and moderate, medium, subangular blocky structure; friable; few patchy clay films on faces of peds; very strongly acid.

The A horizon ranges from 40 to 50 inches in thickness. The Ap or A1 horizon is dark grayish brown, dark brown, brown, or dark yellowish brown. The A2 horizon is dark brown, brown, pale brown, reddish yellow, yellowish red, or light reddish brown. The upper part of the B horizon is yellowish red or red, and the lower part is mottled in shades of brown and gray. The B horizons range in texture from sandy loam or loam to sandy clay loam. The content of clay in the B2t horizon ranges from 15 to 35 percent but is most commonly between 15 and 25 percent. Reaction is strongly acid to very strongly acid throughout, except in places where the A horizons have been limed.

Darco soils are associated with Bassfield and Nugent soils. They have a loamy sand A horizon, more than 40 inches thick, that Bassfield soils do not have. They lack the stratified C horizons that are characteristic of Nugent soils.

Darco loamy sand, 0 to 5 percent slopes (DsB).—This well-drained soil is on broad terrace flats.

Included with this soil in mapping are small areas of Bassfield and Nugent soils. Also included are areas of soils that have a dark surface layer.

This soil is strongly acid or very strongly acid. Permeability is rapid in the surface layer and moderate below a depth of about 48 inches. Runoff is slow. Available water capacity is low.

About 95 percent of the acreage of this soil is cultivated or is used for pasture, and the rest is in woodland. Corn, soybeans, small grain, commonly grown pasture plants, and pine trees are suited to this soil. Under good management, row crops can be grown continuously on this soil. All crops and pasture plants respond to applications of fertilizer and lime. This soil is somewhat droughty, and it needs frequent, light applications of fertilizer. This soil is easy to till, and it can be cultivated throughout a wide range of moisture content without crusting or packing. Erosion is not a hazard, but this soil is flooded occasionally, particularly near stream channels. Capability unit IIIs-1; woodland suitability group 3s2.

Falkner Series

The Falkner series consists of somewhat poorly drained soils on uplands. These soils formed in a thin layer of loamy material high in silt and underlain by clayey material. Slopes range from 2 to 12 percent.

In a representative profile the surface layer is dark grayish-brown silt loam about 3 inches thick. The subsurface layer is mottled very pale-brown, light brownish-gray, and light yellowish-brown silt loam 3 inches thick. Below this layer is mottled yellowish-brown, strong-brown, and light brownish-gray silt loam 8 inches thick. The next layer is brownish-yellow silty clay loam, 6 inches thick, that has strong-brown mottles. Below this layer is mottled red and light brownish-gray silty clay 7 inches thick. This is underlain by light-gray or light brownish-gray silty clay, mottled with red, brown, or yellow, to a depth of 80 inches.

Representative profile of Falkner silt loam, in an area of Falkner and Cadeville soils, 2 to 5 percent slopes, approximately 6¾ miles northeast of Bassfield; 100 yards south of gravel road and 25 yards east of Transco pipeline right-of-way in the SE¼SE¼ sec. 5, T. 6 N., R. 16 W.:

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

A2—3 to 6 inches, mottled very pale brown (10YR 7/4), light brownish-gray (10YR 6/2), and light yellowish-brown (10YR 6/4) silt loam; weak, fine, granular structure; very friable; many fine roots; strongly acid; abrupt, smooth boundary.

B21t—6 to 14 inches, mottled yellowish-brown (10YR 5/8), strong-brown (7.5YR 5/8), and light brownish-gray (10YR 6/2) silt loam; weak, medium, subangular blocky structure; friable; many fine roots; patchy clay films on faces of peds; few fine black and brown concretions; strongly acid; clear, wavy boundary.

B22t—14 to 20 inches, brownish-yellow (10YR 6/6) silty clay

loam; common, medium, distinct mottles of strong brown (7.5YR 5/6); weak, medium, subangular blocky structure; friable; few fine roots; patchy clay films on faces of peds; few fine black and brown concretions; strongly acid; clear, wavy boundary.

IIB23t—20 to 27 inches, mottled red (2.5YR 5/6) and light brownish-gray (2.5Y 6/2) silty clay; strong, medium, angular blocky structure; firm, plastic and sticky; clay films or pressure faces on peds; strongly acid; clear, wavy boundary.

IIB24t—27 to 45 inches, light-gray (10YR 7/1) silty clay; common, fine, faint mottles of yellowish brown and common, medium, prominent mottles of red (2.5YR 5/6); strong, medium, angular blocky structure; firm, plastic and sticky; clay films or pressure faces on peds; strongly acid; clear, wavy boundary.

IIB25t—45 to 80 inches, light brownish-gray (2.5Y 6/2) silty clay; few, fine, faint mottles of yellow; strong, medium, angular blocky structure; firm, plastic and sticky; clay films or pressure faces on peds; strongly acid.

The Ap horizon is brown, dark grayish brown, or grayish brown. The A2 horizon is light yellowish brown, very pale brown, or grayish brown, or it is mottled in shades of brown and gray. The B21t and B22t horizons are yellowish brown, brownish yellow, pale brown, or light yellowish brown. They have none to many grayish mottles, or they are mottled in shades of brown, gray, red, and yellow. The B2t horizons are silt loam or silty clay loam. The IIBt horizons are gray with mottles of red, brown, and yellow, or they are mottled in shades of brown, red, yellow, or gray. They are silty clay, silty clay loam, or clay. Content of clay in the upper 20 inches of the Bt horizon averages between 25 and 35 percent. Reaction is very strongly acid or strongly acid throughout except in places where the A horizons have been limed.

Falkner soils are associated with Cadeville, Freestone, and Savannah soils. They have less clay in the upper part of the B horizons than Cadeville soils. They have less sand in the B horizons than Freestone soils. They lack the fragipan that is characteristic of Savannah soils.

Falkner and Cadeville soils, 2 to 5 percent slopes (FcB).—This mapping unit is on wooded uplands. It is made up of somewhat poorly drained Falkner soils and moderately well drained Cadeville soils. These gently sloping soils are associated in an irregular pattern. Some areas are either Falkner soils or Cadeville soils, but most are both.

This mapping unit is about 65 percent Falkner soils, 22 percent Cadeville soils, and 13 percent Savannah and Ruston soils.

The Falkner soil has the profile described as representative of its series. Falkner soils are strongly acid or very strongly acid. Available water capacity is high, and permeability is slow. Runoff is slow.

The Cadeville soil has the profile described as representative of its series. Cadeville soils are strongly acid or very strongly acid. Available water capacity is high, and permeability is very slow. Runoff is medium.

The soils of this mapping unit are mostly in woodland, but a small acreage is in pasture and row crops. Because of the hazard of erosion, clayey subsoils, and general wetness, these soils are better suited to trees and pasture than to most other uses. Capability unit IIIe-1; Woodland suitability group: Falkner part 2w8, Cadeville part 3c2.

Falkner and Cadeville soils, 5 to 12 percent slopes (FcD).—This mapping unit is on wooded uplands. It is made up of somewhat poorly drained Falkner soils and moderately well drained Cadeville soils. These soils are associated

Figure 3.—**Ball clover pasture, farm pond, and pine trees on Falkner and Cadeville soils, 5 to 12 percent slopes.**

in an irregular pattern. Some areas are either Falkner soils or Cadeville soils, but most areas are both.

This mapping unit is about 51 percent Falkner soils, 25 percent Cadeville soils, and 24 percent Freestone, Ruston, and Savannah soils.

Falkner soils have a very dark grayish-brown silt loam surface layer about 5 inches thick. The next layer is brownish-yellow silt loam 8 inches thick. Below this is mottled brownish-yellow, light yellowish-brown, and yellowish-red silty clay loam 7 inches thick. The next layer is clay, 30 inches thick, that is mottled in shades of brown, red, and gray. This is underlain by light-gray clay, mottled with yellow and brown, to a depth of 60 inches.

Falkner soils are strongly acid or very strongly acid. Available water capacity is high, and permeability is slow. Runoff is medium.

Cadeville soils have a dark grayish-brown sandy loam surface layer about 2 inches thick. The next layer is clay, 16 inches thick, that is mottled in shades of brown, gray, and red. Below this is light-gray clay 26 inches thick. This is underlain by light-gray silty clay loam that has few red mottles and that extends to a depth of 80 inches.

Cadeville soils are strongly acid or very strongly acid. Available water capacity is high, and permeability is very slow. Runoff is medium.

The soils in this mapping unit are mostly in woodland. A small acreage is in pasture (fig. 3) and row crops. Because of the hazard of erosion, the clayey subsoils, and general wetness, these soils are better suited to trees and pasture than to most other uses. Selected pasture plants, adapted hardwoods, and pine trees are suited to these soils. Capability unit IVe-1; Woodland suitability group: Falkner part 2w8, Cadeville part 3c2.

Freestone Series

The Freestone series consists of moderately well drained to somewhat poorly drained soils. These soils formed in loamy material underlain by clayey material on uplands. Slopes range from 17 to 40 percent.

In a representative profile the surface layer is dark grayish-brown and very pale brown sandy loam about 4 inches thick. The subsurface layer is yellowish-brown sandy loam, 3 inches thick, that is mottled with dark grayish brown. The next layer is yellowish-red clay loam 16 inches thick. Below this is mottled weak-red, light-gray, white, and brownish-yellow silty clay 19 inches thick. The next layer is mottled light-gray and weak-red, silty clay loam 23 inches thick. This layer is underlain by light-gray silty clay loam that extends to a depth of 80 inches and that is mottled in shades of yellow and red.

Representative profile of Freestone sandy loam, in an area of Cadeville-Freestone association, hilly, 12 miles south of Prentiss; 3 miles north of the Marion County line, 1¼ miles east of State Highway 13, and ¼ mile south of gravel road on a farm in the NW¼NW¼ sec. 1, T. 5 N., R. 19 W.:

A1—0 to 4 inches, mixed dark grayish-brown (10YR 4/2) and very pale brown (10YR 7/3) sandy loam; weak, fine, granular structure; very friable; many fine roots; common fine and medium pebbles; strongly acid; clear, wavy boundary.

A2—4 to 7 inches, yellowish-brown (10YR 5/4) sandy loam; few, fine, faint mottles of dark grayish brown; weak, fine, granular structure; very friable; many fine roots; few fine and medium pebbles; strongly acid; abrupt, smooth boundary.

B21t—7 to 23 inches, yellowish-red (5YR 4/6) clay loam; moderate, medium, subangular blocky structure; firm; few fine roots; clay films on faces of peds; occasional fine pebbles; strongly acid; abrupt, smooth boundary.

B22t—23 to 42 inches, mottled weak-red (10R 4/4), light-gray (10YR 7/1), white (10YR 8/2), and brownish-yellow (10YR 6/6) silty clay; moderate, medium, angular blocky structure; firm; sticky; clay films on faces of peds; very strongly acid; abrupt, smooth boundary.

B23t—42 to 65 inches, mottled light-gray (2.5Y 7/2) and weak-red (10R 4/4) silty clay loam; moderate, medium, angular blocky structure; firm, sticky; clay films on faces of peds; very strongly acid; abrupt, smooth boundary.

B24t—65 to 80 inches, light-gray (10YR 7/1) silty clay loam; common, fine, faint mottles of yellow and brownish yellow, and common, fine, prominent mottles of red; moderate, medium, angular blocky structure; firm, sticky; clay films on faces of peds; very strongly acid.

The A1 and Ap horizons are grayish brown, dark grayish brown, brown, or very pale brown. The A2 horizon is pale brown, yellowish brown, brownish yellow, or grayish brown. The A horizons are fine sandy loam or sandy loam. The B21t horizon is yellowish red or strong brown and has none to many mottles of chroma 2 or less, or it is mottled in shades of brown and gray. It is clay loam, sandy loam, or loam. The B22t and B23t horizons are yellowish-brown, brownish-yellow, and yellow clay loam, silty clay loam, or silty clay. They have few to many mottles in shades of gray, red, and yellow, or they are mottled in shades of red, yellow, brown, and gray. The B24t horizon is gray or light gray, or it is mottled in shades of brown, red, gray, and yellow. Reaction is strongly acid or very strongly acid throughout.

Freestone soils are associated with Cadeville, Falkner, and Savannah soils. They have less clay in the upper part of the Bt horizon than Cadeville soils. They have more sand in the B horizon than Falkner soils. They lack the fragipan that is characteristic of Savannah soils.

These soils are outside of the range defined for the Freestone series in that they have less than 5 percent leached material in the layer of clay accumulation.

In Jefferson Davis County this soil is mapped only with Cadeville soils.

Jena Series

The Jena series consists of well-drained soils that formed in loamy material on flood plains.

In a representative profile the surface layer is dark-brown sandy loam 9 inches thick. The next layer is dark yellowish-brown loam 9 inches thick. Below this layer is dark-brown and strong-brown sandy loam, 47 inches thick, that has reddish-yellow mottles in the lower part. This layer is underlain by mottled very pale brown and strong-brown sand that extends to a depth of 80 inches.

Representative profile of Jena sandy loam, approximately 4.5 miles southwest of Prentiss; ¼ mile south of gravel road and 300 yards east of Dry Creek in the SE¼NE¼ sec. 30, T. 7 N., R. 19 W.:

Ap—0 to 9 inches, dark-brown (10YR 4/3) sandy loam; weak, fine, granular structure; very friable; many fine roots; strongly acid; abrupt, smooth boundary.

B21—9 to 18 inches, dark yellowish-brown (10YR 4/4) loam; common, medium, distinct mottles of dark brown (10YR 4/3); weak, medium, subangular blocky structure; friable; many fine roots; strongly acid; clear, wavy boundary.

B22—18 to 38 inches, dark-brown (7.5YR 4/4) sandy loam; weak, medium, subangular blocky structure; friable; many fine roots; sand grains bridged with oxides in places; very strongly acid; clear, wavy boundary.

B23—38 to 50 inches, strong-brown (7.5YR 5/6) sandy loam; common, medium, faint mottles of reddish yellow (7.5YR 6/6); weak, fine, granular structure; friable; few fine roots; strongly acid; clear, wavy boundary.

B24—50 to 65 inches, strong-brown (7.5YR 5/6) sandy loam; common, medium mottles of reddish-brown (7.5YR 6/6) and dark-brown (7.5YR 4/4); weak, fine, granular structure; friable; few fine pebbles; strongly acid; clear, wavy boundary.

C—65 to 80 inches, mottled very pale brown (10YR 7/3) and

strong-brown (7.5YR 5/8) sand; structureless; loose; strongly acid; many fine pebbles.

The A horizon is dark grayish-brown, dark-brown, brown, or dark yellowish-brown sandy loam. The B2 horizons are dark-brown, yellowish-brown, light yellowish-brown, or strong-brown sandy loam or loam. The C horizon is very pale brown, pale brown, light yellowish-brown, strong-brown, or yellowish-brown loamy sand or sand, or it is mottled in shades of brown. Reaction is strongly acid or very strongly acid throughout except in places where the A horizon has been limed.

Jena soils are associated with Bassfield, Kirkville, Mantachie, and Nugent soils. They lack the reddish Bt horizons that are characteristic of Bassfield soils. They are better drained than Kirkville and Mantachie soils. They lack the stratified C horizons that are typical of Nugent soils.

Jena sandy loam (Je).—This is a well-drained soil on stream flood plains. Slopes range from 0 to 2 percent. Included in mapping are small areas of Bassfield, Kirkville, Mantachie, and Nugent soils.

This soil is strongly acid or very strongly acid. Permeability is moderate, and available water capacity is medium. Runoff is slow. Depth to a seasonally high water table is more than 40 inches. These soils are occasionally flooded, especially in winter and spring.

Approximately 80 percent of this mapping unit is in row crops and pasture, and the rest is in woodland. Soybeans, corn, oats, cotton, commonly grown pasture plants, and adapted trees are well suited to this soil. This soil is easy to till and can be cultivated throughout a wide range of moisture content without crusting or packing. Row crops can be grown continuously under good management. Capability unit IIw-1; woodland suitability group 1o7.

Kirkville Series

The Kirkville series consists of moderately well drained soils that formed in loamy materials on flood plains.

In a representative profile the surface layer is 4 inches of dark-brown silt loam mottled with light yellowish brown over 8 inches of brown silt loam mottled with dark brown. Below the surface layer is mottled pale-brown and light brownish-gray sandy loam about 5 inches thick. The next layer, about 48 inches thick, is loam mottled in shades of brown, gray, yellow, and red. This layer is underlain by mottled light-gray and yellowish-brown sandy loam that extends to a depth of 80 inches.

Representative profile of Kirkville silt loam in an area of Kirkville and Mantachie soils, frequently flooded, approximately 3 miles north of Prentiss and 1¼ miles west of Mount Carmel Community; ¼ mile north of U.S. Highway 84 and 300 yards north of gravel road in the SE¼SE¼ sec. 21, T. 8 N., R. 18 W.:

Ap—0 to 4 inches, dark-brown (10YR 4/3) silt loam; few, fine, faint mottles of light yellowish brown; weak, fine, granular structure; very friable; many fine roots; strongly acid; abrupt, smooth boundary.

A12—4 to 12 inches, brown (10YR 5/3) silt loam; few, fine, faint mottles of dark brown; weak, fine, granular structure; very friable; many fine roots; strongly acid; abrupt, smooth boundary.

B1—12 to 17 inches, mottled pale-brown (10YR 6/3) and light brownish-gray (10YR 6/2) sandy loam; weak, fine, granular structure; very friable; many fine roots; few pockets of very pale brown sand; strongly acid; clear, wavy boundary.

B21—17 to 32 inches, mottled pale-brown (10YR 6/3), light-gray (10YR 7/2), and brownish-yellow (10YR 6/8) loam; weak, medium, subangular blocky structure; friable; few fine roots; many fine concretions; strongly acid; clear, wavy boundary.

B22—32 to 65 inches, mottled light-gray (10YR 7/2), yellowish-brown (10YR 5/8), and red (2.5YR 5/8) loam; weak, medium, subangular blocky structure; friable; common, fine and medium, black and brown concretions; few sand grains coated with clay; strongly acid; clear, wavy boundary.

B23—65 to 80 inches, mottled light-gray (10YR 7/2) and yellowish-brown (10YR 5/8) sandy loam; weak, medium, subangular blocky structure; friable; strongly acid.

The A horizon is brown, dark grayish brown, dark brown, or yellowish brown. The B horizon is dark brown, yellowish brown, light yellowish brown, or brown and has few to many mottles in shades of gray, or it is mottled in shades of brown, yellow, red, and gray. It is sandy loam, fine sandy loam, or loam. Content of clay between depths of 10 and 40 inches is 10 to 18 percent. Reaction is strongly acid to very strongly acid throughout except in places where the A horizons have been limed.

Kirkville soils are associated with Jena and Mantachie soils. They are not so well drained as Jena soils. They are better drained and have less clay in the B horizon than Mantachie soils.

Kirkville and Mantachie soils, frequently flooded (Km).—This mapping unit is on flood plains. Slopes range from 0 to 2 percent. This mapping unit is made up of moderately well drained Kirkville soils and somewhat poorly drained Mantachie soils. These soils are associated in an irregular pattern. Some areas are either Kirkville soils or Mantachie soils, but most areas are both.

This mapping unit is about 64 percent Kirkville soils, 25 percent Mantachie soils, and 11 percent Bibb, Jena, Stough, and Trebloc soils, thick surface variant.

Kirkville soils are strongly acid or very strongly acid. Available water capacity is high, and permeability is moderate. Runoff is slow.

The Mantachie soil has the profile described as representative of its series. Mantachie soils are strongly acid or very strongly acid. Available water capacity is high, and permeability is moderate. Runoff is slow.

Most of the acreage of this mapping unit is wooded. Smaller acreages are in pasture and row crops. Selected pasture plants (fig. 4), pines, and hardwood trees are well suited to these soils. Occasional flooding is a hazard. Capability unit Vw-2; woodland suitability group 1w9.

Mantachie Series

The Mantachie series consists of somewhat poorly drained soils that formed in loamy material on flood plains.

In a representative profile the surface layer is 4 inches of dark-brown silt loam over 4 inches of dark-brown loam that contains grayish-brown mottles. The next layer is grayish-brown loam mottled with dark brown and light yellowish brown and is about 22 inches thick. Below this is light brownish-gray loam and sandy loam that has yellowish-brown and brownish-yellow mottles and is about 22 inches thick. This layer is underlain by sandy loam that is mottled in shades of gray, brown, and yellow and that extends to a depth of about 80 inches.

Representative profile of Mantachie silt loam in an area of Kirkville and Mantachie soils, frequently flooded, approximately 5¼ miles north of Prentiss, ½ mile southwest of Whitesand Baptist Church, ⅛ mile east of State Highway 13, and 98 yards west of gravel road in the SW¼NE¼ sec. 12, T. 8 N., R. 19 W.:

A11—0 to 4 inches, dark-brown (10YR 4/3) silt loam; weak, fine, granular structure; friable; many fine roots; strongly acid; abrupt, smooth boundary.

A12—4 to 8 inches, dark-brown (10YR 4/3) loam; common, medium, faint mottles of grayish brown (10YR 5/2); weak, fine, granular structure; friable; many fine roots; strongly acid; abrupt, smooth boundary.

Figure 4.—**M-type ditch draining fescue grass pasture on Kirkville and Mantachie soils, frequently flooded.**

B21g—8 to 17 inches, grayish-brown (10YR 5/2) loam; common, medium, faint mottles of dark brown (10YR 4/3); weak, subangular blocky structure; friable; many fine roots; strongly acid; abrupt, smooth boundary.

B22g—17 to 30 inches, grayish-brown (10YR 5/2) loam; common, medium, faint, light yellowish-brown (10YR 6/4) and dark-brown (10YR 4/3) mottles; weak, medium, subangular blocky structure; friable; slightly plastic; few fine roots; strongly acid; abrupt, smooth boundary.

B23g—30 to 45 inches, light brownish-gray (10YR 6/2) loam; common, medium, distinct mottles of yellowish brown (10YR 5/4) and brownish yellow (10YR 6/8); weak, medium, subangular blocky structure; friable; slightly plastic; common fine concretions; strongly acid; clear, wavy boundary.

B24g—45 to 52 inches, light brownish-gray (2.5Y 6/2) sandy loam; common, medium, distinct mottles of brownish yellow (10YR 6/8), yellowish brown (10YR 5/4), and dark brown (7.5YR 4/4); weak, medium, subangular blocky structure; friable; slightly plastic; common fine concretions; strongly acid; clear, wavy boundary.

B25g—52 to 72 inches, mottled light-gray (10YR 7/1), dark grayish-brown (10YR 4/2), and yellowish-brown (10YR 5/8) sandy loam; weak, fine, granular structure; friable; strongly acid; clear, wavy boundary.

B26g—72 to 80 inches, mottled light-gray (10YR 6/1), yellowish-brown (10YR 5/6), and dark-brown (7.5YR 4/4) sandy loam; weak, fine, granular structure; friable; strongly acid.

The A horizon is brown, dark grayish-brown, grayish-brown, dark-brown, pale-brown, brown, dark yellowish-brown, or light yellowish-brown fine sandy loam, loam, or silt loam. The B21 horizon is grayish brown, yellowish brown, dark grayish brown, or is mottled in shades of brown and gray. The B22, B23, B24, B25, and B26 horizons are gray, light gray, grayish brown, or light brownish gray and have mottles in shades of brown and yellow. The lower part of the B horizon is mottled in shades of brown and gray in places. It is loam, clay loam, sandy clay loam, or sandy loam. Content of clay between depths of 10 and 40 inches ranges from 18 to 32 percent. Reaction is strongly acid or very strongly acid throughout except in places where the A horizons have been limed.

Mantachie soils are associated with Bibb, Jena, and Kirkville soils. They are not so poorly drained as Bibb soils. They are more poorly drained than Jena and Kirkville soils, and they have more clay in the B horizon than those soils.

In Jefferson Davis County this soil is mapped only with Bibb and Kirkville soils.

McLaurin Series

The McLaurin series consists of well-drained soils that formed in loamy material on uplands. Slopes range from 2 to 17 percent.

In a representative profile the surface layer is dark-gray sandy loam about 3 inches thick. The subsurface layer is brown or yellowish-brown fine sandy loam, 7 inches thick, that contains brownish mottles. Below this layer is strong-brown sandy loam, 5 inches thick, that contains pale-brown mottles. The next layer is red or yellowish-red loam or sandy loam that contains reddish-yellow and yellowish-red mottles and that extends to a depth of 44 inches. Below this layer is strong-brown loamy sand 24 inches thick. This is underlain by red sandy loam that extends to a depth of 80 inches.

Representative profile of McLaurin sandy loam, 2 to 5 percent slopes, 5 miles southeast of Bassfield; ½ mile north of

State Highway 42, and 50 feet east of private road on company forest land in the SE¼SE¼ sec. 24, T. 6 N., R. 17 W.:

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

A21—3 to 7 inches, brown (10YR 5/3) fine sandy loam; many, fine, faint mottles of dark grayish brown; weak, fine, granular structure; very friable; many fine roots; root and worm channels filled with material from A1 horizon; strongly acid; clear, wavy boundary.

A22—7 to 10 inches, yellowish-brown (10YR 5/4) fine sandy loam; few, fine, faint mottles of yellowish brown; weak, fine, granular structure; very friable; many fine roots; strongly acid; abrupt, smooth boundary.

A3—10 to 15 inches, strong-brown (7.5YR 5/6) sandy loam; few, fine, distinct mottles of pale brown; weak, fine, granular structure; very friable; many fine roots; few sand grains bridged with clay; strongly acid; clear, wavy boundary.

B21t—15 to 28 inches, red (2.5YR 4/8) loam; few, fine, distinct mottles of yellowish red and reddish yellow; weak, medium, subangular blocky structure; friable; few fine roots; sand grains bridged with clay; few thin clay films on faces of peds; strongly acid; clear, wavy boundary.

B22t—28 to 38 inches, red (2.5YR 4/8) sandy loam; few, fine, distinct mottles of yellowish red and reddish yellow; weak, fine and medium, subangular blocky structure; very friable; few pockets of uncoated sand grains; sand grains bridged with clay; few thin clay films on faces of peds; few fine pebbles; strongly acid; clear, wavy boundary.

B23t—38 to 44 inches, yellowish-red (5YR 5/8) sandy loam; few, fine, distinct mottles of reddish yellow; weak, fine, granular structure; very friable; few pockets of uncoated sand grains; sand grains bridged with clay; few fine pebbles; strongly acid; abrupt, smooth boundary.

B3 & A'2—44 to 68 inches, strong-brown (7.5YR 5/8) loamy sand; weak, fine, granular structure; very friable; many pockets of uncoated sand grains; strongly acid; abrupt, smooth boundary.

B't—68 to 80 inches, red (10R 4/8) sandy loam; weak, fine and medium, subangular blocky structure; very friable; sand grains coated and bridged with clay; strongly acid.

The Ap and A1 horizons are very dark gray, very dark grayish brown, dark gray, or dark grayish brown. The A2 and A3 horizons are dark grayish brown, pale brown, brown, strong brown, yellowish brown, or light yellowish brown. The Bt horizon is yellowish-red or red sandy loam, loam, or fine sandy loam. Content of clay in the Bt horizons ranges from 10 to 18 percent. The B3 and A'2 horizons are red and strong-brown sandy loam or loamy sand. The B't horizon is red or yellowish-red loam, sandy loam, or sandy clay loam. Reaction is strongly acid or very strongly acid throughout.

McLaurin soils are associated with Ora, Ruston, and Smithdale soils. They do not have the fragipan that is characteristic of Ora soils. They have less clay in the upper part of the Bt horizon than Ruston and Smithdale soils.

McLaurin sandy loam, 2 to 5 percent slopes (McB).—This is a well-drained soil on uplands.

This soil has the profile described as representative of the series. Included in mapping are small areas of Ora and Ruston soils.

This soil is strongly acid or very strongly acid. Permeability is moderately rapid to moderate, and available water capacity is medium. Runoff is medium.

Approximately one-third of the acreage of this soil is in row crops and pasture. The other two-thirds is in woodland. Cotton, corn, soybeans, small grains, commonly grown pasture plants, and pine trees are well suited to this soil. This soil is easy to till and can be cultivated throughout a wide range of moisture content without crusting or packing. Capability unit IIe-1; woodland suitability group 2o1.

McLaurin sandy loam, 12 to 17 percent slopes (McE).—This is a well-drained soil on uplands.

The surface layer is dark-gray sandy loam 5 inches thick. Below this is brownish fine sandy loam 5 inches thick. The next layer is yellowish-red sandy loam 44 inches thick. Below this layer is reddish-yellow loamy sand about 6 inches thick. This is underlain by brownish-yellow sandy loam that extends to a depth of 80 inches. Included in mapping are small areas of Ruston soils.

This soil is strongly acid or very strongly acid. Permeability is moderately rapid to moderate, and available water capacity is medium. Runoff is rapid. The hazard of erosion is slight in wooded areas, but it is severe in cleared areas.

Most of this soil is still in woodland, but a small amount is in pasture. Commonly grown pasture plants and pine trees are well suited to this soil. Capability unit VIe-1; woodland suitability group 2o1.

Nugent Series

The Nugent series consists of excessively drained soils that formed in sandy alluvial material on flood plains.

In a representative profile the surface layer is dark grayish-brown sandy loam about 3 inches thick. The next layer is mixed dark grayish-brown and light yellowish-brown gravelly sandy loam about 2 inches thick. Below this layer is very pale brown sand 15 inches thick that has strata of dark-brown sandy loam, loam, or silt loam ⅛-inch to 1 inch thick. The next layer is yellowish-brown sand, about 30 inches thick, that contains thin layers of dark-brown loam. Underlying this is brown sandy loam that contains dark-brown mottles and that extends to a depth of 66 inches.

Representative profile of Nugent soils, frequently flooded, in the southeast corner of the city limits of Prentiss; 100 yards northeast of sewage lagoon, 20 yards northeast of large gum trees, and 100 feet from Whitesand Creek in the NE¼NW¼ sec. 27, T. 7 N., R. 19 W.:

Ap—0 to 3 inches, dark grayish-brown (10YR 4/2) sandy loam; weak, fine, granular structure; very friable; many fine roots; slightly acid; abrupt, smooth boundary.

C1—3 to 5 inches, mixed dark grayish-brown (10YR 4/2) and light yellowish-brown (10YR 6/4) gravelly sandy loam; structureless; loose; many fine roots; 10 percent by volume fine and medium gravel; neutral; abrupt, smooth boundary.

C2—5 to 20 inches, very pale brown (10YR 7/4) sand; structureless; loose; many fine roots; thin strata of dark-brown sandy loam, loam, or silt loam ⅛-inch to 1 inch thick; neutral; clear, wavy boundary.

C3—20 to 50 inches, yellowish-brown (10YR 5/6) sand; structureless; loose; few fine roots; thin strata of dark-brown loam ⅛-inch thick; water table at a depth of 50 inches; neutral; abrupt, smooth boundary.

C4—50 to 66 inches, brown (10YR 5/3) sandy loam; common, medium, distinct, dark-brown (10YR 4/3) mottles; weak, fine, granular structure; very friable; few fine roots; slightly acid; abrupt, smooth boundary.

The Ap or A1 horizon is yellowish-brown, strong-brown, reddish-yellow, dark-brown, and dark grayish-brown sandy loam or loamy sand. The C horizon is brown, dark brown, pale brown, very pale brown, yellowish brown, dark grayish brown, or grayish brown. The C horizon is stratified with loamy sand, sand, sandy loam, or loam. The C horizon in places is as much as 10 percent gravel. Reaction is strongly acid through neutral throughout.

Nugent soils are associated with Darco and Jena soils. They have stratified C horizons that are lacking in Darco soils. They lack the loamy B horizons that are characteristic of Jena soils.

Nugent soils, frequently flooded (Nu).—This is a stratified, excessively drained soil on natural levees along major streams. Slopes range from 0 to 2 percent.

This soil is strongly acid to neutral. Permeability is rapid, and available water capacity is low. Runoff is slow. This soil floods several times in winter and early spring.

Approximately 95 percent of the acreage of this soil is in pasture, and the rest is in woodland. Selected pasture plants

and hardwood and pine trees are well suited to this soil. Capability unit Vw-3; woodland suitability group 2s8.

Ora Series

The Ora series consists of moderately well drained soils that have a fragipan. These soils formed in loamy material on uplands. Slopes range from 0 to 8 percent.

In a representative profile the surface layer is dark-brown sandy loam 6 inches thick. Below this is yellowish-red loam 20 inches thick. The next layer is brittle and compact sandy loam, 38 inches thick, that is mottled in shades of brown and red. This is underlain by friable sandy clay loam that extends to a depth of 79 inches and that is mottled in shades of yellow, red, and brown.

Representative profile of Ora sandy loam, 2 to 5 percent slopes, 5 miles south of Carson and 4 miles southwest of Bassfield; on northeast side of paved road in the NE¼NE¼ sec. 28, T. 6 N., R. 18 W.:

Ap—0 to 6 inches, dark-brown (10YR 4/3) sandy loam; weak, fine, granular structure; very friable; many fine roots; medium acid; abrupt, smooth boundary.

B21t—6 to 19 inches, yellowish-red (5YR 4/8) loam; moderate, medium, subangular blocky structure; friable; many fine roots; common fine voids; clay films on faces of peds; very strongly acid; clear, wavy boundary.

B22t—19 to 26 inches, yellowish-red (5YR 5/8) loam; moderate, medium, subangular blocky structure; friable; common fine voids; clay films on faces of peds; strongly acid; clear, wavy boundary.

Bx1—26 to 49 inches, mottled yellowish-brown (10YR 5/4), light yellowish-brown (10YR 6/4), and very pale brown (10YR 7/3) sandy loam; weak, coarse, prismatic structure parting to moderate, medium, subangular blocky; yellowish-brown part is firm, compact, and brittle and very pale brown part is friable; clay films on faces of peds; few oxide coatings; fine voids; seams of gray silt surround prisms; strongly acid; clear, wavy boundary.

Bx2—49 to 64 inches, mottled yellowish-red (5YR 4/6), pale-brown (10YR 6/3), and red (10R 4/6) sandy loam; weak, coarse, prismatic structure parting to moderate, medium, subangular blocky; yellowish-red part is firm, compact, and brittle and pale-brown part is friable; clay films on faces of peds; common fine voids; seams of gray silt surround prisms; strongly acid; clear, wavy boundary.

B3t—64 to 79 inches, mottled reddish-yellow (7.5YR 6/8), red (10R 4/6), and very pale brown (10YR 7/3) sandy clay loam; moderate, medium, subangular blocky structure; friable; sand grains coated and bridged with clay; strongly acid.

The Ap and A2 horizons are dark-brown, dark grayish-brown, brown, or yellowish-brown loam or sandy loam. In undisturbed areas the A1 horizons is thin and very dark gray or very dark grayish brown. A thin, yellowish-brown, yellowish-red, or red B1 horizon is present in places. The Bt horizons are yellowish-red or reddish-yellow sandy clay loam, sandy loam, or loam. Content of clay in the Bt horizon ranges from 18 to 33 percent. The Bx horizon and B3 horizon are sandy loam, loam, or sandy clay loam mottled in shades of yellow, brown, gray, and red. Reaction is strongly acid or very strongly acid except in places where the A horizons have been limed.

Ora soils are associated with McLaurin, Providence, Ruston, Saffell, and Savannah soils. They have a fragipan that McLaurin, Ruston, and Saffell soils lack. They have more sand in the B horizon than Providence soils. They have redder B horizons than Savannah soils.

Ora sandy loam, 0 to 2 percent slopes (OrA).—This is a moderately well drained soil on broad upland flats.

The surface layer is dark grayish-brown sandy loam 7 inches thick. The next layer is yellowish-red sandy clay loam 17 inches thick. Below this is a mottled yellow, brown, gray, and red sandy loam, loam, or sandy clay loam fragipant hat extends to a depth of 60 inches. Included in mapping are small areas of Savannah and Paden soils.

This soil is strongly acid or very strongly acid. Permeability is moderate above the fragipan and moderately slow in the fragipan. Available water capacity is medium. Runoff is medium. The hazard of erosion is slight.

Most of the acreage of this soil is used for row crops and pasture, and the rest is still wooded. Cotton, corn, soybeans, small grains, commonly grown pasture plants, and pine and hardwood trees are well suited to this soil. This soil is easy to till and can be cultivated throughout a wide range of moisture content without crusting or packing. Capability unit IIw-2; woodland suitability group 2o7.

Ora sandy loam, 2 to 5 percent slopes (OrB).—This is a moderately well drained soil on broad upland flats. It has the profile described as representative of the series.

This soil is strongly acid or very strongly acid. Permeability is moderate above the fragipan and moderately slow in the fragipan. Available water capacity is medium. Runoff is slow to medium. The hazard of erosion is slight to moderate. In some places the surface has eroded, and some gall spots and shallow gullies are present. Included in mapping are small areas of Savannah and Ruston soils.

Approximately 60 percent of the acreage of this soil is cultivated or is used for pasture, and the rest is wooded. Cotton, corn, soybeans, small grains, commonly grown pasture plants, and pine trees are well suited to this soil. This soil is easy to till and can be cultivated throughout a wide range of moisture content without crusting. Erosion is a hazard in cultivated areas, but it can be controlled by use of supporting grassed waterways, stripcropping, and parallel terracing. Capability unit IIe-2; woodland suitability group 2o7.

Ora sandy loam, 5 to 8 percent slopes (OrC).—This is a moderately well drained soil on uplands.

The surface layer is yellowish-brown sandy loam about 4 inches thick underlain by brown loam about 4 inches thick. The next layer is yellowish-red loam or sandy clay loam about 24 inches thick. The fragipan is mottled yellow, red, gray, and brown loam, sandy loam, or sandy clay loam that extends to a depth of 80 inches. Included in mapping are small areas of Ruston and Savannah soils.

This soil is strongly acid or very strongly acid. Permeability is moderate above the fragipan and moderately slow in the fragipan. Available water capacity is medium. Runoff is medium. The hazard of erosion is moderate. In places the surface is eroded, and some eroded spots and shallow gullies are present.

Almost all of this soil is cultivated or has been cultivated or is in pasture. Part of the acreage has been planted to pine trees. Cotton, corn, soybeans, small grains, commonly grown pasture plants, and pine trees are well suited to this soil. Erosion is a hazard in cultivated areas, but it can be controlled by use of supporting grassed waterways, stripcropping, and parallel terracing. Capability unit IIIe-2; woodland suitability group 2o7.

Paden Series

The Paden series consists of moderately well drained soils that have a fragipan. These soils formed in loamy material, high in content of silt, on uplands.

In a representative profile the surface layer is dark grayish-brown silt loam 4 inches thick. The subsurface layer

is pale-brown silt loam about 3 inches thick. The next layer is yellowish-brown silt loam 11 inches thick. Below this is yellowish-brown silt loam, about 4 inches thick, mottled with pale brown. The next layer is a yellowish-brown silt loam and loam fragipan that is mottled in shades of brown and gray and is about 43 inches thick. This is underlain to a depth of 80 inches by a clay loam fragipan that is mottled in shades of gray and brown.

Representative profile of Paden silt loam, 0 to 2 percent slopes, 1½ miles northeast of Oakvale, 100 yards east of gravel road in the SW¼NW¼ sec. 30, T. 6 N., R. 19 W.:

A1—0 to 4 inches, dark grayish-brown (10YR 4/2) silt loam; weak, fine, granular structure; very friable; many fine grass roots; strongly acid; abrupt, smooth boundary.

A2—4 to 7 inches, pale-brown (10YR 6/3) silt loam; weak, fine, granular structure; very friable; many fine roots; some pores filled with material from A1 horizon; strongly acid; clear, wavy boundary.

B21—7 to 18 inches, yellowish-brown (10YR 5/6) silt loam; moderate, medium, subangular blocky structure; friable; few fine roots; strongly acid; clear, wavy boundary.

B'x1 & A'2—18 to 22 inches, yellowish-brown (10YR 5/6) silt loam; common, medium, faint, pale-brown (10YR 6/3) mottles; weak, fine and medium, subangular blocky structure; friable; yellowish-brown part is slightly brittle; thin patchy clay films on faces of peds; strongly acid; clear, wavy boundary.

B'x2—22 to 30 inches, yellowish-brown (10YR 5/6) silt loam; common, medium, distinct, pale-brown (10YR 6/3) mottles; weak, coarse, prismatic structure parting to moderate, medium, subangular blocky; firm; yellowish-brown part is compact and brittle and pale-brown part is friable; clay films on faces of peds; common fine voids; few fine concretions; strongly acid; clear, wavy boundary.

B'x3—30 to 42 inches, yellowish-brown (10 YR 5/6) loam; common medium, distinct, pale-brown (10YR 6/3) and light brownish-gray (10YR 6/2) mottles; weak, coarse, prismatic structure parting to moderate, medium, subangular blocky; yellowish-brown part is firm, compact, and brittle and pale-brown part is friable; clay films on faces of peds; seams of gray silt between prisms; common fine voids; few fine concretions; strongly acid; clear, wavy boundary.

IIB'x4—42 to 65 inches, yellowish-brown (10YR 5/6) silt loam; common, medium, distinct, pale-brown (10YR 6/3), light-gray (10YR 7/1), and strong-brown (7.5YR 5/6) mottles; weak, coarse, prismatic structure parting to moderate, medium, subangular blocky; firm; brown part is compact and brittle and the rest is friable; clay films on faces of peds; few fine voids; few fine pebbles; medium acid; clear, wavy boundary.

IIB'x5—65 to 80 inches, mottled yellowish-red (5YR 5/8), yellowish-brown (10YR 5/6), pale-brown (10YR 6/3), and light-gray (10YR 7/1) clay loam; moderate, medium, subangular blocky structure; firm; brown part is compact and brittle; clay films on faces of peds; few fine voids; medium acid.

The A1 and A2 horizons are dark grayish brown, grayish brown, brown, pale brown, or light yellowish brown. The B horizon is yellowish-brown to strong-brown silt loam or silty clay loam. Content of clay in the B horizon is 20 to 32 percent. The Bx and A'2 horizons are yellowish brown, very pale brown, or are mottled in shades of brown and gray. The Bx horizon is yellowish brown mottled in shades of brown and gray or is mottled in shades of brown, red, and gray. It is silty clay loam, silt loam, loam, or clay loam. Reaction is medium acid to very strongly acid throughout.

Paden soils are associated with Providence, Savannah, and Stough soils. They have a bisequal profile that is not present in Providence or Savannah soils. They are better drained and have more clay in the B horizons than Stough soils. They have a fragipan that Stough soils lack.

Paden silt loam, 0 to 2 percent slopes (PaA).—This is a moderately well drained soil on broad upland flats. Included in mapping are small areas of Stough, Providence, and Savannah soils.

This soil is medium acid to very strongly acid. Permeability is moderate above the fragipan and slow in the fragipan. Available water capacity is medium. Runoff is slow.

Most of the acreage of this soil is used for crops or pasture, and the rest is wooded. Cotton, corn, soybeans, small grains, commonly grown pasture plants, and pine and hardwood trees are well suited to this soil. This soil is easy to till and can be cultivated throughout a wide range of moisture content without crusting or packing. Capability unit IIw-3; woodland suitability group 2o7.

Prentiss Series

The Prentiss series consists of moderately well drained loamy fragipan soils on broad terrace flats. These soils formed in marine or stream deposits of loamy sediments.

In a representative profile the surface layer is dark-brown silt loam about 8 inches thick. Below the surface layer is yellowish-brown loam 17 inches thick. Underlying this, and extending to a depth of 86 inches, is a sandy loam fragipan that is mottled with yellowish brown, pale brown, light gray, strong brown, and yellowish red.

Representative profile of Prentiss silt loam, 0 to 2 percent slopes, 3 miles south of Prentiss; ¾ mile west of Highway 13, ¼ mile north of gravel road, and 25 yards west of Whitesand Creek in the SE¼SW¼ sec. 22, T. 7 N., R. 19 W.:

Ap—0 to 8 inches, dark-brown (10YR 4/3) silt loam; weak, fine, granular structure; friable; common fine roots; strongly acid; abrupt, smooth boundary.

B21—8 to 14 inches, yellowish-brown (10YR 5/4) loam; few, fine, faint mottles of dark brown; weak, fine, subangular blocky structure; friable; common fine roots; strongly acid; clear, wavy boundary.

B22—14 to 25 inches, yellowish-brown (10YR 5/6) loam; weak, medium, subangular blocky structure; friable; common fine roots; few patchy clay films on faces of peds; sand grains bridged and coated with clay; few fine concretions; few pockets of pale-brown uncoated sand grains; strongly acid; clear, wavy boundary.

Bx1—25 to 40 inches, mottled yellowish-brown (10YR 5/6), pale-brown (10YR 6/3), light-gray (10YR 7/2), and strong-brown (7.5YR 5/8) sandy loam; moderate, fine and medium, subangular blocky structure; firm; yellowish-brown and strong-brown parts are brittle and compact, pale-brown and light-gray parts are friable; common fine roots; patchy clay films on faces of peds; strongly acid; clear, wavy boundary.

Bx2—40 to 78 inches, mottled light-gray (10YR 7/2) and strong-brown (7.5YR 5/6) sandy loam; weak, coarse, prismatic structure parting to moderate, medium, subangular blocky; firm; strong-brown part is brittle and compact and gray part is friable; few fine roots; common medium and coarse concretions; many fine pores; clay films on faces of prisms and peds; sand grains coated and bridged with clay; strongly acid; clear, wavy boundary.

Bx3—78 to 86 inches, mottled light-gray (10YR 7/2), strong-brown (7.5YR 5/6), and yellowish-red (5YR 5/6) sandy loam; weak, coarse, prismatic structure parting to moderate, medium, subangular blocky; firm; strong-brown part is brittle and compact and gray part is friable; common medium coarse concretions; many fine pores; patchy clay films on faces of prisms; sand grains coated and bridged with clay; strongly acid.

The fragipan is at a depth of 20 to 32 inches. The Ap horizon is dark grayish brown or dark brown. The B21 and B22 horizons are yellowish-brown or strong-brown loam and sandy loam. The Bx horizons are mottled in shades of brown, yellowish red, and gray or have yellowish-brown matrix colors with few to many gray mottles. Content of clay in the B21 and B22 horizons ranges from 10 to 18 percent. Reaction is strongly acid to very strongly acid except in places where the A horizon has been limed.

Prentiss soils are associated with Savannah, Smithton, and Stough soils, and Trebloc soils, thick surface variant. They are

better drained than Smithton and Stough soils. They are better drained and have less clay in the B horizons than Trebloc soils, thick surface variant. They have less clay in the B horizons than Savannah soils. They have a fragipan that Smithton, Stough, and Trebloc soils, thick surface variant, lack.

Prentiss silt loam, 0 to 2 percent slopes (PrA).—This is a moderately well drained soil on flats along major streams. Included in mapping are small areas of Savannah and Stough soils, and Trebloc soils, thick surface variant.

This soil is strongly acid or very strongly acid. Permeability is moderate in the horizon above the fragipan and moderately slow in the fragipan. Available water capacity is medium. Runoff is slow to medium.

About 75 percent of the acreage of this soil is cultivated or used for pasture, and the rest is wooded. Cotton, corn, soybeans, small grains, commonly grown pasture plants, and pine and hardwood trees are well suited to this soil. This soil is easy to till and can be cultivated throughout a wide range of moisture content without crusting or packing. This soil is flooded occasionally. Capability unit IIw-4; woodland suitability group 2o7.

Providence Series

The Providence series consists of moderately well drained fragipan soils on uplands. These soils formed in loamy material high in content of silt. Slopes range from 2 to 8 percent.

In a representative profile the surface layer is yellowish-brown silt loam 6 inches thick. Below the surface layer is yellowish-red silt loam, about 12 inches thick, that has yellowish-brown mottles. The next layer is strong-brown silt loam about 3 inches thick mottled with yellowish red. Below this is yellowish-brown silt loam about 4 inches thick. A thick, compact fragipan is at a depth of 25 inches. It is strong-brown silt loam mottled with gray to a depth of 51 inches and yellowish-red sandy clay loam to a depth of 70 inches mottled with strong brown and light brownish gray.

Representative profile of Providence silt loam, 2 to 5 percent slopes, 5½ miles south of Lucas and 4½ miles north of Oakvale; 3 miles west of State Highway 13 and ¼ mile north of gravel road in the NW¼NW¼ sec. 7, T. 6 N., R. 19 W.:

Ap—0 to 6 inches, yellowish-brown (10YR 5/4) silt loam; weak, fine, granular structure; very friable; many fine roots; strongly acid; abrupt, smooth boundary.

B21t—6 to 18 inches, yellowish-red (5YR 5/6) silt loam; few, fine, distinct mottles of yellowish brown; moderate, medium, subangular blocky structure; friable; many fine roots; root and worm channels filled with material from Ap horizon; clay films on faces of peds; strongly acid; clear, wavy boundary.

B22t—18 to 21 inches, strong-brown (7.5YR 5/6) silt loam; few, fine, distinct mottles of yellowish red; moderate, medium, subangular blocky structure; friable; few fine roots; clay films on faces of peds; strongly acid; clear, wavy boundary.

B23t—21 to 25 inches, yellowish-brown (10YR 5/6) silt loam; moderate, medium, subangular blocky structure; friable; clay films on faces of peds; few, fine, brown concretions; strongly acid; clear, wavy boundary.

Bx1—25 to 30 inches, strong-brown (7.5YR 5/6) silt loam; many, medium, distinct, light brownish-gray (10YR 6/2) mottles; weak, coarse, prismatic structure parting to moderate, medium, subangular blocky; firm; strong-brown part is hard, compact, and brittle; many fine voids; clay films on faces of peds; seams of gray silt surround prisms; few, fine, brown concretions; strongly acid; clear, wavy boundary.

IIBx2—30 to 51 inches, strong-brown (7.5YR 5/8) silt loam high in content of sand; many, medium, distinct, light brownish-gray (10YR 6/2) mottles; weak, coarse, prismatic structure parting to moderate, medium, subangular blocky; firm; strong-brown part is hard, compact, and brittle; many fine voids; clay films on faces of peds; seams of gray silt surround prisms; few, fine, black and brown concretions; strongly acid; clear, wavy boundary.

IIBx3—51 to 70 inches, yellowish-red (5YR 4/6) sandy clay loam; many, medium, distinct, strong-brown (7.5YR 5/6) and light brownish-gray (10YR 6/2) mottles; weak, coarse, prismatic structure parting to moderate, medium, subangular blocky; firm; strong-brown part is compact and brittle; many fine voids; clay films on faces of peds; seams of gray silt surround prisms; few, fine, black and brown concretions; strongly acid; clear, wavy boundary.

The A horizon is dark grayish brown, dark brown, dark gray, or yellowish brown. In some places the A horizon is thin and is very dark gray or very dark grayish brown. The upper part of the Bt horizon is yellowish-brown, strong-brown, or yellowish-red silt loam or silty clay loam. Content of clay ranges from 20 to 30 percent, and content of sand ranges from 5 to 15 percent. The Bx horizons are yellowish brown, strong brown, or yellowish red or are mottled in shades of brown, red, and gray. The upper part is silt loam or silty clay loam, and the lower part is clay loam or sandy clay loam. Reaction is strongly acid or very strongly acid throughout.

Providence soils are associated with Ora and Paden soils. They have less sand in the B horizon than Ora soils. They lack the bisequal profile that is characteristic of Paden soils.

Providence silt loam, 2 to 5 percent slopes (PvB).—This moderately well drained soil has a fragipan and is on uplands. It has the profile described as representative of the series.

Included with this soil in mapping are small areas of Ora and Paden soils. Also included are soils similar to this Providence soil but that have 15 to 20 percent gravel in the lower horizons.

This soil is strongly acid or very strongly acid. Available water capacity is medium, and permeability is moderate above the fragipan and moderately slow in the fragipan. Runoff is medium. The hazard of erosion is slight to moderate. In some places the surface layer is eroded to a depth of about 4 inches, and in cultivated areas the surface layer is a mixture of the original surface layer and the layer directly below the surface layer.

About two-thirds of the acreage of this soil is cultivated or is used for pasture, and the rest is wooded. Cotton, corn, soybeans, small grains, truck crops, commonly grown pasture plants, and pine and hardwood trees are well suited to this soil. This soil is easy to till and can be cultivated throughout a wide range of moisture content without crusting or packing. Erosion can be controlled by using grassed waterways, strip-cropping, and parallel terracing. Row crops and pasture plants respond to applications of fertilizer. Capability unit IIe-3; woodland suitability group 2o7.

Providence silt loam, 5 to 8 percent slopes (PvC).—This is a moderately well drained soil that has a fragipan and is on uplands.

The surface layer is dark grayish-brown silt loam about 5 inches thick. The next layer is strong-brown silt loam about 21 inches thick. Below this is a mottled yellowish-red, strong-brown, and gray loamy fragipan. Included in mapping are small areas of Ora soils and soils similar to this Providence soil but that contain 15 to 20 percent gravel in the lower horizons.

This soil is strongly acid or very strongly acid. Available water capacity is medium, and permeability is moderate above the fragipan and moderately slow in the fragipan. Runoff is medium. The hazard of erosion is slight to moderate. In some places the surface layer is eroded to a depth of about 4 inches, and in cultivated areas part of the next layer has been mixed into the plow layer.

About 90 percent of the acreage of this soil is cultivated or used for pasture, and the rest is wooded. Cotton, corn, soybeans, small grains, commonly grown pasture plants, and pine trees are well suited to this soil. This soil is easy to till and can be cultivated throughout a wide range of moisture content without crusting or packing. Erosion can be controlled by use of grassed waterways, stripcropping, and parallel terraces. Row crops and pasture plants respond to applications of fertilizer. Capability unit IIIe-3; woodland suitability group 2o7.

Ruston Series

The Ruston series consists of well-drained soils that formed in loamy material on uplands and low stream terraces. Slopes range from 0 to 12 percent.

In a representative profile the surface layer is dark grayish-brown sandy loam about 6 inches thick. Below this is yellowish-red sandy loam 3 inches thick. The next layer is red sandy clay loam 18 inches thick. Below it is a layer of yellowish-red sandy loam, 28 inches thick, that has reddish-brown mottles in the lower part. This layer is underlain by red sandy clay loam that extends to a depth of 80 inches.

Representative profile of Ruston sandy loam, 2 to 5 percent slopes, 2.5 miles south of Bassfield; 1¼ miles east of State Highway 35 on west side of a paved road in a cotton-field in the SE¼NW¼ sec. 30, T. 6 N., R. 17 W.:

Ap—0 to 6 inches, dark grayish-brown (10YR 4/3) sandy loam; weak, fine, granular structure; very friable; many fine roots; strongly acid; clear, wavy boundary.

B1—6 to 9 inches, yellowish-red (5YR 4/6) sandy loam; weak, fine, granular structure; very friable; many fine roots; worm castings and root channels filled with Ap material; strongly acid; abrupt, smooth boundary.

B21t—9 to 27 inches, red (2.5YR 4/6) sandy clay loam; moderate, fine, subangular blocky structure; friable; many fine roots; few clay films in pores; sand grains coated and bridged with clay and oxides; strongly acid; clear, wavy boundary.

B22t—27 to 35 inches, yellowish-red (5YR 4/8) sandy loam; moderate, fine, subangular blocky structure; friable; few clay films in pores; sand grains coated and bridged with clay and oxides; strongly acid; clear, wavy boundary.

B23t & A′2—35 to 55 inches, yellowish-red (5YR 5/8) sandy loam; few, fine, faint mottles of reddish brown; weak, fine, granular structure; very friable; small areas ½ inch to 2 inches in diameter where material is somewhat brittle; pockets of uncoated sand grains; strongly acid; clear, wavy boundary.

B′24t—55 to 70 inches, red (10YR 4/8) sandy clay loam; moderate, medium, subangular blocky structure; friable; few clay films in pores; sand grains bridged and coated with clay and oxides; strongly acid; clear, wavy boundary.

B′25t—70 to 80 inches, red (10R 4/8) sandy clay loam; moderate, medium, subangular blocky structure; friable; few clay films in pores; sand grains coated and bridged with clay and oxides; few fine quartz pebbles; strongly acid.

The A horizon is brown, yellowish brown, or dark grayish brown. In places in undisturbed areas, the A1 horizon is very dark grayish brown. The B1 horizon, where present, is yellowish-red or red sandy loam or loam. The B2t horizon is yellowish-red, reddish-yellow, or red clay loam, loam, or sandy clay loam. Content of clay in the upper 20 inches of the B2t horizon ranges from 18 to 30 percent. More than 15 percent of the particles are coarser than very fine sand. The A′2 and B′21t horizons are strong-brown, yellowish-red, or red sandy loam or loamy sand, and they contain common to many pockets of uncoated sand grains. The B′t horizon is yellowish-red or red loam, sandy loam, or sandy clay loam. Reaction is strongly acid or very strongly acid throughout. In some profiles the material is as much as 10 percent fine gravel.

Ruston soils are associated with Bassfield, McLaurin, Ora, Saffell, and Smithdale soils. They have more clay in the B horizon than Bassfield and McLaurin soils. They lack the fragipan of Ora soils. They have less gravel in the B horizon than Saffell soils and more clay in the lower part of the Bt horizon than Smithdale soils.

Ruston sandy loam, 2 to 5 percent slopes (RuB).—This is a well-drained, gently sloping soil on ridges.

This soil has the profile described as representative of the series. Included in mapping are small areas of Ora and Saffell soils.

This soil is strongly acid or very strongly acid. Permeability is moderate, and available water capacity is medium. Runoff is medium. If the soil is cultivated, the hazard of erosion is slight. In a few areas the soil is eroded, and as a result the surface layer is only about 5 inches thick. Also, in a few cultivated areas, material from the layer below the plow layer has been mixed into the plow layer.

Approximately two-thirds of the acreage of this soil is cultivated or is used for pasture. The rest is in woodland or is idle. Cotton, corn, soybeans, small grains, truck crops, commonly grown pasture plants, and pine trees are well suited to this soil. The hazard of erosion is slight if row crops are grown, but erosion can be controlled with grassed waterways, stripcropping, and parallel terracing. All row crops and pasture plants respond to applications of fertilizer. This soil is easy to till and can be cultivated throughout a wide range of moisture content without crusting or packing. Capability unit IIe-1; woodland suitability group 2o1.

Ruston sandy loam, 5 to 8 percent slopes (RuC).—This is a well-drained, sloping soil on uplands.

This soil has a brown surface layer about 6 inches thick. The next layer, about 24 inches thick, is yellowish-red to red sandy clay loam. Below this is a layer of yellowish-red sandy loam about 27 inches thick. This layer is underlain by red sandy clay loam that extends to a depth of 94 inches. Included in mapping are small areas of Ora and Saffell soils.

This soil is strongly acid or very strongly acid. Permeability is moderate, and available water capacity is medium. Runoff is medium. If the soil is cultivated, the hazard of erosion is slight to moderate. In a few areas the surface layer is eroded and is only about 3 to 4 inches thick. Also, in a few cultivated areas, material from the layer below the plow layer has been mixed into the plow layer.

Almost all of the acreage of this soil is cultivated, has been cultivated in the past, or is used for pasture. A small acreage has been planted to pine trees. Cotton, corn, soybeans, small grains, truck crops, commonly grown pasture plants, and pine trees are well suited to this soil. The hazard of erosion is slight to moderate if row crops are grown, but erosion can be controlled with grassed waterways, stripcropping (fig. 5), and

Figure 5.—**Stripcropping on Ruston sandy loam, 5 to 8 percent slopes.**

parallel terracing. All row crops and pasture plants respond to applications of fertilizer. This soil is easy to till and can be cultivated throughout a wide range of moisture content without crusting or packing. Capability unit IIIe-4; woodland suitability group 2o1.

Ruston sandy loam, 4 to 8 percent slopes, severely eroded (RuC3).—This is a well-drained, sloping soil on uplands.

The surface layer is yellowish-brown sandy loam about 3 inches thick. The next layer is about 23 inches of yellowish-red sandy clay loam. Below this is a layer of strong-brown sandy loam about 22 inches thick. This layer is underlain by red sandy clay loam that extends to a depth of 80 inches. Included in mapping are small areas of Ora and Saffell soils.

This soil is strongly acid or very strongly acid. Available water capacity is medium, and permeability is moderate. Runoff is rapid. The hazard of erosion is moderate to severe. In most areas material from the layer below the plow layer has been mixed into the plow layer. Many small gullies and gall spots, and an occasional deep gully are present. Some old abandoned fields have 1 or 2 inches of the original surface layer remaining.

Most of the acreage of this soil has been cultivated, but, because of erosion, it is now idle or in pasture. Smaller areas are used to grow pine trees. Cotton, corn, small grains, commonly grown pasture plants, and pine trees are well suited to this soil where gall spots and gullies are not too numerous. The hazard of erosion is moderate to severe if row crops are grown, but erosion can be controlled with grassed waterways, stripcropping, and parallel terracing. All row crops and pasture plants respond to applications of fertilizer. Capability unit IIIe-5; woodland suitability group 2o1.

Ruston sandy loam, 8 to 12 percent slopes (RuD).—This is a well-drained, rolling soil on uplands.

This soil has a dark grayish-brown sandy loam surface layer about 6 inches thick. The next layer, to a depth of 18 inches, is yellowish-red sandy clay loam. Below this is about 22 inches of yellowish-red sandy loam that has mottles of very pale brown. This layer is underlain by red sandy loam that grades to sandy clay loam and extends to a depth of 80 inches. Included in mapping are small areas of Saffell and Smithdale soils.

This soil is strongly acid or very strongly acid. Available water capacity is medium. Runoff is rapid. If the soil is cultivated, the hazard of erosion is severe. In a few areas the surface layer is eroded and is about 4 inches thick. Also, in a few cultivated areas, material from the layer below the plow layer has been mixed into the plow layer.

About two-thirds of the acreage of this soil is still in woodland. The rest is in pasture, crops, or is idle. This soil is better suited to pasture and trees than to most other uses.

Cotton, corn, small grains, hay crops, commonly grown pasture plants, and pine trees are suited to this soil. Such erosion-control measures as grassed waterways, stripcropping, and parallel terracing help control erosion. All row crops and pasture plants respond to applications of fertilizer. Capability unit IVe-2; woodland suitability group 2o1.

Ruston sandy loam, 8 to 12 percent slopes, severely eroded (RuD3).—This is a well-drained, rolling soil on uplands.

The surface layer is mixed yellowish brown and yellowish red in color. It is about 3 inches thick. The layer below it is yellowish-red sandy clay loam to a depth of 45 inches. The next layer is about 11 inches of red sandy loam mottled with yellow. This is underlain by red sandy clay loam that extends to a depth of 75 inches. Included in mapping are small areas of Saffell and Smithdale soils.

This soil is strongly acid or very strongly acid. Permeability is moderate, and available water capacity is medium. Runoff is rapid. The hazard of erosion is severe.

In most areas material from the layer below the plow layer has been mixed into the plow layer. Many small gullies, gall spots, and an occasional deep gully are present. Some abandoned fields have 1 to 2 inches of the original surface layer, but gall spots and shallow gullies are common.

Most of the acreage of this soil has been cultivated, but, because of erosion, most of it is now idle or in pasture. Smaller areas are used to grow pine trees. Small grains, commonly grown pasture plants, and pine trees are well suited to this soil in areas where gall spots and gullies are not too numerous. Capability unit VIe-2; woodland suitability group 2o1.

Ruston and Bassfield soils, low terrace, 0 to 2 percent slopes (RwA).—This mapping unit is on low stream terraces or second bottoms. It is made up of well-drained Ruston and Bassfield soils. The soils are along the major streams where the stream has cut a deep channel through the flood plain or are on terraces. These soils are associated in an irregular pattern. Some areas are either Ruston soils or Bassfield soils, but most areas are both.

This mapping unit is about 38 percent Ruston soils, 17 percent Bassfield soils, and 45 percent Darco, Jena, Kirkville, and Nugent soils.

Ruston soils have a dark grayish-brown sandy loam surface layer about 10 inches thick. This is underlain by mixed dark grayish-brown and yellowish-red loam about 4 inches thick. The next layer is reddish-yellow sandy clay loam to depth of 40 inches. Below this is strong-brown sandy loam about 13 inches thick. This is underlain by yellowish-red loam that extends to a depth of 80 inches.

Ruston soils are strongly acid or very strongly acid. Available water capacity is medium, and permeability is moderate. Runoff is slow to medium.

Bassfield soils are strongly acid or very strongly acid. Available water capacity is medium, and permeability is moderately rapid. Runoff is slow to medium.

About 95 percent of the acreage of this mapping unit is in row crops or is pasture, and the rest is wooded. Cotton, corn, soybeans, oats, commonly grown pasture plants, and pine trees are well suited to these soils. These soils are easy to till and can be cultivated throughout a wide range of moisture content without crusting or packing. Occasional flooding, about twice a year, is a hazard. Capability unit IIw-5; Woodland suitability group: Ruston part 2o1, Bassfield part 207.

Saffell Series

The Saffell series consists of well-drained soils that have a high percentage of gravel throughout. These soils formed in gravelly loamy materials on uplands. Slopes range from 2 to 8 percent.

In a representative profile the surface layer is very dark gray gravelly sandy loam about 3 inches thick. The subsurface layer is dark grayish-brown sandy loam 5 inches thick. The next layer is pale-brown sandy loam 8 inches thick. Below this layer is red gravelly sandy clay loam 12 inches thick. This is underlain by layers of red and yellowish-red gravelly sandy loam that extends to a depth of 90 inches and that has few mottles of dark brown and white.

Representative profile of Saffell gravelly sandy loam, 2 to 8 percent slopes, 3½ miles west of Bassfield and 2¼ miles south of Carson; 4¾ miles east of State Highway 13 and 100 yards west of paved road on south bank of gravel pit in the NE¼NE¼ sec. 9, T. 6 N., R. 18 W.:

A1—0 to 3 inches, very dark gray (10YR 3/1) gravelly sandy loam; weak, fine, granular structure; very friable; many fine roots; 10 percent fine gravel, by volume; strongly acid; abrupt, smooth boundary.

A2—3 to 8 inches, dark grayish-brown (10YR 4/2) sandy loam; weak, fine, granular structure; very friable; many fine roots; few fine pebbles; strongly acid; abrupt, smooth boundary.

B1—8 to 16 inches, pale-brown (10YR 6/3) sandy loam; weak, fine, granular structure; very friable; many fine roots; few fine pebbles; strongly acid; abrupt, smooth boundary.

B2t—16 to 28 inches, red (2.5YR 4/6) gravelly sandy clay loam; moderate, fine, subangular blocky structure; friable; few fine roots; patchy clay films on faces of peds; sand and gravel coated and bridged with clay; 60 percent fine, medium, and coarse gravel, by volume; strongly acid; clear, wavy boundary.

B31t—28 to 49 inches, red (2.5YR 4/6) gravelly sandy loam; few, fine, distinct mottles of reddish yellow; weak, fine, subangular blocky structure; friable; sand and gravel coated and bridged with clay; 70 percent fine, medium, and coarse gravel, by volume; strongly acid; clear, wavy boundary.

B32t—49 to 77 inches, yellowish-red (5YR 4/6) gravelly sandy loam; few, medium, distinct mottles of dark brown (7.5YR 4/4) and white (10YR 8/1); weak, fine, subangular blocky structure; friable; sand and gravel coated and bridged with clay; 30 percent fine gravel, by volume; strongly acid; clear, wavy boundary.

B33t—77 to 90 inches, red (2.5YR 4/8) gravelly sandy loam; weak, fine, subangular blocky structure; sand and gravel coated and bridged with clay; 20 percent fine gravel, by volume; strongly acid.

The A1 horizon is dark grayish brown or very dark gray. The A2 horizon is pale brown, dark grayish brown, or grayish brown. The A horizon is fine sandy loam or sandy loam to gravelly sandy loam that contains varying amounts of gravel. The B2t horizons range in color from red or yellowish red to mottled red, yellowish red, and brownish yellow. They are gravelly loam or gravelly sandy clay loam. The weighted average content of gravel in the upper 20 inches of the Bt horizon is 35 to 75 percent. The B3t horizon ranges in texture from gravelly sandy loam to sand and in color from red to white. Content of gravel ranges from 20 to 90 percent, by volume. Reaction is strongly acid or very strongly acid throughout.

Saffell soils are associated with Ora and Ruston soils. They have a higher content of gravel than Ruston or Ora soils. They lack the fragipan that is characteristic of Ora soils.

Saffell gravelly sandy loam, 2 to 8 percent slopes (SaC).—This is a well-drained soil in small areas throughout the county. Included in mapping are small areas of Ora and Ruston soils.

This soil is strongly acid or very strongly acid. Permeability is moderate to rapid, and available water capacity is medium. Runoff is medium.

About two-thirds of the acreage of this soil is cultivated or is used for pasture, and the rest is wooded. Some areas have been mined for gravel. Cotton, corn, small grains, commonly grown pasture plants, and pine trees are suited to this soil. This soil is not easy to till because it generally has enough gravel in the surface layer to interfere with cultivation. Capability unit IIIe-6; woodland suitability group 4f2.

Savannah Series

The Savannah series consists of moderately well drained soils that have a fragipan. These soils formed in loamy material on uplands. Slopes range from 2 to 8 percent.

In a representative profile the surface layer is dark grayish-brown silt loam 6 inches thick. Below this is yellowish-brown silt loam 6 inches thick and strong-brown loam 10 inches thick. Below this is brittle and compact loam or silt loam that is mottled in shades of brown, gray, and red to a depth of 65 inches. This is underlain by sandy loam that is mottled in shades of brown and gray to a depth of 70 inches.

Representative profile of Savannah silt loam, 2 to 5 percent slopes, 2½ miles northeast of Bassfield, on south side of blacktopped road in the SW¼SE¼ sec. 37, T. 6 N., R. 17 W.:

Ap—0 to 6 inches, dark grayish-brown (10YR 4/2) silt loam; few, fine, faint mottles of pale brown; weak, fine, granular structure; very friable; many fine roots; strongly acid; abrupt, smooth boundary.

B1—6 to 12 inches, yellowish-brown (10YR 5/6) silt loam; weak, fine, subangular blocky structure; friable; many fine roots; root and worm channels filled with material from A horizon; strongly acid; abrupt, smooth boundary.

B2t—12 to 22 inches, strong-brown (7.5YR 5/6) loam; moderate, medium, subangular blocky structure; friable; few fine roots; clay films on faces of some peds; sand grains coated and bridged with clay; common fine voids; few, fine, soft, brown concretions; strongly acid; clear, wavy boundary.

Bx1—22 to 36 inches, mottled yellowish-brown (10YR 5/6), light-gray (10YR 7/2), and yellowish-red (5YR 4/6) silt loam; weak, coarse, prismatic structure parting to moderate, medium, subangular blocky; firm; yellowish-brown part is compact and brittle and light-gray part is friable; common fine voids; clay films on faces of some peds; sand grains coated and bridged with clay; few, fine, soft, brown concretions; seams of gray silt surround prisms; strongly acid; clear, wavy boundary.

Bx2—36 to 44 inches, mottled strong-brown (7.5YR 5/6) and light brownish-gray (10YR 6/2) loam; weak, coarse, prismatic structure parting to moderate, medium, subangular blocky; strong-brown part is firm, compact, and brittle and light brownish-gray part is friable; common fine voids; sand grains coated and bridged with clay; patchy clay films on faces of peds; seams of gray silt surround prisms; strongly acid; clear, wavy boundary.

Bx3—44 to 54 inches, mottled yellowish-brown (10YR 5/8), light yellowish-brown (10YR 6/4), and yellowish-red (5YR 4/6) loam; weak, coarse, prismatic structure parting to moderate, medium, subangular blocky; yellowish-brown part is firm, compact, and brittle and light yellowish-brown part is friable; clay films on faces of peds; seams of gray silt surround prisms; strongly acid; clear, wavy boundary.

Bx4—54 to 65 inches, mottled strong-brown (7.5YR 5/6), light-gray (10YR 7/1), and yellowish-red (5YR 5/8) loam; weak, coarse, prismatic structure parting to moderate, medium, subangular blocky; strong-brown part is firm, compact, and brittle and light-gray part is friable; clay films on faces of peds; seams of gray silt surround prisms; strongly acid; clear, wavy boundary.

B3t—65 to 70 inches, mottled light yellowish-brown (10YR 6/4), yellowish-red (5YR 5/6), and light-gray (10YR 7/2) sandy loam; moderate, fine and medium, subangular blocky structure; friable; sand grains coated and bridged with clay; seams of gray silt surround peds; strongly acid.

The A horizon is dark grayish brown to brown. A thin, very dark gray A horizon is present in places. The B1 horizon ranges in color from light yellowish brown to yellowish brown and in texture from silt loam to loam. The Bt horizon is strong-brown or yellowish-brown loam or sandy clay loam. Content of clay in the B horizon ranges from 18 to 28 percent. More than 15 percent of the sand is coarser than very fine. The Bx horizon is yellowish brown and has gray mottles or is mottled in shades of gray, yellow, and red. It is loam, silt loam, or clay loam. Depth to the fragipan ranges from 16 to 28 inches. The soil is strongly acid or very strongly acid throughout.

Savannah soils are associated with Falkner, Ora, Paden, Prentiss, and Stough soils. They have a fragipan that is lacking in Falkner and Stough soils. They are less red in the B horizon than Ora soils. They have more sand in the upper part of the B horizon than Paden soils. They have more clay in the B horizon than Prentiss soils.

Savannah silt loam, 2 to 5 percent slopes (SbB).—This moderately well drained soil is on broad upland flats.

This soil has the profile described as representative of the series. Included in mapping are small areas of Ora and Paden soils.

This soil is strongly acid or very strongly acid. Permeability is moderate above the fragipan and moderately slow in the fragipan. Runoff is medium. Available water capacity is medium. The hazard of erosion is slight to moderate. In a few areas the soil is eroded, and as a result the surface layer is only about 3 to 4 inches thick. Also, in a few cultivated areas, material from the layer below the plow layer has been mixed into the plow layer. Gall spots and shallow gullies are scattered throughout areas of this soil.

Approximately 75 percent of the acreage of this soil is cultivated or is used for pasture. The rest is in woodland. Cotton, corn, soybeans, truck crops (fig. 6), commonly grown pasture plants, small grains, and pine and hardwood trees are well suited to this soil. The hazard of erosion is slight to moderate if row crops are grown, but erosion can be controlled with supporting grassed waterways, stripcropping, and parallel terracing. All row crops and pasture plants respond to applications of fertilizer. This soil is easy to till and can be cultivated throughout a wide range of moisture content without crusting or packing. Capability unit IIe-2; woodland suitability group 2o7.

Savannah silt loam, 5 to 8 percent slopes (SbC).—This moderately well drained soil has a fragipan and is on sloping uplands.

The surface layer of this soil is dark grayish-brown fine sandy loam 5 inches thick. Below this is yellowish-brown loam about 5 inches thick. The next layer above the fragipan is strong-brown sandy clay loam and brownish-yellow loam. It is underlain by a mottled yellow, brown, gray, and red sandy loam and sandy clay loam fragipan. Included in mapping are small areas of Ora and Ruston soils.

This soil is strongly acid or very strongly acid. Runoff is medium. Available water capacity is medium. Permeability is moderate above the fragipan and moderately slow in the fragipan. The hazard of erosion is moderate. In a few areas the soil is eroded, and as a result the surface layer is only about 3 or 4 inches thick. Also, in a few cultivated areas, material from the layer below the plow layer has been mixed into the plow layer. Gall spots and shallow gullies are scattered throughout areas of this soil.

Figure 6.—**Cucumbers on Savannah silt loam, 2 to 5 percent slopes.**

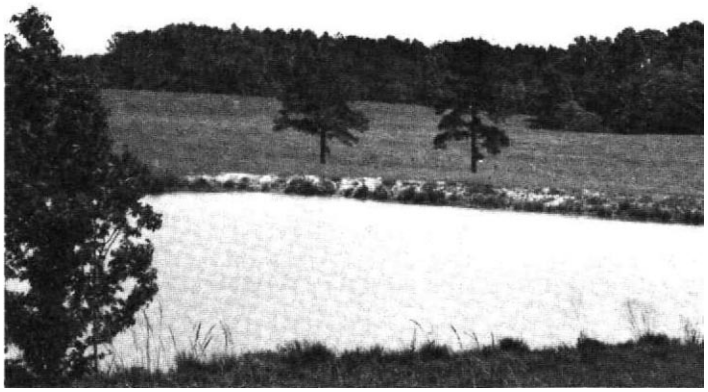

Figure 7.—**Farm pond and Bahiagrass pasture on Savannah silt loam, 2 to 5 percent slopes, and Savannah silt loam, 5 to 8 percent slopes.**

Approximately two-thirds of the acreage of this soil is cultivated or is used for pasture. The rest is in woodland. Cotton, corn, soybeans, small grains, commonly grown pasture plants (fig 7), and pine and hardwood trees are well suited to this soil. The hazard of erosion is moderate if row crops are grown, but erosion can be controlled by using grassed waterways, by stripcropping, and by parallel terracing. All row crops and pasture plants respond to applications of fertilizer. This soil is easy to till and can be cultivated throughout a wide range of moisture content without crusting or packing. Capability unit IIIe-2; woodland suitability group 2o7.

Smithdale Series

The Smithdale series consists of well-drained soils that formed in loamy material on uplands. Slopes range from 12 to 40 percent.

In a representative profile the surface layer is very dark gray sandy loam 3 inches thick. The subsurface layer is strong-brown sandy loam 6 inches thick. The next layer is red sandy clay loam 49 inches thick. This layer is underlain by yellowish-red sandy loam that extends to a depth of 80 inches.

Representative profile of Smithdale sandy loam, 17 to 40 percent slopes, approximately 6 miles south of Prentiss; 50 yards east of State Highway 13 in the NW¼SW¼ sec. 11, T. 6 N., R. 19 W.:

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

A2—3 to 9 inches, strong-brown (7.5YR 5/6) sandy loam; weak, fine, granular structure; very friable; many fine roots; strongly acid; clear, wavy boundary.

B21t—9 to 26 inches, red (2.5YR 4/8) sandy clay loam; moderate, medium, subangular blocky structure; friable; many fine roots; patchy clay films on faces of peds; peds coated and bridged with iron oxides; strongly acid; clear, wavy boundary.

B22t—26 to 43 inches, red (2.5YR 4/8) sandy clay loam; moderate, medium, subangular blocky structure; friable; few fine roots; patchy clay films on faces of peds; peds coated and bridged with iron oxide; strongly acid; clear, wavy boundary.

B23t—43 to 58 inches, red (2.5YR 4/8) sandy clay loam; moderate, medium, subangular blocky structure; friable; patchy clay films on faces of peds; sand grains coated and bridged with clay; strongly acid; clear, wavy boundary.

B24t—58 to 80 inches, yellowish-red (5YR 5/6) sandy loam; weak, medium, subangular blocky structure; friable; few fine and medium quartz pebbles; sand grains coated and bridged with clay; very strongly acid.

The A1 horizon is very dark gray, dark gray, dark grayish brown, very dark grayish brown, reddish brown, brown, or grayish brown. The A2 horizon is brown, pale brown, strong brown, light yellowish brown, yellowish brown, or reddish yellow. The A1 and A2 horizons are loamy sand, fine sandy loam, or sandy loam. The B1 horizon, where present, is reddish-yellow, yellowish-red, or red sandy loam or loam. The Bt horizon is red or yellowish red. The upper part of the Bt horizon is sandy clay loam or loam. The lower part of the Bt horizon is loam or sandy loam. Content of clay in the upper 20 inches of the Bt horizon ranges from 18 to 33 percent. Reaction is strongly acid or very strongly acid, but in some limed areas the surface is medium acid.

Smithdale soils are associated with McLaurin and Ruston soils. They have more clay in the Bt horizon than McLaurin soils. They have less clay in the lower part of the Bt horizon than Ruston soils.

Smithdale sandy loam, 12 to 17 percent slopes (SmE).—This is a well-drained soil on side slopes.

The surface layer is very dark grayish brown sandy loam about 4 inches thick. The next layer is yellowish-brown fine sandy loam 4 inches thick. Below this is about 14 inches of yellowish-red sandy loam. The next layer is red sandy clay loam 34 inches thick. Below this is red sandy loam that extends to a depth of 80 inches. Included in mapping are small areas of McLaurin and Ruston soils.

This soil is strongly acid or very strongly acid. Permeability is moderate, and available water capacity is medium. Runoff is rapid. If the land is bare, the hazard of erosion is severe. Gall spots and sheet erosion are present in some areas.

Almost all of the acreage of this soil is in mixed hardwoods and pines. A small acreage is still in pasture or is idle. Because of steep slopes and the hazard of erosion, these soils are better suited to commonly grown pasture plants and pine trees than to most other uses. Capability unit VIe-1; woodland suitability group 2o1.

Smithdale sandy loam, 17 to 40 percent slopes (SmF).—This well-drained soil is on steep side slopes.

This soil has the profile described as representative of the series. Included in mapping are small areas of Ruston and Saffell soils and soils that have a surface layer more than 20 inches thick.

This soil is strongly acid or very strongly acid. Permeability is moderate, and available water capacity is medium. Runoff is rapid. If the land is bare, the hazard of erosion is severe. Gall spots and shallow gullies are present in some cleared or logged areas.

Almost all of the acreage of this soil is in trees. A small acreage is still in pasture or is idle. Pine trees are well suited to this soil. Capability unit VIIe-2; woodland suitability group 2o1.

Smithdale-Udorthents complex, 5 to 25 percent slopes, severely eroded (SoE3).—This mapping unit is on sloping to hilly uplands. It consists of well-drained soils and gullied areas (fig. 8) that are in an intricate pattern on hillsides and ridgetops. The soils in this unit were originally dominantly Smithdale soils, but because of mismanagement they have become gullied. Continuous cropping, broken terraces, and poor ground cover have caused severe sheet erosion and gullies on the smoother slopes. Logging up and down the hills or cattle trails have caused deep, narrow gullies on the steeper slopes.

This mapping unit is about 45 percent Smithdale soils, 43 percent Udorthents (in gullies), and 12 percent recently deposited sediment in the floors of the gullies.

Figure 8.—**Gullies in an area of Smithdale-Udorthents complex, 5 to 25 percent slopes, severely eroded.**

The well-drained Smithdale soils have a surface layer of mixed brown and yellowish-red sandy loam 4 inches thick. The subsurface layer is dark grayish brown and 4 inches thick. The next layer is light yellowish-brown sandy loam about 5 inches thick. Below this layer is yellowish-red sandy loam 5 inches thick. The next layer is red sandy clay loam 18 inches thick. This is underlain by red sandy loam that extends to a depth of 80 inches.

Smithdale soils are strongly acid or very strongly acid. Available water capacity is medium, and permeability is moderate. Runoff is rapid.

Udorthents are soils in wide, shallow gullies on smooth slopes and in deep, narrow gullies on steeper slopes. They are strongly acid or very strongly acid. Udorthents are soils that have been so severely eroded that soil horizons cannot be identified. These soils are variable in texture ranging from sandy loam or loamy sand to sandy clay loam. Available water capacity is medium, and permeability is variable. Runoff is very rapid.

Almost all of the acreage of this mapping unit is idle or is in pine trees. Gullies, the lack of topsoil, and steepness of slope make these soils unsuitable for crops or pasture. The hazard of erosion is severe. The Smithdale part of this mapping unit is well suited to pine trees. In areas where the soils are not severely eroded, woodland production can be expected to be as good as in other comparable areas of Smithdale soils. Udorthents are gullied areas, and pine trees are suited to these areas, but production is variable. Onsite investigation is needed in order to make accurate recommendations. Capability unit VIIe-3; woodland suitability group 3r3.

Smithdale soils, 15 to 30 percent slopes, severely eroded (SsF3).—This well-drained soil is on uplands.

The surface layer is reddish-brown and brown sandy loam, fine sandy loam, and loam about 3 inches thick. The next layer is yellowish-red sandy clay loam 37 inches thick. Below this is yellowish-red or red sandy loam that extends to a depth of 80 inches. Smithdale soils and a similar soil, too eroded to be mapped as Smithdale soil, are present in an irregular pattern. Included in mapping are small areas of McLaurin and Ruston soils.

This soil is strongly acid or very strongly acid. Permeability is moderate, and available water capacity is medium. Runoff is rapid.

In most areas the next lower layer has been mixed into the plow layer. Many small gullies, gall spots, and scattered deep

gullies are present. Some abandoned fields have 1 to 2 inches of surface layer, but gall spots and shallow gullies are common.

Most of the acreage of this soil was once cultivated, but most is now idle or is in pasture because of erosion. Smaller areas are in pine trees. Commonly grown pasture plants and pine trees are suited to this soil. Capability unit VIIe-4; woodland suitability group 2o1.

Smithton Series

The Smithton series consists of poorly drained soils that formed in loamy material on flood plains.

In a representative profile the surface layer is dark grayish-brown silt loam about 4 inches thick. The subsurface layer is grayish-brown and dark grayish-brown loam 8 inches thick. The next layer is light-gray loam about 12 inches thick mottled with pale brown. This is underlain by light brownish-gray and light-gray loam or sandy loam that extends to a depth of 70 inches and that is mottled with brown, yellowish brown, and dark grayish brown.

Representative profile of Smithton silt loam, approximately 4 miles south on State Highway 13 from intersection with U.S. Highway 84, 3 miles west on gravel road, and 1½ miles southwest on gravel road in the NW¼SE¼ sec. 6, T. 6 N., R. 18 W.:

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

A2g—4 to 12 inches, mottled grayish-brown (10YR 5/2) and dark grayish-brown (10YR 4/2) loam; weak, fine, granular structure; friable; many fine roots; strongly acid; abrupt, smooth boundary.

B1g—12 to 24 inches, light-gray (10YR 7/1) loam; few, fine, faint mottles of pale brown; weak, fine and medium, subangular blocky structure; friable; few fine roots; strongly acid; clear, wavy boundary.

B21tg—24 to 36 inches, light brownish-gray (10YR 6/2) sandy loam; few, fine, faint mottles of brown; weak, fine and medium, subangular blocky structure; friable; patchy clay films on faces of peds; common, medium, black concretions; strongly acid; clear, wavy boundary.

B22tg—36 to 46 inches, mottled gray (10YR 6/1), yellowish-brown (10YR 5/6), brown (10YR 5/3), and dark grayish-brown (10YR 4/2) loam; weak, fine and medium, subangular blocky structure; friable; patchy clay films on faces of peds; sand grains coated and bridged with clay; few, fine, black concretions; strongly acid; clear, wavy boundary.

B23tg—46 to 62 inches, light brownish-gray (10YR 6/2) loam; few, fine, faint mottles of brown; weak, fine and medium, subangular blocky structure; friable; patchy clay films on faces of peds; few, fine, black concretions; strongly acid; clear, wavy boundary.

B24tg—62 to 70 inches, light-gray (10YR 7/2) loam; few, fine, faint mottles of brown and yellowish brown; weak, fine and medium, subangular blocky structure; friable; patchy clay films on faces of peds; few, fine, black concretions; strongly acid.

The A1 horizon is very dark gray, dark gray, dark grayish brown, or grayish brown. The A2 horizon is grayish brown, dark grayish brown, and light brownish gray, or is mottled in these colors. Texture of the A horizon is sandy loam, loam, or silt loam. The upper part of the B horizon is gray, light gray, or light brownish gray with mottles of brown, yellowish brown, strong brown, and dark yellowish brown. The lower part of the B horizon has colors similar to those of the upper part of the B horizon or is mottled in shades of brown and gray. It is loam or sandy loam. Content of clay in the upper 20 inches of the Bt horizon ranges from 12 to 18 percent. Reaction is strongly acid or very strongly acid throughout, except in areas where the A horizon has been limed.

Smithton soils are associated with Prentiss soils and Trebloc soils, thick surface variant. They lack a fragipan and are not so well drained as Prentiss soils. They have less clay in the B horizon than Trebloc soils, thick surface variant.

Smithton silt loam (St).—This poorly drained soil is on flats near the larger streams. Slopes range from 0 to 2 percent. Included in mapping are small areas of Prentiss and Stough soils, and Trebloc soils, thick surface variant.

This soil is strongly acid or very strongly acid. Permeability is moderately slow, and available water capacity is medium. Runoff is very slow.

About half of the acreage of this soil is used for pasture or is cultivated. The rest is in woodland. Soybeans, selected pasture plants, and pine trees are suited to this soil. This soil can only be cultivated in dryer periods because of the perched water table. Capability unit IIIw-1; woodland suitability group 2w9.

Stough Series

The Stough series consists of somewhat poorly drained soils that formed in loamy material on uplands.

In a representative profile the surface layer is dark-brown silt loam 6 inches thick. Below this is mottled pale-brown and dark-brown loam about 7 inches thick. The next layer, about 59 inches thick, is loam mottled in shades of brown and gray. This layer is underlain by light-gray loam that extends to a depth of 80 inches.

Representative profile of Stough silt loam, 3 miles south of Prentiss; ¾ mile west of State Highway 13, 300 yards west of Whitesand Creek, and 25 yards south of gravel road in the NE¼NW¼ sec. 27, T. 7 N., R. 19 W.:

Ap—0 to 6 inches, dark-brown (10YR 4/3) silt loam; weak, fine, granular structure; friable; common fine roots; strongly acid; abrupt, smooth boundary.

B1—6 to 13 inches, mottled pale-brown (10YR 6/3) and dark-brown (10YR 4/3) loam; weak, medium, subangular blocky structure; friable; common fine roots; common fine brown concretions; strongly acid; clear, wavy boundary.

B21t—13 to 23 inches, mottled strong-brown (7.5YR 5/8) and gray (10YR 6/1) loam; weak, medium, subangular blocky structure; friable; common fine roots; common fine brown concretions; patchy clay films on faces of peds; sand grains coated and bridged with clay; strongly acid; clear, wavy boundary.

B22t—23 to 42 inches, mottled gray (10YR 6/1), yellowish-brown (10YR 5/8), and strong-brown (7.5YR 5/8) loam; weak, coarse, prismatic structure parting to moderate, medium, subangular blocky; friable; about 45 percent of layer is brittle; common, fine, brown concretions; patchy clay films on faces of peds; sand grains coated and bridged with clay; many voids and pores; seams of gray between prisms; strongly acid; clear, wavy boundary.

B23t—42 to 55 inches, gray (10YR 6/1) loam; common, medium, distinct mottles of strong brown (7.5YR 5/6); weak, coarse, prismatic structure parting to moderate, medium, subangular blocky; friable in gray part; brittle in strong-brown part; clay film on faces of peds; sand grains coated and bridged with clay; common, soft, brown concretions; seams of gray sandy loam between prisms; very strongly acid; clear, wavy boundary.

B24t—55 to 72 inches, mottled light-gray (10YR 7/2), strong-brown (7.5YR 5/8), and yellowish-red (5YR 4/8) sandy loam; weak, medium, subangular blocky structure; friable; clay films on faces of peds; very strongly acid; clear, irregular boundary.

IIC—72 to 80 inches, light-gray (10YR 7/1) loam; structureless; friable; strongly acid.

The Ap horizon is dark brown, dark grayish brown, and dark gray. The Bt horizon is mottled in shades of gray, brown, and yellow. It is sandy loam or loam. Content of clay in the upper 20 inches of the Bt horizon ranges from 8 to 18 percent. The brittle area in the Bt horizon ranges from about 40 to 50 percent, by volume. The IIC horizon, where present, is light-gray or light brownish-gray loam or sandy clay loam. Reaction is very strongly acid to strongly acid throughout.

Stough soils are associated with Paden, Prentiss, and Savannah soils, and Trebloc soils, thick surface variant. They are not so well drained as, and they lack the fragipan that is characteristic of, Paden, Prentiss, and Savannah soils. They are better drained and have less clay in the B horizon than Trebloc soils, thick surface variant.

Stough silt loam (Su).—This somewhat poorly drained soil is on upland flats. Slopes range from 0 to 2 percent. Included in mapping are small areas of Paden and Prentiss soils, and Trebloc soils, thick surface variant.

The soil is very strongly acid or strongly acid. Permeability is moderately slow, and available water capacity is medium. Runoff is slow. The hazard of erosion is slight.

Most of the acreage of this soil is used for pasture and row crops. The rest is in woodland. Cotton, corn, soybeans, small grains, commonly grown pasture plants, and pine and hardwood trees are well suited to this soil. This soil is easy to till and can be cultivated throughout a wide range of moisture content without crusting or packing. Occasional flooding is a hazard on these soils, and a system of drainage is useful in cultivated areas. Capability unit IIIw-2; woodland suitability group 2w8.

Trebloc Series, Thick Surface Variant

The Trebloc series, thick surface variant consists of poorly drained soils that formed in loamy material high in content of silt. These soils are on uplands.

In a representative profile the surface layer is mottled dark grayish-brown and dark yellowish-brown silt loam 6 inches thick. The subsurface layer is light brownish-gray and light-gray silt loam, about 19 inches thick, that has mottles in shades of brown and yellow. The next layer is 30 inches of light brownish-gray silt loam that has mottles in shades of brown. Below this is 10 inches of loam mottled in shades of gray, brown, and red. This is underlain by light-gray loam that has brownish mottles and that extends to a depth of 80 inches.

Representative profile of Trebloc silt loam, thick surface variant, approximately 2¾ miles south of Prentiss; ¾ mile west of State Highway 13 and ¼ mile west of Whitesand Creek in the NE¼SW¼ sec. 22, T. 7 N., R. 19 W.:

A1—0 to 6 inches, mottled dark yellowish-brown (10YR 4/4) and dark grayish-brown (10YR 4/2) silt loam; weak, medium, granular structure; friable; common fine roots; few fine brown concretions; very strongly acid; abrupt, smooth boundary.

A21g—6 to 13 inches, light brownish-gray (10YR 6/2) silt loam; few, fine, faint, dark-brown mottles; weak, medium, granular structure; friable; common fine roots; few brown concretions; very strongly acid; abrupt, smooth boundary.

A22g—13 to 25 inches, light-gray (10YR 7/2) silt loam; few, fine, distinct, brownish-yellow mottles; weak, medium, granular structure; friable; tongues of A22g horizon are slightly brittle and platy; very strongly acid; clear, irregular boundary.

B21tg—25 to 55 inches, light brownish-gray (10YR 6/2) silt loam; common, medium, distinct, strong-brown (7.5YR 5/8) and dark-brown (7.5YR 4/4) mottles; moderate, fine and medium, subangular blocky structure; friable; tongues of gray silt loam 1 to 2 inches wide are at intervals of 5 to 8 inches; clay in tongues is dark grayish brown; patchy clay films on faces of peds; very strongly acid; clear, wavy boundary.

B22tg—55 to 65 inches, mottled light brownish-gray (10YR 6/2), yellowish-brown (10YR 5/8), and yellowish-red (5YR 5/6) loam; weak, coarse, subangular blocky structure; friable; patchy clay films on faces of peds; very strongly acid; clear, wavy boundary.

B23tg—65 to 80 inches, light-gray (10YR 7/1) loam; common, medium, prominent, yellowish-brown (10YR 5/6) and strong-brown (7.5YR 5/6) mottles; weak, coarse, subangular blocky structure; friable; patchy clay films on faces of peds; very strongly acid.

The A1 horizon is dark grayish brown, grayish brown, or gray, or is mottled in shades of brown and gray. The A2 horizon is light brownish gray or light gray and has dark-brown or light yellowish-brown mottles. The B2 horizons are light gray, gray, dark gray, or light brownish gray and have few to many mottles in shades of brown. They are silt loam, loam, silty clay loam, or clay loam. Content of clay in the upper 20 inches of the Bt horizon ranges from 20 to 32 percent, and content of sand is less than 15 percent. Reaction is strongly acid or very strongly acid throughout.

Trebloc soils, thick surface variant, are associated with Bibb, Prentiss, Smithton, and Stough soils. They have more clay in the B horizons than Bibb and Smithton soils. They are not so well drained as, and they lack the fragipan of, Prentiss soils. They have more clay in the B horizons, and they are not so well drained as Stough soils.

The Trebloc soil mapped in Jefferson Davis County is a variant of the series because the A horizon is 12 to 26 inches thick. Most Trebloc soils, variant, have an A horizon 5 inches thick.

Trebloc silt loam, thick surface variant (Tb).—This poorly drained soil is on broad upland flats. Slopes range from 0 to 2 percent. Included in mapping are small areas of Stough and Bibb soils.

This soil is strongly acid or very strongly acid. Permeability is slow, and available water capacity is high. Runoff is slow.

About 95 percent of the acreage of this soil is in woodland. The rest is in pasture. Selected pasture plants, hardwood trees, and some pine trees are well suited to this soil. Surface drainage is needed if this soil is pastured or cultivated. Capability unit IVw-1; woodland suitability group 2w9.

Udorthents

Udorthents are sandy and loamy soils in recently exposed regoliths. They have few or no recognizable soil horizons. These soils are in shallow gullies less than 100 feet wide and in the sides and bottoms of deep gullies that are more than 200 feet wide. These soils have slopes of 5 to 25 percent, and in Jefferson Davis County they are mapped only with severely eroded Smithdale soils. These soils formed in sandy and loamy material in gullied areas, and they have variable soil properties. Profiles of Udorthents are too variable to be described.

Use and Management of Soils[2]

This section explains the capability classification used by the Soil Conservation Service. Those who wish to know the capability classification of a given soil can refer to the "Guide to Mapping Units" in the back of the survey. Those who want detailed information about management of the soil can refer to the section "Descriptions of the Soils." This section also provides a table that gives the predicted yields of principal crops and pasture plants under a high level of management. The uses of soils for woodland, for wildlife habitat, for engineering purposes, and for town and country planning are also discussed.

Capability Grouping

Some readers, particularly those who farm on a large scale, may find it practical to use and manage alike some of the

[2] HERMAN S. SAUCIER, conservation agronomist, Soil Conservation Service, assisted in the preparation of this section.

different kinds of soil on their farm. These readers can make good use of the capability classification system, a grouping that shows, in a general way, the suitability of soils for most kinds of farming.

The grouping is based on permanent limitations of soils when they are used for field crops, the risk of damage when they are farmed, and the way the soils respond to treatment. The grouping does not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils; does not take into consideration possible but unlikely major reclamation projects; and does not apply to rice, horticultural crops, or other crops that require special management.

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

In the capability system, all kinds of soil are grouped at three levels: the class, the subclass, and the unit. The broadest grouping, the capability class, is designated by Roman numerals I to VIII. In class I are the soils that have the fewest limitations, the widest range of use, and the least risk of damage when they are used. The soils in the other classes have progressively greater natural limitations. In class VIII are soils and landforms so rough, shallow, or otherwise limited that they do not produce worthwhile yields of crops, forage, or wood products. The subclass indicates major kinds of limitations within the classes. Within most classes there can be up to 4 subclasses. The subclasses are indicated by adding a small letter, *e*, *w*, *s*, or *c*, to the class numeral, for example, IIe. The letter *e* shows that the main limitation is risk of erosion unless close-growing plant cover is maintained; *w* means that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c* indicates that the chief limitation is climate that is too cold or too dry.

In class I there are no subclasses, because the soils of this class have few or no limitations. Class V can contain, at the most, only subclasses w, s, and c, because the soils are subject to little or no erosion but have other limitations that confine their use largely to pasture, range, or wildlife.

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

The eight classes in the capability system and the subclasses and units in Jefferson Davis County are described in the list that follows. The unit designation is given in the "Guide to Mapping Units."

Class I. Soils have a few limitations that restrict their use (no subclasses—none in Jefferson Davis County).

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

Subclass IIe.—Soils subject to moderate erosion unless protected.

Unit IIe-1.—Well-drained loamy soils that have slopes of 2 to 5 percent, on uplands.

Unit IIe-2.—Moderately well drained loamy soils that have a fragipan and slopes of 2 to 5 percent, on uplands.

Unit IIe-3.—Moderately well drained loamy soils, high in content of silt, that have a fragipan and slopes of 2 to 5 percent, on uplands.

Subclass IIw.—Soils have moderate limitations because of excess water.

Unit IIw-1.—Well-drained loamy soils that have slopes of 0 to 2 percent, on flood plains.

Unit IIw-2.—Moderately well drained loamy soils that have a fragipan and slopes of 0 to 2 percent, on uplands.

Unit IIw-3.—Moderately well drained loamy soils, high in content of silt, that have a fragipan and slopes of 0 to 2 percent, on uplands.

Unit IIw-4.—Moderately well drained loamy soils that have slopes of 0 to 2 percent, on low terraces.

Unit IIw-5.—Well-drained loamy soils that have slopes of 0 to 2 percent, on low terraces.

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

Subclass IIIe.—Soils subject to severe erosion if they are cultivated and not protected.

Unit IIIe-1.—Somewhat poorly drained and moderately well drained clayey soils that have slopes of 2 to 5 percent, on uplands.

Unit IIIe-2.—Moderately well drained loamy soils that have a fragipan and slopes of 5 to 8 percent, on uplands.

Unit IIIe-3.—Moderately well drained loamy soils, high in content of silt, that have a fragipan and slopes of 5 to 8 percent, on uplands.

Unit IIIe-4.—Well-drained loamy soils that have slopes of 5 to 8 percent, on uplands.

Unit IIIe-5.—Well-drained, severely eroded loamy soils that have slopes of 4 to 8 percent, on uplands.

Unit IIIe-6.—Well-drained gravelly loamy soils that have slopes of 2 to 8 percent, on uplands.

Subclass IIIs.—Soils have severe limitations because of moisture capacity or tilth.

Unit IIIs-1.—Well-drained loamy soils that have slopes of 0 to 5 percent, on terraces.

Subclass IIIw.—Soils severely limited for cultivation because of excess water.

Unit IIIw-1.—Poorly drained loamy soils that have slopes of 0 to 2 percent, on flood plains.

Unit IIIw-2.—Somewhat poorly drained loamy soils that have slopes of 0 to 2 percent, on low terraces.

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

Subclass IVe.—Soils subject to very severe erosion if they are cultivated and not protected.

Unit IVe-1.—Somewhat poorly drained and moderately well drained clayey soils that have slopes of 5 to 12 percent, on uplands.

Unit IVe-2.—Well-drained loamy soils that have slopes of 8 to 12 percent, on uplands.

Subclass IVw.—Soils have very severe limitations for cultivation because of excess water.

Unit IVw-1.—Poorly drained loamy soils, high in content of silt, that have slopes of 0 to 2 percent, on uplands and terraces.

Class V. Soils subject to little or no erosion but have other limitations, impractical to remove, that limit their use largely to pasture or range, woodland, or wildlife habitat.
- Subclass Vw.—Soils have limitations because of water.
  - Unit Vw-1.—Poorly drained and somewhat poorly drained loamy soils that have slopes of 0 to 2 percent, on flood plains.
  - Unit Vw-2.—Moderately well drained and somewhat poorly drained loamy soils that are frequently flooded and that have slopes of 0 to 2 percent, on flood plains.
  - Unit Vw-3.—Excessively drained loamy soils that are frequently flooded and that have slopes of 0 to 2 percent, on flood plains.

Class VI. Soils have severe limitations that make them generally unsuited to cultivation and limit their use to pasture or range, woodland, or wildlife habitat.
- Subclass VIe.—Soils severely limited, chiefly by the hazard of erosion unless protective cover is maintained.
  - Unit VIe-1.—Well-drained loamy soils that have slopes of 12 to 17 percent, on uplands.
  - Unit VIe-2.—Well-drained loamy soils that are severely eroded and that have slopes of 8 to 12 percent, on uplands.

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 habitat.
- Subclass VIIe.—Soils very severely limited, chiefly by the hazard of erosion unless protective cover is maintained.
  - Unit VIIe-1.—Somewhat poorly drained and moderately well drained clayey soils that have slopes of 17 to 40 percent, on uplands.
  - Unit VIIe-2.—Well-drained loamy soils that have slopes of 17 to 40 percent, on uplands.
  - Unit VIIe-3.—Well-drained loamy soils and recently formed soils in gullies that have slopes of 5 to 25 percent, on uplands.
  - Unit VIIe-4.—Well-drained, severely eroded loamy soils that have slopes of 15 to 30 percent, on uplands.

Class VIII. Soils and landforms have limitations that preclude their use for commercial plants and restrict their use

TABLE 2.—*Predicted acre yields of crops and pasture plants under high-level management*

[Absence of yield means data are not available or the crop is not commonly grown on the soil]

Soil	Cotton	Corn	Soybeans	Oats	Pasture	
					Coastal bermudagrass and legume	Bahiagrass and legume
	Lbs	*Bu*	*Bu*	*Bu*	*AUM*[1]	*AUM*
Bibb and Mantachie soils, frequently flooded					7.0	7.0
Cadeville-Freestone association, hilly						
Darco loamy sand, 0 to 5 percent slopes		45	15	45	7.5	7.5
Falkner and Cadeville soils, 2 to 5 percent slopes	450	45		40	7.5	6.5
Falkner and Cadeville soils, 5 to 12 percent slopes					7.5	6.5
Jena sandy loam	700	90	35	55	11.0	10.0
Kirkville and Mantachie soils, frequently flooded					8.0	7.5
McLaurin sandy loam, 2 to 5 percent slopes	500	75	25	55	10.0	8.0
McLaurin sandy loam, 12 to 17 percent slopes					7.0	6.5
Nugent soils, frequently flooded					3.5	3.0
Ora sandy loam, 0 to 2 percent slopes	750	85	40	55	8.5	9.0
Ora sandy loam, 2 to 5 percent slopes	750	80	35	55	8.5	9.0
Ora sandy loam, 5 to 8 percent slopes	600	70	30	55	8.0	8.5
Paden silt loam, 0 to 2 percent slopes	600	75	25	55	8.0	9.0
Prentiss silt loam, 0 to 2 percent slopes	750	85	35	50	9.5	9.5
Providence silt loam, 2 to 5 percent slopes	700	80	35	60	9.5	9.0
Providence silt loam, 5 to 8 percent slopes	650	75	30	50	9.0	8.5
Ruston sandy loam, 2 to 5 percent slopes	500	60	30	60	10.0	10.0
Ruston sandy loam, 5 to 8 percent slopes	500	55	25	55	9.0	9.0
Ruston sandy loam, 4 to 8 percent slopes, severely eroded	400	40	20	40	7.5	7.5
Ruston sandy loam, 8 to 12 percent slopes	400	50	25	50	8.0	8.0
Ruston sandy loam, 8 to 12 percent slopes, severely eroded					6.5	6.5
Ruston and Bassfield soils, low terrace, 0 to 2 percent slopes	550	65	30	60	10.0	10.0
Saffell gravelly sandy loam, 2 to 8 percent slopes	375	45		35	5.5	5.5
Savannah silt loam, 2 to 5 percent slopes	650	75	35	55	8.5	9.0
Savannah silt loam, 5 to 8 percent slopes	600	70	30	50	8.0	9.0
Smithdale sandy loam, 12 to 17 percent slopes					8.0	8.0
Smithdale sandy loam, 17 to 40 percent slopes						
Smithdale-Udorthents complex, 5 to 25 percent slopes, severely eroded						
Smithdale soils, 15 to 30 percent slopes, severely eroded					6.5	6.5
Smithton silt loam			25		7.0	7.0
Stough silt loam	775	80	25	50	8.5	8.0
Trebloc silt loam, thick surface variant					6.0	6.0

[1] A.U.M. stands for animal-unit-months, which is a term used to express the carrying capacity of pasture. It is the number of animals carried per acre multiplied by the number of months the pasture can be grazed during a single grazing season without injury to the sod. For example, an acre of pasture that provides 2 months of grazing for 5 cows has a carrying capacity of 10 animal-unit-months.

Figure 9.—**Loblolly-shortleaf pine forest on Falkner and Cadeville soils, 2 to 5 percent slopes. Deep ruts moderately restrict use of equipment. Log road also serves as fire lane.**

to recreation, wildlife habitat, water supply, or esthetic purposes. (None in Jefferson Davis County.)

Predicted Yields

Table 2 on page 25 lists predicted yields of the principal crops grown in the county. The predictions are based on estimates made by farmers, soil scientists, and others who have knowledge of yields in the county and on information taken from research data. The predicted yields are average yields per acre that can be expected by good commercial farmers at the level of management which tends to produce the highest economic return.

Crops other than those shown in table 2 are grown in the county, but their predicted yields are not included because their acreage is small, or reliable data on yields are not available.

The following management practices are needed to obtain the yields listed in table 2: (1) Effectively using and conserving rainfall; (2) installing surface and subsurface drainage systems; (3) managing crop residue to maintain soil tilth; (4) using minimum but timely tillage; (5) consistently using measures to control insects, diseases, and weeds; (6) applying fertilizer according to soil test and crop needs; and (7) using adapted crop varieties at recommended seeding rates.

Use of Soils for Woodland[3]

In this section the woodland of Jefferson Davis County is described, and the soils are grouped according to their suitability for trees. The information given here can be used by woodland owners, foresters, and others in planning tree plantings, in conserving and improving existing stands, and in managing commercial woodlots.

Of the total area of 264,960 acres in Jefferson Davis County, about 50 percent, or 135,000 acres, is classified as commercial woodland. Farmers own 54,300 acres, the forest industry owns 39,500 acres, other private owners have 37,300 acres, and public woodland is on 3,900 acres (*15*).

The 135,000 acres of commercial woodland is forested as follows: 55,000 acres is in loblolly-shortleaf pine (fig. 9), 45,000 acres is in oak and hickory, 20,000 acres is in oak and pine, and 15,000 acres is in oak, gum, and cypress.

Grazing is a suitable secondary use for many areas of woodland. The grasses, legumes, and forbs, and many of the woody plants in the understory can be used for forage. Grazing must be controlled so desirable tree seedlings are not damaged and forage plants are not overgrazed.

This section gives information about both the production of woodcrops and the production of forage in woodland.

[3] T. D. ALLEN, woodland conservationist, and DAVID W. SANDERS, range conservationist, assisted in preparing this section.

Table 3 gives information based on detailed plot studies, measurement of different trees on different soils, published and unpublished records, and the experience and judgment of the technicians who work with tree crops in the area.

The amount of forage produced in a woodland area varies with the age of trees, the density of the canopy, the soil, and the forage value of the vegetation. For the purpose of this survey, four canopy classes are recognized. An *open canopy* shades as much as 20 percent of the ground at noon; a *sparse canopy* shades 21 to 35 percent, a *medium canopy* shades 36 to 55 percent, and a *dense canopy* shades 56 to 70 percent. The potential yield of forage, by canopy classes for each woodland suitability group, is shown in table 3.

Forage value is a rating given to the vegetation in relation to its potential to furnish quality and quantity forage for livestock production. A value of high is given for the most desirable forage, a value of moderate is given for moderately desirable forage, and a value of low is given for the least desirable forage.

The main forage plants are listed in table 3 as well as those that are present when at least 70 percent of the understory consists of high-value plants and the canopy is 45 percent or less. As the canopy closes, these plants are replaced by shade-tolerant, woody species, and forage yields are progressively lower.

In the first column is the woodland suitability group. Each group is made up of soils that are suited to the same kinds of trees, that need about the same kind of management to produce these trees, and that have about the same potential productivity.

Each woodland suitability group is identified by a three-part symbol. The first part of the symbol indicates the relative productivity of the soils: the number 1 indicates very high productivity; 2, high productivity; 3, moderately high productivity; 4, moderate productivity; and 5, low productivity. The second part of the symbol, a letter, indicates the important soil property that imposes a moderate or severe hazard or limitation in managing the soils for wood production. The letter *w* shows that excessive water in or on the soil is the chief limitation; *c* shows that clay in the upper part of the soil is a limitation; *s* shows that the soils are sandy; *f* shows that the soils have large amounts of coarse fragments; *r* shows that the soils have steep slopes; and *o* shows that the soils have no significant restrictions or limitations for woodland use or management. The third element in the symbol indicates the degree of management problems and the general suitability of the soils for certain kinds of trees (*6*, *7*).

In the second column the soils are listed by their mapping unit symbol under the series name to which they belong. If a mapping unit symbol is made up of soils of two series, as in a complex or association, the component soils are listed and evaluated separately under the series name.

In the third column is a brief soil description, showing drainage, permeability, and available water capacity of the soils in each group.

In the next column are listed some of the commercially important trees that are adapted to the soil. These are the trees that woodland managers generally favor in intermediate or improvement cuttings. Also given is the potential productivity of these trees in terms of site index. The site index is the average height of the dominant trees, in feet, at age 30 for cottonwood, at age 35 for sycamore, at age 25 for planted trees, and at age 50 for all other species.

The management problems evaluated in the next three columns are erosion hazard, equipment limitations, and seedling mortality. Erosion hazard measures the risk of soil losses in well-managed woodland. Erosion hazard is *slight* if expected soil loss is small; *moderate* if some measures to control erosion are needed in logging and construction; and *severe* if intensive treatment or special equipment and methods are needed to prevent excessive soil losses.

Equipment limitation ratings reflect the soil conditions that limit the use of equipment generally used in woodland management or harvesting. A rating of *slight* indicates that equipment use is not limited to kind or time of year. A rating of *moderate* indicates a seasonal limitation or need for modification in methods or equipment. A rating of *severe* indicates the need for specialized equipment or operations.

Seedling mortality ratings indicate the degree of expected mortality of planted seedlings when plant competition is not a limiting factor. Normal rainfall, good planting stock, and proper planting are assumed. A rating of *slight* indicates expected mortality is less than 25 percent. A rating of *moderate* indicates a 25 to 50 percent loss, and a rating of *severe* indicates more than 50 percent loss of seedlings.

In the next column is a list of trees suitable to be planted for commercial wood production.

In the last column is a list of the understory vegetation used as forage along with the principal plants and estimated yields by canopy class. Productivity is expressed in pounds of air-dry forage per acre. Where yield data are not available and estimates cannot be made, the species are listed in order of their productivity.

Use of Soils for Wildlife[4]

Soils directly influence kinds and amounts of vegetation and amounts of water available, and in this way they indirectly influence the kinds of wildlife that can live in an area. Soil properties that affect the growth of wildlife habitat are: (1) thickness of soil useful to crops, (2) surface texture, (3) available water capacity to a depth of 40 inches, (4) wetness, (5) surface stoniness or rockiness, (6) hazard of flooding, (7) slope, and (8) permeability of the soil to air and water.

In table 4, soils of this survey area are rated for producing eight elements of wildlife habitat and for three groups, or kinds, of wildlife. The ratings indicate relative suitability for various elements. A rating of *good* indicates that habitats are easily improved, maintained, or created; there are few or no soil limitations in habitat management; and satisfactory results can be expected. A rating of *fair* indicates that habitats can be improved, maintained, or created on these soils, but that moderate soil limitations affect habitat management or development, and a moderate intensity of management and fairly frequent attention are needed to ensure satisfactory results. A rating of *poor* indicates that habitats can be improved, maintained, or created on these soils, but that the soil limitations are severe. Habitat management may be difficult and expensive and require intensive effort, and results are questionable.

A rating of *very poor* indicates that under the prevailing soil conditions, it is impractical to attempt to improve, maintain, or create habitats, and unsatisfactory results are probable.

Each soil is rated in table 4 according to its suitability for producing various kinds of plants and other elements that

[4] EDWARD G. SULLIVAN, biologist, assisted in preparing this section.

TABLE 3.—*Soils rated for*

Woodland suitability group	Soil	Soil description	Potential productivity	
			Tree species	Average site index
1o7	Jena: Je	Well-drained, loamy soils on flood plains; medium available water capacity; moderate permeability.	Loblolly pine	100
			Sweetgum	90
			Water oak	80
			Yellow-poplar	100
			Sycamore	100
1w9	Kirkville part of Km.	Moderately well drained and somewhat poorly drained, loamy soils on flood plains; high available water capacity; moderate permeability.	Loblolly pine	100
	Mantachie parts of Bm and Km.		Slash pine	100
			Sweetgum	100
			Water oak	100
			White oak	90
			Sycamore	100
			Cottonwood	100
			Cherrybark oak	100
2o1	McLaurin: McB, McE	Well-drained, loamy soils on uplands; medium available water capacity; moderate to moderately rapid permeability.	Slash pine	90
	Ruston: RuB, RuC, RuC3, RuD, RuD3, and Ruston part of RwA.		Loblolly pine	90
			Longleaf pine	70
	Smithdale: SmE, SmF, SsF3			
2o7	Bassfield part of RwA	Well drained to moderately well drained, loamy soils on uplands; medium available water capacity; moderately rapid to slow permeability.	Slash pine	90
	Ora: OrA, OrB, OrC		Loblolly pine	90
	Paden: PaA			
	Prentiss: PrA			
	Providence: PvB, PvC			
	Savannah: SbB, SbC			
2w8	Falkner parts of FcB and FcD	Moderately well drained to somewhat poorly drained, loamy and clayey soils on uplands and terraces; medium to high available water capacity; moderately slow to slow permeability.	Loblolly pine	90
	Freestone part of CFF		Slash pine	90
	Stough: Su		Sweetgum	90
			Water oak	90
			White oak	
			Red oak	
2w9	Bibb part of Bm	Poorly drained, loamy soils on broad flats; medium to high available water capacity; moderate to slow permeability.	Loblolly pine	90
	Smithton: St		Slash pine	90
	Trebloc, thick surface variant: Tb		Sweetgum	90
			Green ash	
			Red oak	
			White oak	
2s8	Nugent: Nu	Excessively drained soils along major streams; rapid permeability; low available water capacity.	Water oak	95
			Loblolly pine	95
			Slash pine	90
3c2	Cadeville part of CFF and FcD	Moderately well drained soils on uplands; high available water capacity; very slow permeability.	Loblolly pine	80
			Slash pine	80
			Longleaf pine	75
3s2	Darco: DsB	Well-drained, loamy soils, on uplands, that have a thick, sandy surface layer; low available water capacity; rapid permeability in the surface layer, moderate in the next layers.	Loblolly pine	80
			Longleaf pine	70
			Slash pine	80
3r3	Smithdale-Udorthents: SoE3	Well-drained, loamy soils on uplands; medium available water capacity; moderate permeability; Udorthents are gullied areas that need onsite investigation to make recommendations.	Loblolly pine	80
			Shortleaf pine	70

woodland and forage use

Management problems			Species suitable for planting	Understory vegetation used as forage	
Erosion hazard	Equipment limitations	Seedling mortality		Principal plants (high-value plants)	Estimated yield by canopy class
					Lbs of air-dry forage per acre
Slight	Slight	Slight	Loblolly pine, slash pine, cottonwood, yellow-poplar, sycamore, cherrybark oak.	Pinehill bluestem, switch cane, switchgrass, uniola, grassleaf goldaster, honeysuckle.	Open canopy: 2,000–2,400. Sparse: 1,500–2,000. Medium: 800–1,500. Dense: 200–800.
Slight	Severe	Moderate	Slash pine, loblolly pine, sycamore, cottonwood; yellow-poplar, cherrybark oak.	Pinehill bluestem, switchgrass, switch cane, uniola, honeysuckle.	Open canopy: 2,200–2,800. Sparse: 2,000–2,400. Medium: 1,000–1,400. Dense: 200–800.
Slight	Slight	Slight	Slash pine, loblolly pine, yellow-poplar, cherrybark oak, black walnut.	Pinehill bluestem, indiangrass, big bluestem, grassleaf goldaster, perennial lespedeza.	Open canopy: 200–2,800. Sparse: 1,000–2,600. Medium: 510–1,000. Dense: 0–500.
Slight	Slight	Slight	Slash pine, loblolly pine, yellow-poplar, cherrybark oak.	Pinehill bluestem, indiangrass, big bluestem, grassleaf, goldaster, perennial lespedeza.	Open canopy: 2,000–2,400. Sparse: 1,800–2,200. Medium: 800–1,200. Dense: 300–700.
Slight	Moderate	Slight	Loblolly pine, slash pine, sweetgum, yellow-poplar, cherrybark oak.	Pinehill bluestem, switch cane, longleaf uniola.	Open canopy: 2,200–2,600. Sparse: 2,000–2,400. Medium: 800–1,400. Dense: 400–800.
Slight	Severe	Severe	Loblolly pine, slash pine, sweetgum, water tupelo; sycamore, shumard oak.	Pinehill bluestem, switchgrass, switch cane, perennial lespedeza, honeysuckle.	Open canopy: 2,300–2,800. Sparse: 2,000–2,400. Medium: 800–1,400. Dense: 200–800.
Slight	Moderate	Severe	Water oak, sweetgum, loblolly pine, slash pine.	Hardwood site, grazing not recommended.	----------
Moderate	Moderate	Moderate	Loblolly pine	Pinehill bluestem, longleaf uniola, indiangrass, beaked panicum, grassleaf goldaster; tick clover.	Open canopy: 1,500–2,200. Sparse: 1,000–2,000. Medium: 500–1,000. Dense: 0–500.
Slight	Moderate	Moderate	Loblolly pine, shortleaf pine	Pinehill bluestem, indiangrass, switchgrass, longleaf uniola.	Open canopy: 1,200–1,800. Sparse: 1,000–1,600. Medium: 500–1,000. Dense: 0–500.
Severe	Severe	Severe	Loblolly pine, shortleaf pine	Pinehill bluestem, slender bluestem, low panicum, pineywoods dropseed.	Open canopy: 1,200–1,600. Sparse: 800–1,400. Medium: 300–800. Dense: 0–400.

TABLE 3.—*Soils rated for*

Woodland suitability group	Soil	Soil description	Potential productivity	
			Tree species	Average site index
4f2	Saffell: SaC.	Well-drained, loamy soils, on uplands, that have a high content of gravel; medium available water capacity; moderate to rapid permeability.	Loblolly pine Shortleaf pine Redcedar	70 60 —

make up wildlife habitat. The ratings take into account mainly the characteristics of the soils and closely related natural factors of the environment. They do not take into account climate, present use of the soil, or present distribution of wildlife and people. For this reason, selection of a site for development as wildlife habitat requires onsite inspection.

Grain and seed crops are such annual grain-producing plants as corn, sorghum, millet, and soybeans.

Domestic grasses and legumes are established by planting. They provide food and cover for wildlife. Grasses include bahiagrass, ryegrass, and panicgrass; legumes include annual lespedeza, shrub lespedeza, and other clovers.

Wild herbaceous plants are native or introduced perennial grasses, forbs, and weeds that provide food and cover for upland wildlife. Beggarweed, perennial lespedeza, wild bean, pokeweed, and cheatgrass are typical examples.

Hardwood trees are nonconiferous trees that produce wildlife food in the form of fruits, nuts, buds, catkins, or browse. Such plants commonly grow in their natural environment, but they may be planted and developed through wildlife management programs. Typical species are oak, beech, cherry, dogwood, and maple.

Wetland plants are annual and perennial herbaceous plants that grow wild on moist and wet sites. They furnish food and cover mostly for wetland wildlife. Typical examples of these plants are smartweed, wild millet, spikerush and other rushes, sedges, burreed, tearthumb, and aneilema. Submerged and floating aquatics are not included in this category.

Shallow-water areas are impoundments or excavations for controlling water, generally not more than five feet deep, to create habitats that are suitable for waterfowl. Some are designed to be drained, planted, and then flooded; others are permanent impoundments that grow submersed aquatics.

Table 4 also rates soils according to their suitability as habitat for the three kinds of wildlife in Jefferson Davis County—open land, woodland, and wetland wildlife. These ratings are related to ratings made for the elements of habitat. For example, soils rated unsuited for shallow-water developments are rated unsuited for wetland wildlife.

Open land wildlife are birds and mammals that generally live in meadows, pastures, and open areas where grasses, herbs, and shrubby plants grow. Quail, dove, meadowlark, field sparrow, cottontail rabbit, and fox are typical examples of open land wildlife.

Woodland wildlife are birds and mammals that generally live in areas of hardwood trees, coniferous trees, and shrubs. Woodcock, thrush, wild turkey, vireo, deer, squirrel, and raccoon are typical examples of woodland wildlife.

Wetland wildlife are birds and mammals that generally live in wet areas, marshes, and swamps. Duck, geese, rail, shore birds, heron, mink, and muskrat are examples of wetland wildlife.

Engineering Uses of Soils[5]

This section is useful to those who need information about soils used as structural material or as foundation 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 and soil slope. These properties, in various degrees and combinations, affect construction and maintenance of roads, airports, pipelines, foundations for small buildings, irrigation systems, ponds and small dams, and systems for disposal of sewage and refuse.

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

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

Most of the information in this section is presented in tables 5, 6, and 7, which show, respectively, several estimated soil properties significant to engineering; interpretations for various engineering uses; and results of engineering laboratory tests on soil samples.

[5] PAUL A. CALHOUN, engineer, Soil Conservation Service, assisted in the preparation of this section.

woodland and forage use—Continued

Management problems			Species suitable for planting	Understory vegetation used as forage	
Erosion hazard	Equipment limitations	Seedling mortality		Principal plants (high-value plants)	Estimated yield by canopy class
Slight	Slight	Moderate	Loblolly pine, shortleaf pine	Pinehill bluestem, slender bluestem, low panicum, pineywoods dropseed.	*Lbs of air-dry forage per acre* Open canopy: 1,200–1,600. Sparse: 800–1,400. Medium: 300–800. Dense: 0–400.

This information, along with the soil map and other parts of this publication, can be used to make interpretations in addition to those given in tables 5, 6, and 7, and it also can be used to make other useful maps.

This information, however, does not eliminate the need for further investigations 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, inspection of sites, especially 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 special meaning to soil scientists but are not known to all engineers. The Glossary defines many of these terms commonly used in soil science.

Engineering classification systems

The two systems most commonly used in classifying samples of soils for engineering are the Unified system (*16*) used by the Soil Conservation Service engineers, Department of Defense, and others, and the AASHO system (*1*) 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. 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 strength, or the best soils for subgrade (foundation). At the other extreme, in group A-7, are clay soils that have low strength when wet and that are the poorest soils for subgrade. Where laboratory data are available to justify a further breakdown, the A-1, A-2, and A-7 groups are divided as follows: A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, and A-7-6. As additional refinement, the engineering value of a soil material can be indicated by a group index number. Group indexes range from 0 for the best material to 20 or more for the poorest. The AASHO classification for tested soils, with group index numbers in parentheses, is shown in table 7; the estimated classification, without group index numbers, is given in table 5 for all soils mapped in the survey area.

USDA texture is determined by the relative proportions of sand, silt, and clay in soil material that is less than 2.0 millimeters in diameter. "Sand," "silt," "clay," and some of the other terms used in the USDA textural classification are defined in the Glossary.

Estimated soil properties significant to engineering

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

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

Soil texture is described in table 5 in the standard terms used by the Department of Agriculture. These terms take into account relative percentages of sand, silt, and clay in soil material that is less than 2 millimeters in diameter. "Loam," for example, is soil material that contains 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the soil contains gravel or other particles coarser than sand, an appropriate modifier is added, for example, "gravelly loamy sand." "Sand," "silt," "clay," and some of the other terms used in USDA textural classification are defined in the Glossary.

Permeability is that quality of a soil that enables it to transmit water or air. It is estimated on basis of those soil characteristics observed in the field, particularly structure and texture. The estimates in table 5 do not take into account lateral seepage or such transient soil features as plowpans and surface crusts.

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

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

TABLE 4.—*Suitability of soils for wildlife habitat*

Soil series and map symbol	Elements of wildlife habitat						Kinds of wildlife		
	Grain and seed crops	Domestic grasses and legumes	Wild herbaceous plants	Hardwood trees	Wetland plants	Shallow-water areas	Open land	Woodland	Wetland
Bassfield	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Bibb: Bm For Mantachie part of Bm, refer to Mantachie series.	Poor	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
Cadeville: CFF For Freestone part of CFF, refer to Freestone series.	Fair	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Darco: DsB	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Falkner: FcB, FcD For Cadeville parts of FcB and FcD, refer to Cadeville series.	Good	Good	Good	Good	Fair	Very poor.	Good	Good	Poor.
Freestone	Poor	Fair	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Jena: Je	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Kirkville: Km For Mantachie part of Km, refer to Mantachie series.	Poor	Fair	Fair	Good	Poor	Poor	Fair	Good	Poor.
Mantachie	Poor	Fair	Fair	Good	Fair	Fair	Fair	Good	Fair.
McLaurin:									
McB	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
McE	Fair	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Nugent: Nu	Poor	Poor	Fair	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Ora:									
OrA, OrB	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
OrC	Fair	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Paden: PaA	Fair	Good	Good	Fair	Poor	Fair	Good	Fair	Poor.
Prentiss: PrA	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Providence:									
PvB	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
PvC	Fair	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Ruston:									
RuB	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
RuC, RuC3, RuD, RuD3, RwA For Bassfield part of RwA, refer to Bassfield series.	Fair	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Saffell: SaC	Fair	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Savannah:									
SbB	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
SbC	Fair	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Smithdale:									
SmE	Poor	Fair	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
SmF, SoE3, SsF3 Udorthents part of SoE3 is too variable to estimate.	Very poor.	Fair	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.

TABLE 4.—*Suitability of soils for wildlife habitat*—Continued

Soil series and map symbol	Elements of wildlife habitat						Kinds of wildlife		
	Grain and seed crops	Domestic grasses and legumes	Wild herbaceous plants	Hardwood trees	Wetland plants	Shallow-water areas	Open land	Woodland	Wetland
Smithton: St	Fair	Good	Good	Fair	Good	Good	Good	Fair	Good.
Stough: Su	Fair	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Trebloc thick surface variant: Tb	Poor	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
Udorthents. Too variable to estimate.									

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

Engineering interpretations of the soils

Table 6 contains information useful to engineers and others who plan to use soil material in construction of roads, farm facilities, drainage systems, and irrigation systems. Undesirable features are emphasized; but important desirable features are also named. The ratings and other interpretations in this table are based on estimated properties of the soils in table 5.

Topsoil is used for topdressing an area where vegetation is to be established and maintained. Suitability is affected mainly by ease of working and spreading the soil material, as for preparing a seedbed; natural fertility of the material, or the response of plants when fertilizer is applied; and absence of substances toxic to plants. Texture of the soil material and its content of stone fragments are characteristics that affect suitability and are considered in the ratings.

Sand and gravel are used in great quantities in many kinds of construction. The ratings in table 6 provide guidance about where to look for probable sources. A soil rated as a good source of sand generally has a layer at least 3 feet thick, the top of which is within a depth of 6 feet. The ratings do not take into account thickness of overburden, location of the water table, or other factors that affect mining of the materials, nor do they indicate quality of the deposit. A good source of gravel is found only under Saffell soils; all other soils are a poor source or an improbable source of gravel.

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

Highway location is influenced by features of the undisturbed soil that affect construction and maintenance of highways. Some of the soil features that affect the location of highways are drainage, plasticity or workability of the soil material when it is wet, and the hazard of flooding.

Farm pond reservoir areas hold water behind a dam or embankment (fig. 10). Soils suitable for pond reservoir areas have a low seepage rate, which is related to their permeability and depth to fractured or permeable bedrock or other permeable material.

Farm pond embankments are raised structures of soil material constructed across drainageways in order to impound water. These embankments are generally less than 20 feet high, are constructed of homogeneous soil material and are compacted to medium density. Embankments that have core and shell-type construction are not rated in this table. Embankment foundations, reservoir area, and slope are assumed to be suitable for pond construction. Soil properties that affect the embankment and the availability of borrow material are considered. The best soils have good slope stability, low permeability, slight compressibility under load, and good resistance to piping and erosion. The best borrow material is free of stones or rocks and is thick enough for easy excavation.

TABLE 5.—*Estimated soil properties*

[An asterisk in the first column indicates that at least one mapping unit in this series is made up of two or more kinds of soil. The soils in such map-series that appear in the first column of this table. The symbol

Soil series and map symbols	Depth to seasonal high water table	Depth from surface	USDA texture	Classification	
				Unified	AASHO
	Inches	*Inches*			
Bassfield	>60	0–7	Sandy loam, fine sandy loam	SM	A-4, A-2
		7–42	Sandy loam	SM	A-2, A-4
		42–80	Sand, loamy sand	SM, SP-SM	A-2
*Bibb: Bm	<12	0–10	Silt loam, fine sandy loam	ML	A-4
For Mantachie part of Bm, see Mantachie series.		10–60	Loam, silt loam	ML, CL	A-4
		60–70	Sandy loam	SM, ML	A-2, A-4
*Cadeville: CFF	15–30	0–11	Sandy loam, fine sandy loam	SM, ML	A-2, A-4
For Freestone part of CFF, see Freestone series.		11–50	Clay, silty clay, silty clay loam, clay loam.	CH	A-7
		50–85	Silty clay loam, silt loam	CH, CL	A-7, A-6
Darco: DsB	>60	0–42	Loamy sand	SM	A-2
		42–48	Sandy loam	SM, SC	A-2, A-4
		48–80	Loam, sandy clay loam	SC, CL	A-4
*Falkner: FcB, FcD	14–20	0–14	Silt loam	ML	A-4
For Cadeville part of FcB and FcD, see Cadeville series.		14–20	Silty clay loam, silt loam	CL	A-6
		20–80	Silty clay, clay, silty clay loam	CH	A-7
Freestone	15–24	0–7	Sandy loam, fine sandy loam	ML, SM	A-4
		7–23	Clay loam, sandy clay loam, loam	CL, SC	A-6
		23–80	Clay loam, silty clay loam, silty clay.	CL, CH	A-6, A-7
Jena: Je	40–72	0–9	Sandy loam, fine sandy loam	SM	A-4, A-2
		9–65	Sandy loam, loam	SM, ML, SM-SC	A-2, A-4
		65–80	Loamy sand, sand	SM, SP-SM	A-2
*Kirkville: Km	15–30	0–12	Silt loam	ML	A-4
For Mantachie part of Km, see Mantachie series		12–80	Sandy loam, loam, fine sandy loam	ML, CL, SM	A-4
Mantachie	12–20	0–8	Silt loam, loam, fine sandy loam	ML	A-4
		8–45	Loam, clay loam, sandy clay loam	ML, CL	A-4, A-6
		45–80	Sandy loam, loam	SM, ML	A-2, A-4
McLaurin: McB, McE	>60	0–15	Sandy loam, fine sandy loam	SM	A-2, A-4
		15–44	Sandy loam, loam, fine sandy loam	SM, CL	A-4
		44–68	Loamy sand, sandy loam	SM	A-2
		68–80	Sandy loam, loam, sandy clay loam	SM, SC, CL	A-2, A-4, A-6
Nugent: Nu	>60	0–3	Sandy loam, loamy sand	SM	A-2, A-4
		3–50	Sand, loamy sand	SM, SP-SM	A-2
		50–66	Sandy loam, loam	SM, ML	A-2, A-4
Ora: OrA, OrB, OrC	24–30	0–6	Sandy loam, loam	SM, ML	A-4, A-2
		6–26	Loam, sandy clay loam, sandy loam.	CL, SC	A-6
		26–79	Sandy loam, loam, sandy clay loam (fragipan).	SM, SC, CL	A-4, A-6
Paden: PaA	15–24	0–18	Silt loam, silty clay loam	ML	A-4
		18–65	Silt loam, silty clay loam (fragipan).	CL, ML	A-4, A-6
		65–80	Clay loam, loam (fragipan)	CL	A-6
Prentiss: PrA	20–32	0–8	Silt loam	ML	A-4
		8–25	Loam, sandy loam	ML, CL, SM	A-4, A-6
		25–86	Sandy loam (fragipan)	SM	A-4
Providence: PvB, PvC	24–30	0–25	Silt loam, silty clay loam	ML, CL	A-4, A-6
		25–30	Silt loam, silty clay loam (fragipan).	CL	A-6
		30–70	Sandy clay loam, clay loam (fragipan).	SC, CL	A-6

significant to engineering

ping units may have different properties and limitations, and for this reason it is necessary to follow carefully the instructions for referring to other
> means greater than; the symbol < means less than]

Percentage passing sieve—				Permeability	Available water capacity	Reaction	Shrink-swell potential
No 4 (4.7 mm)	No 10 (2.0 mm)	No 40 (0.42 mm)	No 200 (0.074 mm)				
				Inches per hour	*Inches per inch of soil depth*	*pH*	
100	100	60–70	30–45	2.0–6.0	0.10–0.14	4.5–5.5	Low.
100	100	60–70	30–40	2.0–6.0	0.10–0.12	4.5–5.5	Low.
100	100	50–85	5–20	6.0–20	0.02–0.05	4.5–5.5	Low.
100	100	80–100	55–95	0.6–2.0	0.12–0.18	4.5–5.5	Low.
100	100	80–95	60–90	0.6–2.0	0.15–0.20	4.5–5.5	Low.
100	100	60–70	30–55	0.6–2.0	0.08–0.10	4.5–5.5	Low.
100	95–100	60–85	30–55	0.6–2.0	0.10–0.15	4.5–5.5	Low.
100	100	95–100	75–95	<0.06	0.17–0.20	4.5–5.5	High.
100	100	95–100	80–95	<0.06	0.18–0.20	4.5–5.5	High.
100	100	50–75	15–25	6.0–20	0.05–0.10	4.5–5.5	Low.
100	100	60–70	30–40	2.0–6.0	0.10–0.15	4.5–5.5	Low.
100	95–100	80–90	40–65	0.6–2.0	0.10–0.13	4.5–5.5	Low.
100	100	95–100	80–95	0.2–0.6	0.18–0.22	4.5–5.5	Low.
100	100	95–100	80–95	0.2–0.6	0.18–0.20	4.5–5.5	Moderate.
100	95–100	90–100	80–95	0.06–0.2	0.13–0.17	4.5–5.5	High.
100	100	60–75	40–55	0.6–2.0	0.10–0.15	4.5–5.5	Low.
100	95–100	80–90	45–80	0.2–0.6	0.12–0.16	4.5–5.5	Moderate.
100	100	95–100	85–95	0.06–0.2	0.13–0.17	4.5–5.5	High.
100	100	60–75	30–45	0.6–2.0	0.10–0.15	4.5–5.5	Low.
100	100	70–90	30–60	0.6–2.0	0.10–0.15	4.5–5.5	Low.
100	100	50–75	5–25	6.0–20	0.05–0.10	4.5–5.5	Low.
100	100	80–100	70–95	0.6–2.0	0.15–0.20	4.5–5.5	Low.
100	100	70–95	36–70	0.6–2.0	0.15–0.20	4.5–5.5	Low.
100	100	80–100	51–90	0.6–2.0	0.15–0.22	4.5–5.5	Low.
100	100	80–90	55–80	0.6–2.0	0.15–0.20	4.5–5.5	Low.
100	100	70–90	30–60	2.0–6.0	0.10–0.15	4.5–5.5	Low.
100	100	60–75	30–45	2.0–6.0	0.10–0.15	4.5–5.5	Low.
100	100	60–85	40–65	0.6–2.0	0.10–0.15	4.5–5.5	Low.
100	100	50–65	15–35	2.0–6.0	0.05–0.10	4.5–5.5	Low.
100	100	60–85	35–70	2.0–6.0	0.10–0.15	4.5–5.5	Low.
100	100	50–65	15–40	2.0–6.0	0.10–0.15	5.1–6.6	Low.
90–100	90–100	60–75	5–20	6.0–20	0.02–0.08	5.1–7.3	Low.
100	100	70–90	30–60	2.0–6.0	0.08–0.10	5.1–6.6	Low.
100	95–100	70–90	30–60	2.0–6.0	0.10–0.15	4.5–6.0	Low.
100	95–100	85–95	40–75	0.6–2.0	0.15–0.20	4.5–5.5	Low.
100	100	60–85	36–70	0.2–0.6	0.05–0.10	4.5–5.5	Low.
100	100	90–100	85–100	0.6–2.0	0.20–0.22	4.5–5.5	Low.
100	95–100	90–100	85–100	0.06–0.2	0.05–0.08	4.5–6.0	Low.
100	100	90–100	70–80	2.0–6.0	0.05–0.08	4.5–6.0	Low.
100	100	90–100	70–90	0.6–2.0	0.15–0.20	4.5–5.5	Low.
100	100	70–95	36–65	0.6–2.0	0.15–0.18	4.5–5.5	Low.
100	90–100	70–80	40–50	0.2–0.6	0.05–0.10	4.5–5.5	Low.
100	100	80–100	85–95	0.6–2.0	0.20–0.22	4.5–5.5	Low.
100	100	90–100	85–100	0.2–0.6	0.05–0.10	4.5–5.5	Low to moderate.
100	100	80–90	45–70	0.2–0.6	0.05–0.10	4.5–5.5	Low.

TABLE 5.—*Estimated soil properties*

Soil series and map symbols	Depth to seasonal high water table	Depth from surface	USDA texture	Classification	
				Unified	AASHO
	Inches	*Inches*			
*Ruston: RuB, RuC, RuC3, RuD, RuD3, RwA. For Bassfield part of RwA; see Bassfield series.	>60	0–9	Sandy loam, loam	ML, SM	A-4, A-2
		9–35	Sandy clay loam, clay loam, loam	SC, CL	A-6
		35–55	Sandy loam, loamy sand	SM	A-2
		55–80	Sandy clay loam, loam, sandy loam	SC, CL	A-6, A-4
Saffell: SaC	60	0–16	Gravelly sandy loam, sandy loam, fine sandy loam.	SM, ML	A-2, A-4
		16–28	Gravelly sandy clay loam, gravelly loam.	GC, SC	A-2, A-4
		28–90	Gravelly sandy loam, sand	GM, SM	A-2, A-4
Savannah: SbB, SbC	22–30	0–12	Silt loam, loam	ML	A-4, A-6
		12–22	Loam, sandy clay loam	SC, CL	A-6
		22–65	Loam, silt loam, clay loam (fragipan).	ML, CL	A-4, A-6
		65–70	Sandy loam	SM	A-2, A-4
*Smithdale: SmE, SmF, SoE3, SsF3 Udorthents part of SoE3, is too variable to estimate.	>60	0–9	Sandy loam, fine sandy loam, loamy sand.	SM	A-2, A-4
		9–58	Sandy clay loam, loam	SC, CL	A-4, A-2, A-6
		58–80	Sandy loam	SM	A-2, A-4
Smithton: St	10–18	0–12	Silt loam, loam, sandy loam	SM, ML	A-2, A-4
		12–70	Loam, sandy loam	ML, SM	A-4
Stough: Su	12–20	0–6	Silt loam	ML	A-4
		6–72	Loam, sandy loam	CL, SM	A-6, A-4
		72–80	Loam, sandy clay loam	SC, CL	A-6
Trebloc thick surface variant: Tb	<10	0–25	Silt loam	ML	A-4
		25–55	Silt loam, silty clay loam	ML, CL	A-4, A-6
		55–80	Loam, clay loam	CL	A-6
Udorthents: Too variable to estimate.					

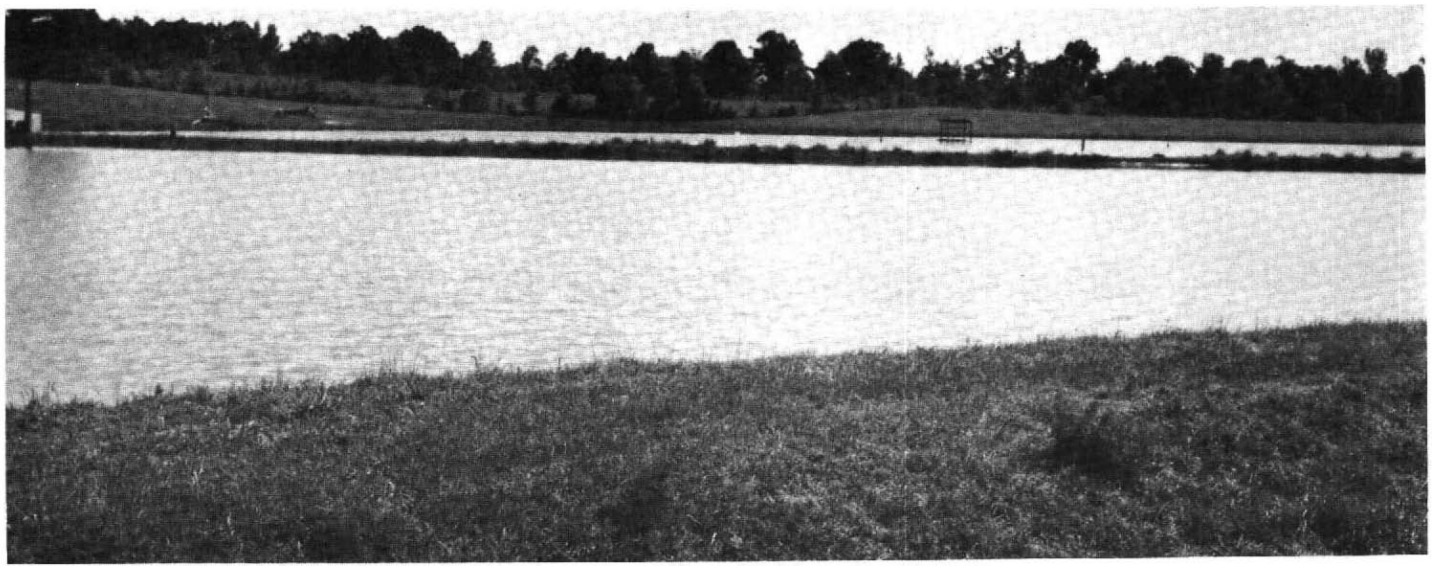

***Figure 10.*—Catfish ponds on Ora sandy loam, 2 to 5 percent slopes, and Ora sandy loam, 5 to 8 percent slopes.**

significant to engineering—Continued.

Percentage passing sieve—				Permeability	Available water capacity	Reaction	Shrink-swell potential
No 4 (4.7 mm)	No 10 (2.0 mm)	No 40 (0.42 mm)	No 200 (0.074 mm)				
				Inches per hour	*Inches per inch of soil depth*	*pH*	
100	100	70–95	30–65	0.6–2.0	0.10–0.15	4.5–5.5	Low.
100	100	80–90	36–80	0.6–2.0	0.15–0.20	4.5–5.5	Low.
100	100	50–65	15–35	2.0–6.0	0.10–0.15	4.5–5.5	Low.
100	100	60–90	36–70	0.6–2.0	0.15–0.20	4.5–5.5	Low.
75–90	75–85	40–60	20–55	2.0–6.0	0.08–0.12	4.5–5.5	Low.
40–65	40–60	40–55	25–50	0.6–2.0	0.10–0.15	4.5–5.5	Low.
30–60	25–50	25–50	15–45	6.0–20	0.08–0.12	4.5–5.5	Low.
100	100	80–100	60–80	0.6–2.0	0.14–0.18	4.5–5.5	Low.
100	100	80–95	45–65	0.6–2.0	0.15–0.18	4.5–5.5	Low.
100	100	90–100	65–90	0.2–0.6	0.05–0.10	4.5–5.5	Low.
100	100	60–70	30–40	2.0–6.0	0.05–0.10	4.5–5.5	Low.
100	100	60–95	30–45	2.0–6.0	0.10–0.15	4.5–6.0	Low.
100	95–100	80–90	30–65	0.6–2.0	0.12–0.17	4.5–5.5	Low.
100	100	60–70	30–40	2.0–6.0	0.10–0.15	4.5–5.5	Low.
100	95–100	65–95	35–80	0.6–2.0	0.20–0.22	4.5–5.5	Low.
100	95–100	80–95	36–70	0.2–0.6	0.10–0.15	4.5–5.5	Low.
100	100	90–100	80–95	0.6–2.0	0.20–0.22	4.5–5.5	Low.
100	100	80–95	36–70	0.2–0.6	0.10–0.15	4.5–5.5	Low.
100	100	80–95	45–65	0.6–2.0	0.15–0.18	4.5–5.5	Low.
100	100	90–100	80–95	0.6–2.0	0.20–0.22	4.5–5.5	Low.
100	100	80–100	85–95	0.06–0.2	0.15–0.20	4.5–5.5	Low.
100	100	80–95	70–80	0.06–0.2	0.10–0.13	4.5–5.5	Low.

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

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

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

Waterways for agricultural drainage and erosion control generally are required for soils on flood plains and for nearly level soils on uplands. The erodibility of the soils affects shaping, seeding, and establishing waterways, and a seasonal high water table limits the use of equipment.

Engineering test data

Table 7 contains engineering test data for two of the major soil series in Jefferson Davis County. These tests were made to help evaluate the soils for engineering purposes. The engineering classifications given are based on data obtained by mechanical analyses and by tests to determine liquid limits and plastic limits. The mechanical analyses were made by combined sieve and hydrometer methods.

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

Tests to determine liquid limit and plastic limit measure the effect of water on the consistence of soil material.

TABLE 6.—*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 such other series that appear in the

Soil series and map symbols	Suitability as a source of—			Soil features affecting engineering practices	
	Topsoil	Sand	Road fill	Highway location	Farm ponds: Reservoir area
Bassfield	Good	Poor: excess fines	Good	Soil properties favorable; occasionally flooded.	Excessive seepage; moderately rapid permeability.
*Bibb: Bm For Mantachie part of Bm, see Mantachie series.	Poor: wetness	Poor: poorly graded material.	Poor: wetness	Flooding; wetness	Moderate permeability.
*Cadeville: CFF For Freestone part of CFF, see Freestone series.	Poor: clay texture below a depth of 11 inches.	Unsuited: clayey subsoil.	Poor: high shrink-swell potential.	High shrink-swell potential; low strength and stability.	Very slow permeability.
Darco: DsB	Poor: sandy texture in upper 42 inches.	Fair in upper part; excess fines.	Good	Soil features favorable.	Excessive seepage
*Falkner: FcB, FcD For Cadeville parts of FcB and FcD, see Cadeville series.	Fair: limited thickness of suitable material.	Unsuited: excess fines.	Poor: poor traffic-supporting capacity; high shrink-swell potential.	Wetness; poor traffic-supporting capacity; high shrink-swell potential.	Slow permeability
Freestone	Fair: limited thickness of suitable material.	Unsuited: excess fines.	Poor: wetness; poor traffic-supporting capacity.	Poor traffic-supporting capacity; wetness; high shrink-swell potential; slopes.	Slow permeability; slopes.
Jena: Je	Good	Poor: excess fines	Good	Flooding	Moderate permeability; subject to flooding.
*Kirkville: Km For Mantachie part of Km, see Mantachie series.	Good	Poor: excess fines	Good	Flooding	Moderate permeability; flooding.
Mantachie	Poor: wetness	Poor: excess fines	Fair: wetness	Severe flooding	Moderate permeability; flooding.
McLaurin: McB, McE	Good	Poor: excess fines	Good	Soil features favorable.	Moderately rapid to moderate permeability.
Nugent: Nu	Poor: limited thickness of suitable material; sandy texture.	Fair: excess fines	Good	Flooding	Rapid permeability
Ora: OrA, OrB, OrC	Fair: sandy loam, loam and sandy clay loam texture; limited thickness of suitable material.	Poor: excess fines	Fair: fair traffic-supporting capacity.	Perched water table; wetness.	Moderately slow permeability.

interpretations of the soils

mapping units may have different properties and limitations, and for this reason it is necessary to follow carefully the instructions for referring to first column of this table]

Soil features affecting engineering practices—Continued				
Farm ponds—Continued	Agricultural drainage	Irrigation	Terraces and diversions	Waterways
Embankment				
Fair to good strength and stability.	Well drained	Moderate intake rate; moderately rapid permeability; medium available water capacity; flooding.	Nearly level slopes	Easily sodded; medium available water capacity.
Moderate seepage and piping hazard.	Needs surface drainage; wetness; poorly drained.	Moderate intake rate; moderate permeability; flooding; high available water capacity.	Nearly level slopes	Easily sodded; high available water capacity; wetness.
Fair stability; high shrink-swell potential.	Not needed because of slopes.	Slow intake rate; very slow permeability; steep slopes; high available water capacity.	High shrink-swell potential; steep slopes.	Sod difficult to establish; clay texture; high available water capacity.
Fair to good strength and stability.	Well drained	Rapid intake rate; low available water capacity.	Not generally needed because soil is on terrace flats.	Difficult to sod; low available water capacity.
Fair stability; erodes easily	Slow runoff; slopes	Moderate intake rate; high available water capacity.	High shrink-swell potential.	Fair resistance to erosion; easy to sod; high available water capacity.
Fair slope stability; medium to high compressibility.	Not needed because of steep slopes.	Steep slopes; medium available water capacity.	High shrink-swell potential; slopes.	Fairly easy to sod; high shrink-swell potential; slopes; medium available water capacity.
Fair strength and stability	Needs surface drainage; flooding.	Moderate intake rate; moderate permeability; flooding; medium available water capacity.	Nearly level slopes	Easily sodded; medium available water capacity.
Fair to good strength and stability.	Excess surface water; flooding.	Moderate intake rate; moderate permeability; flooding; high available water capacity.	Nearly level slopes	Grows good sod; high available water capacity.
Fair strength and stability	Needs surface drainage; flooding.	High available water capacity; flooding.	Nearly level slopes	Grows good sod; high available water capacity.
Good strength and stability	Not needed, well drained	Moderate intake rate; moderately rapid to moderate permeability; medium available water capacity.	Soil features favorable	Fairly easy to sod; medium available water capacity.
High seepage rate; low to fair strength and stability.	Easily drained if flooding is controlled; excessively drained.	High intake rate; low available water capacity; flooding.	Nearly level slopes	Low available water capacity; nearly level position; sandy.
Fair to good strength and stability.	Perched seasonal water table above fragipan.	Moderate intake rate; moderately slow permeability; medium available water capacity.	Slopes favorable	Grows good sod; moderate natural fertility; medium available water capacity.

TABLE 6.—*Engineering*

Soil series and map symbols	Suitability as a source of—			Soil features affecting engineering practices	
	Topsoil	Sand	Road fill	Highway location	Farm ponds: Reservoir area
Paden: PaA	Fair: wetness; limited thickness of suitable material.	Unsuited	Fair: wetness; fair traffic-supporting capacity.	Fragipan impedes internal drainage; fair traffic-supporting capacity.	Slow permeability
Prentiss: PrA	Good	Poor: excess fines	Fair: wetness; fair traffic-supporting capacity.	Perched water table; wetness; fair traffic-supporting capacity.	Moderately slow permeability.
Providence: PvB, PvC	Fair: silt loam, silty clay loam texture; limited thickness of suitable material.	Unsuited	Fair: fair traffic-supporting capacity.	Fair traffic-supporting capacity.	Moderately slow permeability.
*Ruston: RuB, RuC, RuC3, RuD, RuD3, RwA. For Bassfield part of RwA, see Bassfield series.	Fair: sandy loam, loam, clay loam, sandy clay loam texture; limited thickness of suitable material.	Poor: excess fines	Fair: fair traffic-supporting capacity.	Soil features favorable.	Excessive seepage in lower part of profile.
Saffell: SaC	Poor: coarse fragments.	Poor: excess fines	Good	Soil features favorable.	Excessive seepage in lower part of of profile.
Savannah: SbB, SbC	Fair: silt loam, loam, and sandy clay loam texture; limited thickness of suitable material.	Unsuited	Fair: fair traffic-supporting capacity.	Perched water table; wetness; fair traffic-supporting capacity.	Moderately slow permeability.
*Smithdale: SmE, SmF, SoE3, SsF3. Udorthents part of SoE3 is too variable for interpretations to be made.	Fair: sandy loam, loam and sandy clay loam texture; limited thickness of suitable material.	Poor: excess fines	Good	Soil properties favorable; steep slopes.	Excessive seepage in lower part of profile.
Smithton: St	Poor: wetness	Unsuited	Poor: wetness	Perched water table; wetness.	Moderately slow permeability.
Stough: Su	Fair: limited thickness of suitable material.	Unsuited	Fair: wetness; fair traffic-supporting capacity.	Perched water table; wetness.	Moderately slow permeability.
Trebloc thick surface variant: Tb.	Poor: wetness	Unsuited: excess fines.	Fair: wetness; fair traffic-supporting capacity.	Perched water table; wetness.	Slow permeability
Udorthents. Too variable for interpretations to be made.					

Town and Country Planning[6]

Knowledge of soils is necessary in planning, developing, and maintaining areas used for town and country planning. In table 8 the soils of Jefferson Davis County are rated according to limitations that affect their suitability for town and country planning.

In table 8 the soils are rated as having slight, moderate, or severe limitations for the specified uses. For all of these ratings, it is assumed that a good cover of vegetation can be

[6] GEORGE W. YEATES, staff conservationist, Soil Conservation Service, assisted in the preparation of this section.

interpretations of the soils—Continued

Soil features affecting engineering practices—Continued				
Farm ponds—Continued	Agricultural drainage	Irrigation	Terraces and diversions	Waterways
Embankment				
Fair strength and stability	Perched seasonal water table above fragipan.	Slow intake rate; medium available water capacity.	Nearly level slopes	Grows good sod; medium available water capacity.
Fair strength and stability	Perched seasonal water table above fragipan.	Moderate intake rate; moderately slow permeability; medium available water capacity.	Nearly level slopes	Grows good sod; medium available water capacity.
Fair strength and stability	Moderately well drained; perched seasonal water table above fragipan.	Slow intake rate; medium available water capacity.	Slopes favorable	Grows good sod; medium available water capacity.
Good strength and stability	Slopes too steep; well drained.	Moderate intake rate; moderate permeability; medium available water capacity.	Soil features favorable unless slopes are steep.	Grows good sod; medium available water capacity.
Good strength and stability	Well drained	Moderate intake rate; moderate to rapid permeability; medium available water capacity.	Soil features favorable	Fair for growing sod; high infiltration rate; medium available water capacity.
Fair strength and stability	Not needed because of slopes.	Moderate intake rate; moderately slow permeability; medium available water capacity.	Soil features favorable	Fair for growing sod; medium available water capacity.
Good strength and stability; seepage likely.	Not needed because of slopes; well drained.	Moderate intake rate; moderate permeability; medium available water capacity.	Steep slopes	Grows good sod; medium available water capacity.
Fair to good strength and stability.	Needs surface drainage; wetness.	Moderate to slow intake rate; medium available water capacity.	Nearly level slopes	High water table; medium available water capacity.
Fair to good strength and stability.	Needs surface drainage; wetness.	Moderate to slow intake rate; medium available water capacity.	Nearly level slopes	Grows good sod; medium available water capacity.
Moderate strength and stability.	Needs drainage; excess surface water; wetness.	Moderate to slow intake rate; high available water capacity.	Nearly level slopes	Grows good sod; high available water capacity.

established and maintained. A limitation of *slight* means that soil properties are generally favorable and limitations are so minor that they can easily be overcome. A *moderate* limitation can be overcome or modified by planning, by design, or by special maintenance. A *severe* limitation means that costly soil reclamation, special design, intense maintenance, or a combination of these, is required.

Dwellings, as rated in table 8, are not more than three stories high and are supported by foundation footings placed in undisturbed soil. The features that affect the rating of a

TABLE 7.—*Engineering*

[Tests performed by the Mississippi

Soil name and location	Report number (Miss.) S-70-	Depth from surface	Moisture-density[1]		Mechanical analysis[2]	
			Maximum dry density	Optimum moisture	Percentage passing sieve—	
					No 4 (4.7 mm)	No 10 (2.0 mm)
		Inches	*Lb per cu ft*	*Percent*		
Jena sandy loam:						
SE1/4NE1/4 sec. 30, T. 7 N., R. 19 W. 4.5 miles southwest of Prentiss, Mississippi.	33-2-3	18-38	122.4	10.6	100	100
	33-2-4	38-50	125.2	9.5	100	100
Smithdale sandy loam:						
NW1/4SW1/4 sec. 11, T. 6 N., R. 19 W. 6.5 miles south of Prentiss, Mississippi.	33-1-3	9-26	112.5	16.1	100	100
	33-1-5	43-58	116.9	13.5	100	100

[1] Moisture-density according to AASHO Designation: T-99-57, Method A(*1*).

[2] Mechanical analyses according to the AASHO Designation: T 88. Results by this procedure may differ from results obtained by the soil survey procedures of the Soil Conservation Service. 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 pro-

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

Sewage lagoons (fig. 11) are shallow ponds constructed to hold sewage within a depth of 2 to 5 feet long enough for bacteria to decompose the solids. A lagoon has a nearly level floor, and sides, or embankments, of compacted soil material. The assumption is made that the embankment is compacted to medium density and the pond is protected from flooding. Properties that affect the pond floor and the embankment are considered. Those that affect the pond floor are permeability, organic matter, and slope; and if the floor needs to be leveled, depth to bedrock becomes important. The soil properties that affect the embankment are the engineering properties of the embankment material as interpreted from the Unified Soil Classification and the amounts of stones, if any, that influence the ease of excavation and compaction of the embankment material.

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

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

Playgrounds are areas used intensively for baseball, football, badminton, and similar organized games. Soils suitable for this use need to withstand intensive foot traffic. The best soils have a nearly level surface free of coarse fragments and rock outcrops, good drainage, freedom from flooding during periods of heavy use, and a surface that is firm after rains but not dusty when dry. If grading and leveling are required, depth to rock is important.

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

Formation and Classification of the Soils

Soils differ from one another because of differences in the material and the environment in which they formed. By studying the characteristics of an existing soil, we can reconstruct the processes of its formation and assemble data that provide a basis for predicting how the soil reacts to particular uses and for placing it in the nationwide system of soil classification. This section describes the factors of soil formation and their effect on the soils of Jefferson Davis County and places the soils in various categories of the current system.

Factors of Soil Formation

The nature of a soil at any given point depends on the combined influence of the five factors of soil formation: climate, living organisms, parent material, relief, and time

test data

State Highway Department]

Mechanical analysis[2]—Continued						Liquid limit	Plasticity index	Classification	
Percentage passing sieve—Continued		Percentage smaller than—						AASHO[3]	Unified[4]
No 40 (0.42 mm)	No 200 (0.074 mm)	0.05 mm	0.02 mm	0.005 mm	0.002 mm				
						Percent			
89	45	43	36	20	16	22	7	A-4(0)	SM-SC
78	34	33	29	16	13	20	5	A-2(0)	SM-SC
90	39	38	37	32	30	37	17	A-6(0)	SC
88	32	31	28	23	22	29	8	A-2(0)	SC

cedure, the fine material is analyzed by the pipette method and the material coarser than 2 millimeters is excluded from calculation of grain-size fractions. The mechanical analysis data in this table are not suitable for use in determining textural classes for soils.

[3] Based on Standard Specifications for Highway Materials and Methods of Sampling and Testing (Pt. 1, Ed. 8): The Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes, AASHO Designation M 145-49.

[4] Based on the Unified Soil Classification System, as described in ASTMD-2487 and D-2488.

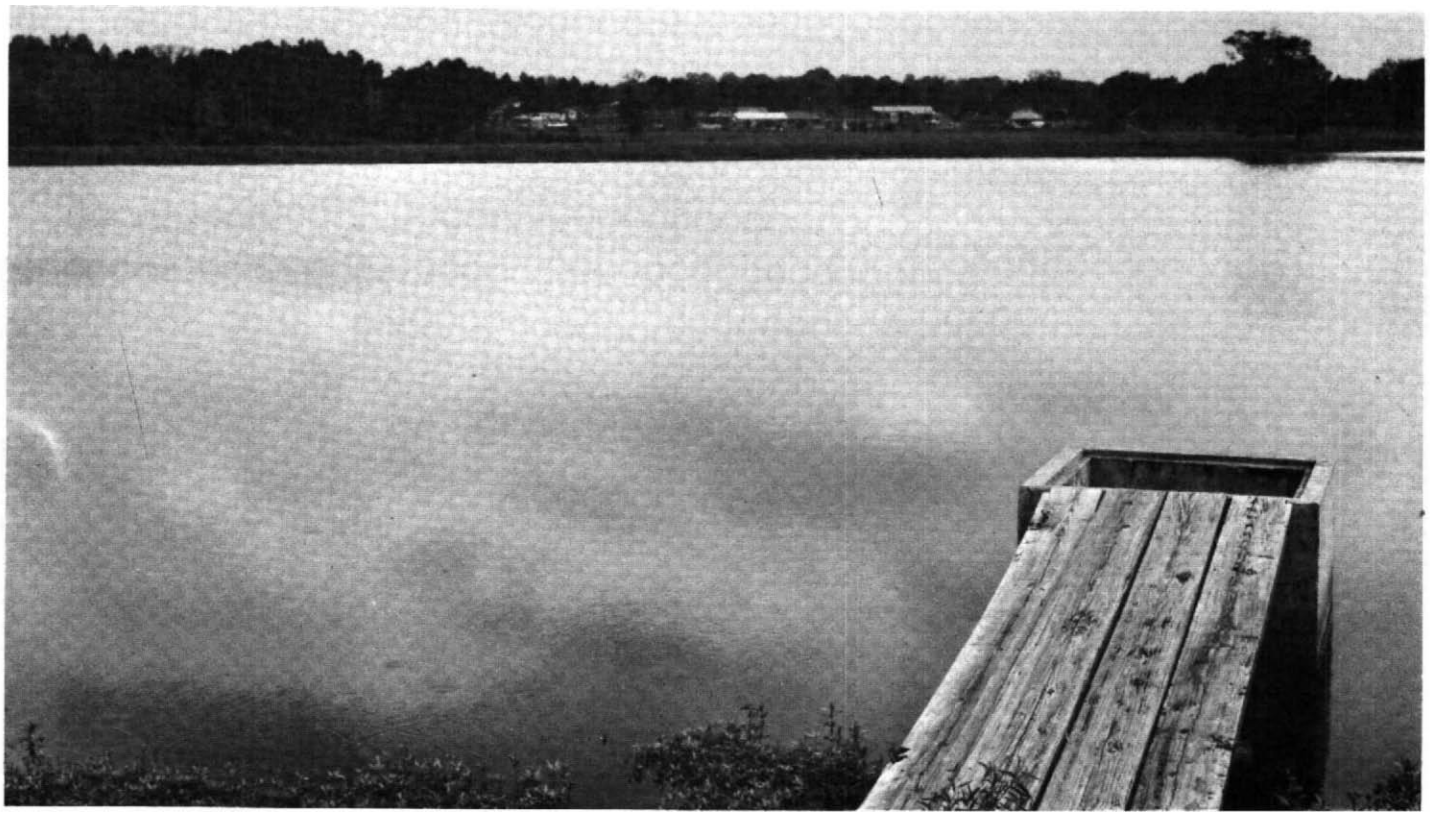

***Figure 11.*—Sewage lagoon near Prentiss in an area of Bibb and Mantachie soils, frequently flooded. Flooding is never deep enough to damage embankment.**

TABLE 8.—*Soil limitations for*

[An asterisk in the first column indicates that at least one mapping unit in this series is made up of two or more kinds of soil. The soils in such other series that appear in the

Soil series and map symbols	Dwellings	Sewage lagoons	Septic tank absorption fields
Bassfield	Severe: occasional flooding	Severe: rapid permeability below a depth of 42 inches.	Severe: occasional flooding
*Bibb: Bm For Mantachie part of Bm, see Mantachie series.	Severe: flooding	Slight; severe if flooding damages embankments.	Severe: flooding; wetness
*Cadeville: CFF For Freestone part of CFF, see Freestone series.	Severe: high shrink-swell potential.	Severe: slopes	Severe: very slow permeability; slopes.
Darco: DsB	Slight	Severe: rapid permeability in upper part.	Slight
*Falkner: FcB, FcD For Cadeville parts of FcB and FcD, see Cadeville series.	Severe: limited bearing strength; high shrink-swell potential.	Moderate where slopes are 2 to 8 percent. Severe where slopes are more than 8 percent.	Severe: slow permeability
Freestone	Severe: slopes	Severe: slopes	Severe: slopes
Jena: Je	Severe: occasional flooding	Moderate: moderate permeability.	Severe: flooding
*Kirkville: Km For Mantachie part of Km, see Mantachie series.	Severe: flooding	Moderate: wetness; moderate permeability.	Severe: flooding
Mantachie	Severe: flooding	Moderate: wetness; moderate permeability.	Severe: flooding
McLaurin:			
McB	Slight	Severe: moderately rapid permeability in lower part of profile.	Slight
McE	Severe: slopes	Severe: slopes	Severe: slopes
Nugent: Nu	Severe: flooding	Severe: flooding; rapid permeability.	Severe: flooding
Ora:			
OrA	Moderate: medium bearing strength.	Slight	Severe: moderately slow permeability.
OrB, OrC	Moderate: medium bearing strength.	Moderate: slope	Severe: moderately slow permeability.
Paden: PaA	Moderate to severe: wetness; medium bearing strength.	Slight	Severe: wetness; slow permeability.
Prentiss: PrA	Moderate: medium bearing strength; wetness.	Slight	Severe: moderately slow permeability.
Providence:			
PvB	Moderate: medium bearing strength.	Moderate: slopes	Severe: moderately slow permeability.
PvC	Moderate: medium bearing strength.	Moderate: slopes	Severe: moderately slow permeability.

(*8*). All five factors come into play in the genesis of every soil, but the importance of each differs from place to place. In some places each is about equal, and in others one factor may dominate in the formation of the soil and determine most of its properties.

Climate

Climate as a genetic factor affects the physical, chemical, and biological relationship in the soil, primarily through the influence of precipitation and temperature. Water dissolves

town and country planning

mapping units may have different properties and limitations, and for this reason it is necessary to follow carefully the instructions for referring to first column of this table]

Camp areas	Picnic areas	Playgrounds	Paths and trails
Severe: occasional flooding during period of use.	Moderate: occasional flooding during periods of use.	Moderate: occasional flooding during periods of use.	Slight.
Severe: poor trafficability; flooding and wetness.	Severe: poor trafficability; flooding and wetness.	Severe: poor trafficability; flooding and wetness.	Severe: flooding.
Severe: slopes; very slow permeability; wetness.	Severe: slopes	Severe: slopes; very slow permeability.	Moderate: slopes.
Moderate: loamy sand surface layer.	Moderate: loamy sand surface layer.	Severe: loamy sand surface layer.	Slight.
Moderate: slow permeability; wetness.	Moderate: wetness	Moderate: slow permeability; wetness. Severe where slopes are more than 5 percent.	Moderate: wetness.
Severe: slopes	Severe: slopes	Severe: slopes	Moderate where slopes are 15 to 25 percent. Severe where slopes are more than 25 percent.
Severe: flooding	Severe: flooding	Moderate: floods occasionally during period of use.	Slight.
Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding.
Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding.
Slight	Slight	Moderate: slopes	Slight.
Severe: slopes	Severe: slopes	Severe: slopes	Moderate: slopes.
Severe: frequent flooding	Severe: frequent flooding	Severe: frequent flooding	Severe: frequent flooding.
Slight	Slight	Slight	Slight.
Slight	Slight	Moderate: slope	Slight.
Moderate: wetness; slow permeability.	Moderate: wetness	Moderate: wetness; slow permeability.	Moderate: wetness.
Slight	Slight	Slight	Slight.
Slight	Slight	Moderate: slopes	Slight.
Slight	Slight	Severe: slopes	Slight.

minerals, supports biological activity, and transports minerals and biological residues through the soil. The amount of water that percolates through the soil over a broad area depends mainly upon the rainfall, the relative humidity, and the length of the frost-free period. At a given point, the amount of downward percolation is also affected by the physiographic position and by the permeability of the soil.

Temperature influences the kinds of organisms in the soil and their growth, and the speed of physical and chemical reactions in the soils. Variations in the microclimate cause

TABLE 8.—*Soil limitations for town*

Soil series and map symbols	Dwellings	Sewage lagoons	Septic tank absorption fields
*Ruston:			
RuB	Slight	Moderate: moderate permeability.	Slight
RuC, RuC3	Slight	Moderate: moderate permeability; slopes.	Slight
RuD, RuD3	Moderate: slopes	Severe: slopes	Moderate: slopes
RwA For Bassfield part of RwA, see Bassfield series.	Severe: occasional flooding	Severe: occasional flooding	Severe: occasional flooding
Saffell: SaC	Slight	Severe: rapid permeability in lower part of profile.	Slight
Savannah:			
SbB	Moderate: medium bearing strength.	Moderate: slope	Severe: moderately slow permeability.
SbC	Moderate: medium bearing strength.	Moderate: slopes	Severe: moderately slow permeability.
Smithdale: SmE, SmF, SoE3, SsF3 Udorthents part of SoE3 is too variable to be estimated.	Severe: slopes	Severe: slopes	Severe: slopes
Smithton: St	Severe: wetness	Slight	Severe: moderately slow permeability.
Stough: Su	Severe: wetness	Moderate: moderately slow permeability.	Severe: moderately slow permeability.
Trebloc thick surface variant: Tb	Severe: wetness	Slight	Severe: wetness; slow permeability.
Udorthents. Properties are too variable to be estimated.			

certain characteristics of the soils to differ from those developed under the prevailing macroclimate.

The climate of Jefferson Davis County is humid, warm, temperate, and continental. Throughout the county, climate is a uniform factor in the formation of soils, and it has made a marked impression on most of the soils. The soils are moist and are subject to leaching most of the period December 1 through August 20. They are generally moderately dry from August 20 through November 30. The soils are seldom frozen, but if they are, they are frozen to a depth of only 1 to 2 inches. Freezing and thawing, therefore, have had little or no effect on the weathering and soil-forming processes.

Living organisms

Micro-organisms are indispensable to the development of soils. Bacteria, fungi, and other micro-organisms aid in weathering rock and decomposing organic matter. Larger plants tend to alter the microclimate, to furnish organic matter, and to transfer elements from the subsoil to the surface soil. The kinds and numbers of plants and animals that live on and in the soil are determined in large part by the climate and, to varying degrees, by the parent material, relief, and age of the soil.

Not much is known of the fungi and micro-organisms in the soils of Jefferson Davis County, except that they are confined to the upper few inches. Ants, earthworms, and other invertebrates are most active in the A1 and A2 horizons and in the upper part of the B horizons, where they slowly but continuously mix the soil. The Argentine fire ant moves much soil from the lower horizons to the upper horizons but has not been active in the county long enough to influence any characteristics of the soils.

The native vegetation in most places on uplands was pine. On some hills was a mixed stand of pine and various species of broadleaf trees. On the bottom lands along streams, the growth was mainly broadleaf trees and an understory of vines, shrubs, and herbaceous plants.

Only the major differences in the original vegetation are reflected to any extent in the soils. The cutting of the virgin forest and the burning of the refuse which followed logging operations has changed the kinds of trees in the forest, but not to the extent that the influence of the trees on soil development has changed. Clearing of the land for farming has introduced new plants that may influence future development of the soils.

Parent material

Parent material is the unconsolidated mass from which soils develop. It is largely responsible for the chemical and mineral composition of soils. In this county the parent ma-

and country planning—Continued

Camp areas	Picnic areas	Playgrounds	Paths and trails
Slight	Slight	Slight	Slight.
Slight	Slight	Moderate: slopes	Slight.
Moderate: slopes	Moderate: slopes	Severe: slopes	Slight.
Severe: occasional flooding	Moderate: occasional flooding	Moderate: occasional flooding	Slight: occasional flooding.
Slight to moderate: coarse fragments	Slight to moderate: coarse fragments.	Moderate: coarse fragments; slopes.	Moderate: coarse fragments.
Slight	Slight	Moderate: slopes	Slight.
Slight	Slight	Severe: slopes	Slight.
Severe: slopes	Severe: slopes	Severe: slopes	Moderate where slopes are less than 25 percent. Severe where slopes are more than 25 percent.
Severe: wetness	Severe: wetness	Severe: wetness	Severe: wetness.
Moderate: wetness	Moderate: wetness	Moderate: wetness	Moderate: wetness.
Severe: wetness	Severe: wetness	Severe: wetness	Severe: wetness.

terial of the soils is derived from sedimentary sand, silt, and clay of the Coastal Plain, and in some areas from a thin mantle of loess over the Coastal Plain material. Providence soils, for example, formed in a thin mantle of loess in Coastal Plain material. McLaurin and Ruston soils, for example, formed from Coastal Plain material.

The soils along the streams in the county formed from material transported and deposited by streams. Much of the alluvium came from the soils and parent material on nearby uplands, but some came from outside of the county. Most of the parent material in which these soils formed is of recent deposition; however, it has been in place long enough to reflect the influence of soil-forming processes to a marked degree.

Relief

Topography is largely determined by the kind of geologic formation, the geologic history of the general area, and the effects of dissection by streams. It influences the formation of the soils through its effects on moisture relations, erosion, temperature, and plant cover. This influence is modified by the other four factors of soil formation.

The topography of the county is characterized by moderate to steeply sloping hills that are dissected by relatively wide stream valleys. The widest of these valleys are those of Bowie Creek, Whitesand Creek, Silver Creek, Greens Creek, Hooker Hollow Creek, and Nigger Creek. The hills range from less than 200 feet above sea level to more than 400 feet above sea level and are 25 to 200 feet above the floors of the valleys. The tops of most of the hills are gently sloping and relatively wide.

Time

The length of time required for the development of a soil depends largely on the other factors of soil formation. Less time is required for a soil to form in a humid, warm region where plant growth is abundant than is required in a dry, cold region where vegetation is scant. Also, less time is required if the parent material is coarse textured than if it is fine textured, if other conditions are equal.

Geologically, the soils of the county are young. Nevertheless, the humid climate, the abundant vegetation, and the moderately porous soil textures have contributed to the rapid development of most of the soils. Many of the soils on smoother slopes and older stream terraces are mature. On younger terraces and in more recent alluvial sediment, the soil material has not been in place long enough to permit mature development. Kirkville and Mantachie soils are examples of soils that formed in more recent alluvial sediment.

Classification of Soils

Soils are classified so that we can more easily remember their significant characteristics. Classification enables us to assemble knowledge about the soils, to see their relationship to one another and to the whole environment, and to develop principles that help us to understand their behavior and their response to manipulation. First through classification, and then through use of soil maps, we can apply our knowledge of soils to specific fields and other tracts of land (*3*).

The narrow categories of classification, such as those used in detailed soil surveys, allow us to organize and apply knowledge about soils in managing farms, fields, and woodlands; in developing rural areas; in engineering work; and in many other ways. Soils are placed in broad classes to facilitate study and comparison in large areas such as countries and continents.

The system of soil classification currently used was adopted by the National Cooperative Soil Survey in 1965. Because this system is under continual study, readers interested in developments of the current system should search the latest literature available (*10, 11, 13*).

The current system of classification has six categories. Beginning with the broadest, these categories are order, suborder, great group, subgroup, family, and series. In this system the 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. In table 9, the soil series of Jefferson Davis County are placed in four categories of the current system. Classes of the current system are briefly defined in the following paragraphs.

ORDER. Ten soil orders are recognized. The properties used to differentiate among soil orders are those that tend to give broad climatic groupings of soils. The two exceptions to this are the Entisols and Histosols, which occur in many different climates.

SUBORDER. Each order is subdivided into suborders that are based primarily on those soil characteristics that seem to produce classes with the greatest genetic similarity. The suborders narrow the broad climatic range permitted in the orders. The soil properties used to separate suborders are mainly those that reflect either the presence or absence of waterlogging, or soil differences resulting from the climate or vegetation.

GREAT GROUP. Soil suborders are separated into great groups on the basis of uniformity in the kinds and sequence of major soil horizons and features. The horizons used to make separations are those in which clay, iron, or humus have accumulated; those that have pans that interfere with growth or roots, movement of water, or both; and those that have thick, dark-colored surface horizons. The features used are the self-mulching properties of clay, soil temperature, major differences in chemical composition (mainly calcium, magnesium, sodium, and potassium), dark-red and dark-brown colors associated with basic rocks, and the like.

SUBGROUP. Great groups are subdivided into subgroups, one representing the central (typic) segment of the group, and others called intergrades that 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 great group, suborder, or order.

FAMILY. Soil families are separated within a subgroup primarily on the basis of properties important to the growth of plants or on the behavior of soils when used for engineering. Among the properties considered are texture, mineralogy,

TABLE 9.—*Classification of soil series*[1]

Series	Family	Subgroup	Order
Bassfield	Coarse-loamy, siliceous, thermic	Typic Hapludults	Ultisols.
Bibb[2]	Coarse-loamy, siliceous, acid, thermic	Typic Fluvaquents	Entisols.
Cadeville	Fine, mixed, thermic	Albaquic Hapludalfs	Alfisols.
Darco	Loamy, siliceous, thermic	Grossarenic Paleudults	Ultisols.
Falkner	Fine-silty, siliceous, thermic	Aquic Paleudalfs	Alfisols.
Freestone[3]	Fine-loamy, siliceous, thermic	Glossaquic Paleudalfs	Alfisols.
Jena	Coarse-loamy, siliceous, thermic	Fluventic Dystrochrepts	Inceptisols.
Kirkville	Coarse-loamy, siliceous, thermic	Fluvaquentic Dystrochrepts	Inceptisols.
Mantachie	Fine-loamy, siliceous, acid, thermic	Aeric Fluvaquents	Entisols.
McLaurin	Coarse-loamy, siliceous, thermic	Typic Paleudults	Iltisols.
Nugent	Sandy, siliceous, thermic	Typic Udifluvents	Entisols.
Ora	Fine-loamy, mixed, thermic	Typic Fragiudults	Ultisols.
Paden	Fine-silty, mixed, thermic	Glossic Fragiudults	Ultisols.
Prentiss	Coarse-loamy, siliceous, thermic	Glossic Fragiudults	Ultisols.
Providence	Fine-silty, mixed, thermic	Typic Fragiudalfs	Alfisols.
Ruston	Fine-loamy, siliceous, thermic	Typic Paleudults	Ultisols.
Saffell	Loamy-skeletal, siliceous, thermic	Typic Hapludults	Ultisols.
Savannah	Fine-loamy, siliceous, thermic	Typic Fragiudults	Ultisols.
Smithdale	Fine-loamy, siliceous, thermic	Typic Paleudults	Ultisols.
Smithton	Coarse-loamy, siliceous, thermic	Typic Paleaquults	Ultisols.
Stough	Coarse-loamy, siliceous, thermic	Fragiaquic Paleudults	Ultisols.
Trebloc	Fine-silty, siliceous, thermic	Typic Paleaquults	Ultisols.
Udorthents[4]	Not classified	Not classified	Entisols.

[1] Soil classification was approved in April 1972.

[2] Bibb soils are taxadjuncts to the series; soils have weak structure in the control section. Use, management, and behavior are similar to those of the Bibb series.

[3] Freestone soils are taxadjuncts to the series; content of albic material in the argillic horizon is slightly less than 5 percent. Use, management, and behavior are the same as those of the Freestone series.

[4] A great group, not a soil series.

reaction, soil temperature, permeability, thickness of horizons, and consistence.

SERIES. As explained in the section "How This Survey Was Made," the series is a group of soils having major horizons that, except for texture of the surface layer, are similar in important characteristics and in arrangement in the profile. The soil series generally is given the name of the geographic location near the place where a soil of the series was first observed and mapped. An example is the Bassfield series.

Physical and Chemical Analyses

Physical and chemical data from laboratory analyses are useful to soil scientists in classifying and interpreting soils. The physical and chemical properties of selected soils are shown in tables 10 and 11. The samples were analyzed by the Soil Genesis and Morphology Laboratory of the Mississippi Agricultural and Forestry Experiment Station.

The section "Descriptions of the Soils" describes profiles of

TABLE 10.—*Particle-size distribution in selected soils*

[Analyzed by Soil Genesis and Morphology Laboratory of the Mississippi Agricultural and Forestry Experiment Station. Dashes indicate data not reported. The symbol < means less than]

Soil Series	Horizon	Depth from surface	Particle-size distribution			
			Total clay (<0.002 mm)	Total silt (0.05 to 0.002 mm)	Total sand (2.0 to 0.05 mm)	Very fine sand (0.10 to 0.05 mm)
		Inches	*Percent*	*Percent*	*Percent*	*Percent*
Falkner.	A1	0–3	5.6	79.2	15.2	----
	A2	3–6	6.8	77.7	15.5	----
	B21t	6–14	14.7	73.8	15.3	----
	B22t[1]	14–20	----	----	----	----
	IIB23t	20–27	50.8	41.8	7.4	----
	IIB24t	27–45	48.3	44.9	6.8	----
	IIB25t	45–80	45.6	46.4	8.0	----
Jena.	Ap	0–9	4.8	27.4	67.8	3.2
	B21	9–18	16.4	42.7	40.9	3.7
	B22	18–38	14.4	30.5	55.1	3.1
	B23	38–50	8.0	19.2	72.8	1.0
	B24	50–65	8.0	18.7	73.3	1.1
	C	65–80	.5	2.7	96.8	.25
Ora.	Ap	0–6	7.5	35.6	56.9	3.2
	B21t	6–19	20.3	37.5	42.2	2.1
	B22t	19–26	14.4	29.4	56.2	2.7
	Bx1	26–49	10.3	24.9	64.8	3.9
	Bx2	49–64	17.1	14.9	68.0	2.9
	B3t	64–79	20.6	10.8	68.6	2.7
Prentiss.	Ap	0–8	9.8	53.3	36.9	----
	B21	8–14	12.1	50.1	37.8	9.3
	B22	14–25	12.6	47.8	39.6	8.6
	Bx1	25–40	14.6	33.3	52.1	7.4
	Bx2	40–78	11.4	29.8	58.8	7.6
	Bx3	78–86	14.9	27.9	57.2	7.1
Smithdale.	A1	0–3	.8	22.1	77.1	2.2
	A2	3–9	3.0	17.4	79.6	2.0
	B21t	9–26	25.8	10.8	63.4	1.4
	B22t	26–43	22.0	11.1	66.9	1.7
	B23t	43–58	21.0	11.8	67.2	1.5
	B24t	58–80	12.6	24.2	63.2	1.4
Stough.	Ap	0–6	10.6	53.8	35.6	----
	B1	6–13	10.6	49.9	39.5	7.0
	B21t	13–23	12.6	45.8	41.6	7.4
	B22t	23–42	12.8	46.7	40.5	7.5
	B23t	42–55	15.7	50.4	33.9	----
	B24t	55–72	13.1	34.1	52.8	10.0
	IIC	72–80	13.1	38.7	48.2	9.3
Trebloc, thick surface variant.	A1	0–6	17.8	72.0	10.2	----
	A21g	6–13	12.6	67.6	19.8	----
	A22g	13–25	11.4	69.6	19.0	----
	B21tg	25–55	19.8	53.3	26.9	----
	B22tg	55–65	15.0	42.5	42.5	4.5
	B23tg	65–80	16.0	38.3	45.7	6.5

[1] Not sampled. Field determination is silty clay loam.

TABLE 11.—*Chemical analysis of selected soils*

[Analyzed by the Soil Genesis and Morphology Laboratory of the Mississippi Agricultural and Forestry Experiment Station. Dashes indicate data not available]

Soil series	Horizon	Depth from surface	Reaction 1:1 H_2O	Extractable cations		Meg/100 grams			Base saturation by sum of cations
				Calcium	Magnesium	Potassium	Sodium	Extractable acidity	
Falkner.	A1	0–3	4.8	0.8	0.4	0.2	0.1	9.5	13
	A2	3–6	4.9	.3	.5	.2	.1	5.6	17
	B21t	6–14	5.0	.5	.9	.2	.1	6.3	21
	B22t	14–20							
	IIB23t	20–27	4.9	3.4	6.5	.3	.6	21.7	33
	IIB24t	27–45	4.9	5.4	8.3	.4	.8	20.1	43
	IIB25t	45–80	4.4	7.8	8.7	.5	1.0	13.3	57
Jena.	Ap	0–9	5.5	1.0	.3	.2	0	3.3	31
	B21	9–18	5.1	1.3	.5	.2	0	5.3	28
	B22	18–38	5.1	1.2	.5	.2	0	5.8	25
	B23	38–50	5.0	.4	.7	.1	.1	3.0	30
	B24	50–65	5.0	.4	.5	.2	0	3.0	26
	C	65–80	5.3	.3	.2	.1	0	.8	43
Ora.	Ap	0–6	6.0	1.7	.7	.2	0	3.8	41
	B21t	6–19	5.3	.4	.8	.2	.1	8.5	15
	B22t	19–26	5.4	.3	.4	.1	.1	5.5	14
	Bx1	26–49	5.5	.3	.5	.2	0	3.8	21
	Bx2	49–64	5.3	.5	.9	.2	0	4.7	26
	B3t	64–79	5.3	.3	.8	.1	0	6.1	17
Prentiss.	Ap	0–8	5.0	.5	.2	.3	.1	6.2	15
	B21	8–14	5.0	.3	.3	.3	0	5.1	15
	B22	14–25	5.0	.3	.4	.3	.1	5.7	16
	Bx1	25–40	5.0	.3	.5	.3	0	5.5	16
	Bx2	40–78	5.2	.3	.5	.2	0	4.1	20
	Bx3	78–86	5.3	.3	1.8	.2	.4	5.3	34
Smithdale.	A1	0–3	6.2	3.2	.7	.1	0	3.2	56
	A2	3–9	5.5	.3	.3	.1	0	1.3	35
	B21t	9–26	5.5	1.9	1.7	.3	0	3.2	47
	B22t	26–43	5.5	.8	1.3	.2	0	4.5	34
	B23t	43–58	5.3	.4	.7	.2	0	5.5	20
	B24t	58–80	5.3	.2	.5	.2	0	5.6	14
Stough.	Ap	0–6	5.1	.3	.4	.1	0	9.6	8
	B1	6–13	5.0	.1	.2	0	0	5.1	6
	B21t	13–23	5.1	.1	.4	0	.1	4.2	12
	B22t	23–42	5.1	.1	.4	0	.1	4.3	11
	B23t	42–55	5.0	.1	.5	.1	.1	7.4	10
	B24t	55–72	4.9	.1	.5	.2	.2	6.5	12
	IIC	72–80	5.1	.2	.6	.1	.1	5.1	16
Trebloc, thick surface variant.	A1	0–6	4.9	.2	.4	.1	.1	8.6	8
	A21g	6–13	4.9	.3	.3	0	.1	6.1	11
	A22g	13–25	5.2	.5	.6	.2	.6	5.1	27
	B21tg	25–55	5.2	.3	.9	0	1.7	9.2	24
	B22tg	55–65	5.3	.2	.8	.2	1.6	8.6	24
	B23tg	65–80	5.2	.3	1.1	.2	1.2	9.0	23

the soils analyzed. Soil textures reported in table 10 are not necessarily the same as those stated in the section "Descriptions of the Soils," which are field estimates (*5*).

Particle-size distribution was determined by Day's hydrometer method (*4*).

Soil reaction (pH) was determined by using a Beckman model pH meter on mixtures of soil and water at a ratio of 1:1.

Exchangeable cations were extracted by the neutral, 1*N* ammonium acetate method (*2, 14*). Exchangeable sodium and potassium were determined by flame photometry. Exchangeable calcium and magnesium were determined by atomic absorption. Extractable hydrogen was determined by the barium chloride—TEA method (*2, 14*).

Base saturation was calculated as the sum of exchangeable bases divided by the sum of exchangeable bases plus extractable hydrogen × 100.

General Nature of the County

This section is primarily for those who are not familiar with the county. It describes physiography, drainage, relief,

farming trends, and climate. Population and farming statistics are mainly from the U.S. Census.

The area that is now Jefferson Davis County, formed by legislative act and approved by Governor James K. Vardaman on March 31, 1906, was named in honor of Jefferson Davis, President of the Confederate States of America.

Jefferson Davis County has a land area of 264,960 acres and was formed from the older counties of Lawrence and Covington. It was once part of the Choctaw Nation.

The early settlers were of English descent. They were farmers, traders, and industrialists. They came from Georgia, North Carolina, and South Carolina, and they settled mostly near the present towns of Prentiss, Bassfield, and Carson. Prentiss is the county seat of Jefferson Davis County.

The early settlers depended on streams, rivers, and roads for travel and for transporting freight. Railroads later provided travel and transportation for farm products.

The population of Jefferson Davis County was 15,869 in 1940 and 13,540 in 1960, a 14.2 percent decline over a 20-year period.

Physiography, Drainage, and Relief

Jefferson Davis County is in the south-central part of the state within the lower Coastal Plain resource area. The county as a whole is a plain about 400 feet above sea level. Several rather broad valleys and numerous small drainageways have been cut in this plain. The western three-fourths of the county consists of dominantly sandy, well-drained soils on moderately wide ridgetops and steep to very steep side slopes. Soils in the eastern fourth of the county have a sandy surface layer underlain by a clay or clay loam subsoil. They are on wide ridgetops and moderately steep to very steep side slopes. The bottom lands along the smaller streams are narrow and well drained. The bottom lands along the larger streams are wide and consist of poorly drained, somewhat poorly drained, and well-drained soils.

Two major watersheds are in Jefferson Davis County. The western three-fourths of the county is drained by the Pearl River and such minor tributaries as Silver, Jay Bird, Whitesand, Greens, Holiday, and Hooker Hollow Creeks. The eastern fourth of the county is drained by the Bowie River and such minor tributaries as Nigger, Clear Run, and Gum Swamp Creeks. From each of these streams many branches spread out in all directions and form a broken pattern of narrow valleys and ridges. In many places the ridgetops are 100 feet higher than the valley floors.

The surface drainage of the county is approaching maturity, but a few areas on uplands still do not have surface drainage channels. Floods occur on the flood plains of these streams, but the water does not stay on the surface long. Small areas on stream terraces and bottom lands, however, are under water for long periods of time.

The relief of Jefferson Davis County ranges from nearly level on the flood plains to very steep in the uplands.

Farming

Early settlers in Jefferson Davis County found heavy growth of virgin forest, mainly pine trees on the uplands and hardwood trees along the major streams. There were a few open areas along the streams that the Indians had cleared to grow corn, melon, and beans. These early settlers depended for sustenance mainly upon fish and game supplemented with corn planted in small fields and vegetables grown in garden patches.

Since the early settlement of the county, farming has been a major industry. The first important crops were cotton, corn, and rice. By 1909, cotton had been the principal cash crop for many years, but in 1966, there were only 6,400 acres planted in cotton.

The decline in acreage planted to cotton has been accompanied by an increase in the acreage of improved pasture and greater emphasis on production of beef cattle. In 1966, 27,355 acres were used for range and pasture.

In 1964, the farms in the county reported 11,700 beef cattle. In 1964, corn was grown on 14,136 acres, a decrease of 32.5 percent from 1959. Soybeans were grown on 1,442 acres, an increase of 463 percent from 1959. Oats for grain were grown on 885 acres in 1964, a decrease of 42.3 percent from 1959. Cucumbers were grown on 618 acres in 1964, a decrease of about 7.7 percent from 1959.

The number of farms in Jefferson Davis County decreased from 1,946 in 1959 to 1,676 in 1964, or 13.9 percent. In the same period, land in farms decreased from 197,935 acres to 185,132 acres, or 6.4 percent. The average farm increased from 101.7 acres in 1959 to 110.5 acres in 1964 (*9*).

Climate[7]

Jefferson Davis County is in the South-Central Division of Mississippi, a grouping of nine counties selected to give as much uniformity in agricultural climate as possible. The Division is in a subtropical area which is affected alternately by the flow of cold air moving southward, and warm, moist air moving northward. Transitions from one flow to another frequently bring abrupt changes in weather.

Temperatures are not available for a location within the county; however, summers are consistently warm. It is estimated that in most years there are one or more days when the temperature is 100° F or higher. At nearby Monticello, temperature was 108° F on July 24, 1924. Temperatures of 90° F or warmer are expected to occur during the period April to October on an average of 70 or fewer days to more than 120 days. Temperature and precipitation data are listed in table 12.

Winters are relatively mild. Most years have one or more days when the temperature is 17° F or colder. At Monticello, the temperature was 3° F on January 27, 1940. Temperatures of 32° F or colder are expected from October to April on an average of 30 or fewer days to more than 70 days. Cold periods are generally of short duration. A few years could be expected to have one to three days when the temperature does not rise above 32° F. The ground freezes occasionally, but not to a great depth, and it generally thaws rapidly. Probabilities of low temperatures are shown in table 13.

Temperatures in table 13 were measured in a standard National Weather Service instrument shelter with the thermometer 4½ feet above ground. On clear, calm nights, shelter-level temperatures generally are several degrees warmer than the air near the ground. Under these conditions, frost forms on vegetation at ground level even though the temperature in the shelter is above 32° F. The length of the "freeze-free period" between the last 32° F temperature in

[7] E. J. SALTSMAN, State climatologist, National Weather Service, Jackson, Mississippi, prepared this section.

TABLE 12.—*Temperature and precipitation data*

[Precipitation data from the Prentiss Station, Jefferson Davis County, Mississippi. Temperature data estimated from stations in adjoining counties]

Month	Temperature						Precipitation			
	Average daily maximum	Average daily minimum	Average monthly—		Average number of days that have—		Average number of days that have 0.10 inch or more	Average monthly total	One year in 10 will have—	
			Highest maximum	Lowest minimum	Maximum of 90° and above	Minimum of 32° and below			Less than—	More than—
	°F	°F	°F	°F				*Inches*	*Inches*	*Inches*
January	60	36	78	17		14	7	5.1	2.1	8.7
February	63	38	79	21		10	6	5.3	2.4	8.7
March	70	44	82	27		6	7	6.5	2.6	11.2
April	79	53	88	36	(1)	(1)	6	4.9	1.5	9.1
May	85	60	93	45	8		6	4.6	1.4	8.7
June	91	66	97	57	19		6	4.0	1.1	7.8
July	92	69	98	64	24		8	5.1	2.0	8.9
August	92	68	98	60	24		6	3.8	1.7	6.4
September	88	63	96	49	14		5	3.6	.8	7.4
October	80	51	91	34	3	1	3	2.4	.1	5.5
November	69	42	84	24		7	4	3.8	.6	7.9
December	62	37	78	19		13	7	5.7	2.6	9.3
Total	78	52	100[2]	15[3]	92	51	71	54.8	40.1	71.3

[1] Less than one-half day.
[2] Average annual highest temperature.
[3] Average annual lowest temperature.

spring and first 32° F temperature in fall is used to determine the length of the "growing season." The effect of temperature varies according to the kind, type, and variety of vegetation. These data are based on a 30-year period of record, 1941–70, and have been adjusted, where necessary, for seasons in which temperatures were not as low as the indicated threshold. These data are applicable to most of the agricultural part of Jefferson Davis County.

Thunderstorms occur at any time of the year, generally on one or more days each month. In some years none occur in one or more of the colder months. Thunderstorms occur on an average of about 65 or 70 days each year. Nearly every summer day that has rain also has lightening or thunder, and the number of thunderstorm days then decreases until December, when the fewest occur. Thunderstorms late in fall, in winter, and early in spring are generally associated with passing weather systems, may occur at any hour, and are likely to be attended by higher winds than those in summer. Generally, heavier rainfall is associated with thunderstorms.

Precipitation occurs on an average of about two days in seven. Rainfall generally falls in showers. Prolonged rains are not frequent; they generally occur in winter and spring. More than one-quarter inch of rain may fall in five minutes in any season; three inches or more a day may fall in any month

TABLE 13.—*Probabilities of last freezing temperatures in spring and first in fall*

[Data estimated from stations in adjoining counties]

Probability	Dates for given probability and temperature				
	24 °F or lower	28 °F or lower	32 °F or lower	36 °F or lower	40 °F or lower
Spring:					
1 year in 10 later than	March 17	March 26	April 11	April 25	May 5
2 years in 10 later than	March 7	March 20	April 5	April 19	April 29
5 years in 10 later than	February 17	March 8	March 25	April 7	April 18
Fall:					
1 year in 10 earlier than	November 12	October 31	October 21	October 12	October 2
2 years in 10 earlier than	November 21	November 5	October 25	October 16	October 7
5 years in 10 earlier than	December 4	November 15	November 2	October 24	October 18

TABLE 14.—*Rainfall frequency*

Duration	Return period for a central location			
	2 Years	10 Years	50 Years	100 Years
	Inches	*Inches*	*Inches*	*Inches*
10 minutes	0.9	1.3	1.6	1.8
1 hour	2.1	2.8	3.6	3.9
3 hours	2.9	4.1	5.1	5.6
12 hours	4.2	6.0	7.7	8.6
1 day	4.7	7.0	9.0	10.1
2 days	5.6	8.1	11.3	11.8
7 days	7.7	11.2	14.7	15.7

and cause local flash flooding; torrential rains occur occasionally (see rainfall frequency, table 14). During the colder part of the year, the typical weather cycle is rain followed by a few relatively warm, balmy days and then again by rain. The average snowfall is less than an inch a year, but some years have no snow. Amounts of an inch or more have been reported in December, January, and February, but snow seldom remains on the ground more than two or three days. Occasionally during the warmer season, the pressure distribution alters to bring westerly to northerly winds. When this condition is extended, it results in periods of drier, hot weather. If these conditions are prolonged, drought conditions that affect farming may develop, and the danger of forest fire increases. Some places in the county have reported periods of a month or more with no rain.

Water loss experienced by the soil and crops is indicated by evaporation from large pans. The average annual evaporation from a National Weather Service Class A pan is about 61 inches, of which about 41 inches, or 68 percent, evaporates from May through October. The pan evaporation represents maximum, or potential, evaporation. The average annual lake evaporation is about 45 inches. The actual loss from soil generally is less, since the soil moisture available is often limited.

The mean annual relative humidity is about 74 percent. Humidity of less than 30 percent is most likely on days in October and November; their number diminishes in other months and are least in summer. Humidity of less than 50 percent occurs on some days each month and on an annual basis totals about 2 hours in 11. Humidity of 80 percent or more totals about 10 hours in 21. Humidity of 90 percent or higher occurs at any hour throughout the year, most frequently in early morning and during periods of rain. At times, heavy fog occurs mostly near daybreak, but it generally dissipates early in the forenoon and rarely lasts throughout the day.

Sunshine is an important factor in crop production. Over a period of years, sunshine in Jefferson Davis County is estimated to be slightly less than two-thirds of the annual possible. The time between sunrise and sunset varies from 10 hours and about 6 minutes at the winter solstice to 14 hours and about 13 minutes at the summer solstice.

Winds of as much as 40 miles per hour or more can occur in any month. Windspeed is generally less than 10 miles per hour except during and near periods of storms. Winds are dominantly southeasterly to southwesterly. At a height of 30 feet, a sustained windspeed of 75 miles per hour or more is estimated to recur about once every 50 years. Gusts are higher, but they usually last less than 20 seconds.

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Glossary

ABC soil. A soil that has a complete profile, including an A, B, and C horizon.

AC soil. A soil that has an A horizon and a C horizon but no B horizon. Commonly such soils are immature, as those developing from alluvium or those on steep, rocky slopes.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as crumbs, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alluvium. Soil material, such as sand, silt, or clay, that has been deposited on land by streams.

Association, soil. A group of soils geographically associated in a characteristic repeating pattern.

Available water capacity (also 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.

Bisequal soil. See sequum.

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.

Complex, soil. A mapping unit consisting of different kinds of soils that occur in such small individual areas or in such an intricate

pattern that they cannot be shown separately on a publishable soil map.

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 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.

Fallow. Cropland left idle in order to restore productivity, mainly through accumulation of water, nutrients, or both. Summer fallow is a common stage before cereal grain in regions of limited rainfall. The soil is tilled for at least one growing season to control weeds, to aid decomposition of plant residues, and to encourage the storage of moisture for the succeeding grain crop.

Fertility, soil. The quality of a soil that enables it to provide compounds, in adequate amounts and in proper balance, for the growth of specified plants, when other growth factors such as light, moisture, temperature, and the physical condition of the soil are favorable.

Flood plain. Nearly level land, consisting of stream sediments, that borders a stream and is subject to flooding unless protected artificially.

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.

Genesis, soil. The manner in which a soil originates. Refers especially to the processes initiated by climate and organisms that are responsible for the development of the solum, or true soil, from the unconsolidated parent material, as conditioned by relief and age of landform.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rains. The distinction between gully and rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by normal tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage. V-shaped gullies result if the material is more difficult to erode with depth; whereas U-shaped gullies result if the lower material is more easily eroded than that above it.

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.

Humus. The well-decomposed, more or less stable part of the organic matter in mineral soils.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state. In engineering, a high liquid limit indicates that the soil has a high content of clay and a low capacity for supporting loads.

Loess. Fine-grained material, dominantly of silt-sized particles, that has been deposited by wind.

Miscellaneous land type. A mapping unit for areas of land that have little or no natural soil; or that are too nearly inaccessible for orderly examination; or that occur where, for other reasons, it is not feasible to classify the soil.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and their thickness and arrangement in the soil profile.

Mottling, soil. Irregularly marked with spots of different colors that vary in number and size. Mottling in soils usually indicates poor areation and lack of drainage. Descriptive terms are as follows: abundance—*few*, *common*, and *many*; size—*fine*, *medium*, and *coarse*; and contrast—*faint*, *distinct*, and *prominent*. The size measurements are these: *fine*, less than 5 millimeters (about 0.2 inch) in diameter along the greatest dimension; *medium*, ranging from 5 millimeters to 15 millimeters (about 0.2 to 0.6 inch) in diameter along the greatest dimension; and *coarse*, more than 15 millimeters (about 0.6 inch) in diameter along the greatest dimension.

Munsell notation. A system for designating color by degrees of the three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with a hue of 10YR, a value of 6, and a chroma of 4.

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*.

Phase, soil. A subdivision of a soil, series, or other unit in the soil classification system made because of differences in the soil that affect its management but do not affect its classification in the natural landscape. A soil series, for example, may be divided into

phases because of differences in slope, stoniness, thickness, or some other characteristic that affects its management but not its behavior in the natural landscape.

pH value. A numerical means for designating acidity and alkalinity in soils. A pH value of 7.0 indicates precise neutrality; a higher value, alkalinity; and a lower value, acidity.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from a semisolid to a plastic state.

Plowpan. A compacted layer formed in the soil immediately below the plowed layer.

Poorly graded. A soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles in poorly graded soil material, density can be increased only slightly by compaction.

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
Extremely acid	Below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Medium acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Relief. The elevations or inequalities of a land surface, considered collectively.

Rill. A steep-sided channel resulting from accelerated erosion. A rill normally is a few inches in depth and width and is not large enough to be an obstacle to farm machinery.

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.

Sequum. A sequence in a soil profile consisting of an eluvial horizon and its related illuvial horizon, if present. Two sequa may be present in a single profile, and that soil could then be called a bisequal soil.

Series, soil. A group of soils developed from a particular type of parent material and having genetic horizons that, except for texture of the surface layer, are similar in differentiating characteristics and in arrangement in the profile.

Silica. Silica is a combination of silicon and oxygen. The mineral form is called quartz.

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.

Site index. A numerical means of expressing the quality of a forest site that is based on the height of the dominant stand at an arbitrarily chosen age; for example, the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years.

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.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes of separates recognized in the United States are as follows: *Very coarse sand* (2.0 to 1.0 millimeter); *coarse sand* (1.0 to 0.5 millimeter); *medium sand* (0.5 to 0.25 millimeter); *fine sand* (0.25 to 0.10 millimeter); *very fine sand* (0.10 to 0.05 millimeter); *silt* (0.05 to 0.002 millimeter); and *clay* (less than 0.002 millimeter). The separates recognized by the International Society of Soil Science are as follows: I (2.0 to 0.2 millimeter); II (0.2 to 0.02 millimeter); III (0.02 to 0.002 millimeter); IV (less than 0.002 millimeter).

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. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that it may soak into the soil or flow slowly to a prepared outlet without harm. Terraces in fields are generally built so they can be farmed. Terraces intended mainly for drainage have a deep channel that is maintained in permanent sod.

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.

Type, soil. A subdivision of the soil series that is made on the basis of differences in the texture of the surface layer.

Variant, soil. A soil having properties sufficiently different from those of other known soils to suggest establishing a new soil series, but a soil of such limited known area that creation of a new series is not believed to be justified.

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

Well-graded soil. A soil or soil material consisting of particles that are well distributed over a wide range in size or diameter. Such a soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an oven-dry basis, at which plants (specifically sunflower) wilt so much that they do not recover when placed in a dark, humid atmosphere.

GUIDE TO MAPPING UNITS

For a full description of a mapping unit, read both the description of the mapping unit and that of the soil series to which the mapping unit belongs. Other information is given in tables as follows:

Acreage and extent, table 1, page 6.
Predicted yields, table 2, page 25.
Woodland suitability groups, table 3, page 28.
Use of soils for wildlife, table 4, page 32.
Use of soils for engineering, tables 5, 6, 7, and 8, pages 34 through 47.

Map symbol	Mapping unit	Page	Capability unit	Woodland suitability group
			Symbol	Symbol
Bm	Bibb and Mantachie soils, frequently flooded	7	Vw-1	---
	Bibb part	--	-----	2w9
	Mantachie part	--	-----	1w9
CFF	Cadeville-Freestone association, hilly	7	VIIe-1	---
	Cadeville part	--	-----	3c2
	Freestone part	--	-----	2w8
DsB	Darco loamy sand, 0 to 5 percent slopes	8	IIIs-1	3s2
FcB	Falkner and Cadeville soils, 2 to 5 percent slopes	9	IIIe-1	---
	Falkner part	--	-----	2w8
	Cadeville part	--	-----	3c2
FcD	Falkner and Cadeville soils, 5 to 12 percent slopes	9	IVe-1	---
	Falkner part	--	-----	2w8
	Cadeville part	--	-----	3c2
Je	Jena sandy loam	11	IIw-1	1o7
Km	Kirkville and Mantachie soils, frequently flooded	11	Vw-2	1w9
McB	McLaurin sandy loam, 2 to 5 percent slopes	13	IIe-1	2o1
McE	McLaurin sandy loam, 12 to 17 percent slopes	13	VIe-1	2o1
Nu	Nugent soils, frequently flooded	13	Vw-3	2s8
OrA	Ora sandy loam, 0 to 2 percent slopes	14	IIw-2	2o7
OrB	Ora sandy loam, 2 to 5 percent slopes	14	IIe-2	2o7
OrC	Ora sandy loam, 5 to 8 percent slopes	14	IIIe-2	2o7
PaA	Paden silt loam, 0 to 2 percent slopes	15	IIw-3	2o7
PrA	Prentiss silt loam, 0 to 2 percent slopes	16	IIw-4	2o7
PvB	Providence silt loam, 2 to 5 percent slopes	16	IIe-3	2o7
PvC	Providence silt loam, 5 to 8 percent slopes	16	IIIe-3	2o7
RuB	Ruston sandy loam, 2 to 5 percent slopes	17	IIe-1	2o1
RuC	Ruston sandy loam, 5 to 8 percent slopes	17	IIIe-4	2o1
RuC3	Ruston sandy loam, 4 to 8 percent slopes, severely eroded	18	IIIe-5	2o1
RuD	Ruston sandy loam, 8 to 12 percent slopes	18	IVe-2	2o1
RuD3	Ruston sandy loam, 8 to 12 percent slopes, severely eroded	18	VIe-2	2o1
RwA	Ruston and Bassfield soils, low terrace, 0 to 2 percent slopes	18	IIw-5	---
	Ruston part	--	-----	2o1
	Bassfield part	--	-----	2o7
SaC	Saffell gravelly sandy loam, 2 to 8 percent slopes	19	IIIe-6	4f2
SbB	Savannah silt loam, 2 to 5 percent slopes	20	IIe-2	2o7
SbC	Savannah silt loam, 5 to 8 percent slopes	20	IIIe-2	2o7
SmE	Smithdale sandy loam, 12 to 17 percent slopes	21	VIe-1	2o1
SmF	Smithdale sandy loam, 17 to 40 percent slopes	21	VIIe-2	2o1
SoE3	Smithdale-Udorthents complex, 5 to 25 percent slopes, severely eroded	21	VIIe-3	3r3
SsF3	Smithdale soils, 15 to 30 percent slopes, severely eroded	21	VIIe-4	2o1
St	Smithton silt loam	22	IIIw-1	2w9
Su	Stough silt loam	23	IIIw-2	2w8
Tb	Trebloc silt loam, thick surface variant	23	IVw-1	2w9

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