Series 1960, No. 18

Issued June 1964

SOIL SURVEY

Jackson County Mississippi

UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
In cooperation with
MISSISSIPPI AGRICULTURAL EXPERIMENT STATION

HOW TO USE THE SOIL SURVEY REPORT

THIS SOIL SURVEY of Jackson County will serve several groups of readers. It will help farmers in planning the kind of management that will protect their soils and provide good yields; assist engineers in selecting sites for roads, buildings, reservoir areas, and other structures; serve as a reference for students and teachers; aid foresters in managing woodland; aid in community and county planning and development; and add to our knowledge of soils.

Locating the soils

Use the index to map sheets at the back of this report to locate areas on the detailed soil map. The index is a small map of the county, on which numbered rectangles have been drawn to show what part of the county is represented on each sheet of the detailed soil map. When the correct sheet of the large map has been found, it will be seen that the soil areas are outlined and that each soil is designated by a symbol. All areas marked with the same symbol are the same kind of soil. Suppose, for example, an area on the map has the symbol NoA. The legend for the detailed map shows that this symbol identifies Norfolk fine sandy loam, 0 to 2 percent slopes. This soil and all others mapped in the county are described in the section "Descriptions of the Soils."

Finding information

Different sections of this report will be of special interest to different groups of readers.

Farmers and those who work with farmers can learn about the soils in the section "Descriptions of the Soils," and then turn to the section "Use and Management of the Soils." In this way they first identify the soils on their farm and then learn how these soils can be managed and what yields can be expected. The "Guide to Mapping Units," at the back of the report, shows where information about each particular use of the soils can be found in this report.

Foresters and others interested in woodland can refer to the section "Woodland." In that section the soils of the county are grouped according to their suitability for trees, factors affecting the management of woodland are explained, and the yields that can be expected from the most important kinds of pine trees are given.

Engineers and builders will find useful information in the section "Engineering Uses of the Soils." Tables in that section show soil characteristics that affect engineering. For those who want to locate homesites, the tables also provide information on sewage disposal fields, foundations for low buildings, and suitability for reservoir areas.

Soil scientists and others interested in the nature of the soils will find information about how the soils were formed and how they are classified in the section "Genesis, Morphology, and Classification of the Soils."

Students, teachers, and other users will find various parts of the report useful, depending on their particular interests.

Newcomers to Jackson County will be especially interested in the section "General Soil Map," where broad patterns of soils are described. They may also be interested in the section "General Nature of the County," which gives additional information about the county.

* * * * *

This soil survey was made as part of the technical assistance furnished by the Soil Conservation Service to the Jackson County Soil Conservation District. Fieldwork for this survey was completed in 1960. Unless otherwise indicated, all statements in the report refer to conditions in the county at that time.

U.S. GOVERNMENT PRINTING OFFICE: 1964

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington, D.C. 20402

Contents

Series 1960, No. 18

Issued June 1964

SOIL SURVEY OF JACKSON COUNTY, MISSISSIPPI

BY WILLIAM A. COLE AND JOSEPH H. DENT, JR., SOIL CONSERVATION SERVICE

FIELD SURVEY BY WILLIAM A. COLE, MORRIS E. SHAFFER, JOSEPH H. DENT, JR., VELTON C. ALLGOOD, AND LEWIS R. WATTS, SOIL CONSERVATION SERVICE, AND ROBERT E. FULGHAM, MISSISSIPPI AGRICULTURAL EXPERIMENT STATION

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

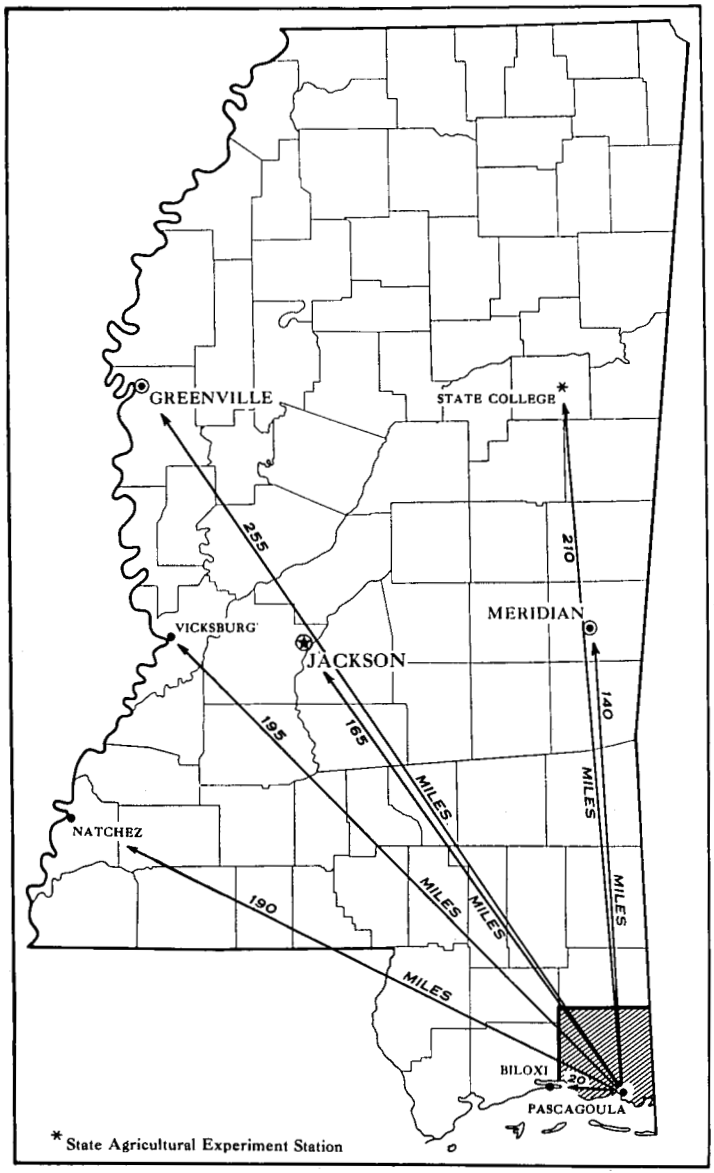

Figure 1.—Location of Jackson County in Mississippi.

JACKSON COUNTY is in the extreme southeastern part of Misissippi (fig. 1). It is bordered on the south by the Gulf of Mexico, on the north by George County, on the west by Harrison County, on the northwest by Stone County, and on the east by Mobile County, Ala. The total area of the county is 744 square miles, or 476,160 acres, including Petit Bois, Horn, and Round Islands. The length of the county from north to south is about 25 miles, and the width from east to west, about 29 miles.

Pascagoula, the county seat, is in the southeastern part of the county, on the coast. It is approximately 110 miles southeast of Hattiesburg, 165 miles southeast of Jackson, 107 miles east of New Orleans, La., and 42 miles west of Mobile, Ala.

Timber and forest products are the chief sources of agricultural income. Field crops are secondary. Industry is the principal source of income. Shipyards and papermills are the largest industrial installations in the county, and there are more than 30 others. Many employees of industrial plants are also part-time farmers.

How Soils Are Named, Mapped, and Classified

Soil scientists made this survey to learn what kinds of soils are in Jackson County, where they are located, and how they can be used.

They went into the county knowing they likely would find many soils they had already seen, and perhaps some they had not. As they traveled over the county, they observed steepness, length, and shape of slopes; size and speed of streams; kinds of native plants or crops; kinds of rocks; and many facts about the soils. They dug or bored 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 to the parent material that has not been changed much by leaching or by roots of plants.

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 uniform procedures. To use this report efficiently, it is necessary to know the kinds of groupings most used in a local soil classification.

Soils that have profiles almost alike make up a soil series. Except for different texture in the surface layer, the major horizons of all the soils of one series 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. Bowie and Norfolk, 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 natural characteristics.

Many soil series contain soils that differ in the texture of their surface layer. According to these differences in texture, separations called soil types are made. Within a series, all the soils having a surface layer of the same texture belong to one soil type. None of the series in Jackson County includes more than one type.

Some soil types vary so much in slope, degree of erosion, number and size of stones, or some other feature affecting their use, that practical suggestions about their management could not be made if they were shown on the soil map as one unit. Such soil types are divided into soil phases. The name of a soil phase indicates a feature that affects management. For example, Norfolk fine sandy loam, 2 to 5 percent slopes, is one of several phases of Norfolk fine sandy loam, a soil type that ranges from nearly level to strongly sloping.

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

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

Two or more recognized soils that are not regularly associated geographically may be mapped together as an undifferentiated mapping unit, if the condition of the landscape is such as to make separating them impractical. Susquehanna, Bowie, and Boswell soils, 5 to 8 percent slopes, is an example of an undifferentiated mapping unit. In most mapping, there are areas to be shown that are so wet or so frequently worked by wind and water that they cannot be called soils. These areas are shown on the soil map, but they are called land types rather than soils and are given descriptive names, such as Swamp or Dune land.

Only part of the soil survey was done when the soil scientist had named and described the soil series and mapping units and had shown the location of the mapping units on the soil map. He still had to present the mass of detailed information he had recorded in different ways for different groups of users, among them farmers, managers of woodland, and engineers. To do this efficiently, he had to consult with persons in other fields of work and with them prepare groupings that would be of practical value to the different users. Such groupings are the capability classes, subclasses, and units, designed primarily for those interested in producing the short-lived crops and tame pasture; forage sites, for those using tracts of native grass; woodland suitability groups, for those who manage wooded tracts; and the classifications used by engineers who build highways or structures to conserve soil and water.

General Soil Map

After study of the soils in a locality and the way they are arranged, it is possible to make a general map that shows several main patterns of soils, called soil associations. Such a map is the colored general soil map in the

TABLE 1.—*Suitability of the major soils in the soil associations for residential areas, recreational areas, and agricultural areas*

Soil association	Suitability of major soils for—							
	Residential areas			Recreational areas		Agricultural areas		
	Sewage lagoons	Individual sewage systems	Foundations	Developed	Natural	Grassland	Row crops	Woodland
1. Rains-Lynchburg-Plummer-Goldsboro.	Poor to fair.	Poor to fair.[1]	Fair to good.	Poor to fair.	Poor to fair.	Good	Poor to good.	Good.
2. Eustis-Klej-Lakeland	Poor	Good [2]	Good	Fair to good.	Good	Fair	Fair to good.	Fair.
3. Ruston-Orangeburg-Norfolk	Poor to fair.	Good	Good	Good	Good	Good	Good	Good.
4. Goldsboro-Lynchburg-Norfolk	Fair to good.	Fair to good.	Good	Good	Good	Good	Good	Good.
5. Bayboro-Coxville-Dunbar	Fair	Poor	Poor	Poor	Fair	Fair	Poor	Fair to good.
6. Susquehanna-Boswell-Bowie	Good	Poor	Poor	Fair	Good	Fair	Poor	Fair.
7. Alluvial Land	Poor	Poor	Poor	Poor	Good	Poor	Poor	Poor.
8. Tidal Marsh	Poor	Poor	Poor	Poor	Good	Poor	Poor	Poor.

[1] Rains and Plummer soils are poorly suited to individual sewage systems; Goldsboro and Lynchburg soils are fairly good.
[2] Possibly excessive seepage.

back of this report. Each association, as a rule, contains a few major soils and several minor soils, in a pattern that is characteristic although not strictly uniform.

The soils within any one association are likely to differ in some properties; for example, slope, depth, or natural drainage. Thus, the general soil map shows, not the kind of soil at any particular place, but patterns of soils in each of which there are several different kinds of soil.

Each soil association is named for the major soil series in it, but, as already noted, soils of other series may also be present. The major soils of one soil association may also be present in another association, but in a different pattern.

The general map is useful to people who want a general idea of the soils, who want to compare different parts of a county, or who want to know the possible location of good-sized areas suitable for a certain kind of farming or other land use.

In table 1, the major soils in each of the eight soil associations in Jackson County are rated for use as residential areas, recreational areas, and agricultural areas.

The soil associations shown on the general soil map at the back of this report are described in the following subsections.

1. Rains-Lynchburg-Plummer-Goldsboro association

Level or nearly level, poorly drained loamy soils

This association occurs mainly in the northeastern and southern parts of Jackson County, on broad, nearly level to gently sloping uplands broken by scattered drains, swales, and depressions. These soils were developed in acid, loamy sediments under a coniferous forest and were affected by a high water table.

Rains soils make up about 40 percent of the association; Lynchburg soils, 20 percent; Plummer soils, 15 percent; and Goldsboro soils, 15 percent. The remaining 10 percent of the association consists of somewhat poorly drained Scranton and Pheba soils and poorly drained Grady soils. The poorly drained Rains and Plummer soils have a black surface layer. The somewhat poorly drained Lynchburg soils and the moderately well drained Goldsboro soils have a very dark gray surface layer. Rains and Goldsboro soils have a surface layer and subsoil that are chiefly loam. Lynchburg soils have a surface layer and subsoil of very fine sandy loam. Plummer soils have a surface layer and subsoil of loamy sand.

A large part of this association is idle, but a considerable acreage is being planted to slash pine, to which the soils are well suited. A few livestock farms are in operation. These soils have a moderate to high forage potential, and the better drained soils are well suited to row crops.

Natural recreational areas may be developed satisfactorily for hunting throughout this association, but the poorly drained Rains and Plummer soils are not suitable for playgrounds, parks, or golf courses. Those soils that have a high water table are not suitable for individual sewage disposal systems, but they are fairly stable for foundations for streets, houses, and commercial buildings. During tropical storms the areas in the southern part of the county may be flooded.

2. Eustis-Klej-Lakeland association

Rolling sandy soils

This association occurs in the northeastern and southern parts of the county on nearly level and rolling ridges. The soils are deep loamy sands and sands.

Eustis soils make up 50 percent of the association; Klej soils, 30 percent; Lakeland soils, 15 percent; and Orangeburg and Ruston soils, 5 percent. Lakeland and Eustis soils are well drained to excessively drained. Klej soils are moderately well drained and occupy slightly lower positions than Lakeland and Eustis soils. All the soils in this association have a dark grayish-brown to very dark gray surface layer. Eustis soils have a reddish-yellow or strong-brown subsoil. Lakeland and Klej soils have a brownish-yellow subsoil.

This association is presently in longleaf pine forest, to which the soils are well suited. On the few farms, truck crops and pecans are the major crops. These soils are suitable for truck crops and many forage crops.

The soils in this association have coarse texture, rapid percolation, and good drainage. They provide stable foundations for streets and buildings; consequently, they are suitable as sites for homes and commercial buildings. Excessive seepage can be detrimental to the proper disposal of sewage on the stronger slopes.

The soils in this association are not suitable for reservoirs, but they are suitable for playgrounds, campsites, parks, or golf courses. Natural recreational areas can be developed satisfactorily.

3. Ruston-Orangeburg-Norfolk association

Rolling sandy and loamy soils

This association is in the central and northeastern parts of the county, on broad, nearly level to rolling uplands. The soils were developed in moderately coarse textured, acid, marine sediments under a coniferous forest. They have good drainage.

Ruston soils make up 50 percent of the association; Orangeburg soils, 25 percent; and Norfolk soils, 20 percent. About 5 percent of this association consists of minor areas of moderately well drained Goldsboro and Klej soils and well drained to excessively drained Eustis and Lakeland soils. All the soils in this association have a surface layer of grayish-brown to dark grayish-brown fine sandy loam. The subsoil is fine sandy loam, loam, or sandy clay loam. In the Orangeburg soils it is dark red, in the Ruston soils it is yellowish red, and in the Norfolk soils it is olive brown to yellowish brown.

Most of the acreage is used for general farming, pecan orchards, and pine forests. The soils are well suited to row crops, forage crops, and trees.

The soils in this association are suitable for parks, playgrounds, golf courses, and wildlife habitats. They have medium texture, rapid percolation, and good drainage. They provide stable foundations for streets and buildings; consequently, they are ideal as sites for residential and commercial buildings.

4. Goldsboro-Lynchburg-Norfolk association

Gently sloping loamy soils

This association occurs in the west-central part of the county. It occupies nearly level to gently sloping, narrow and broad ridges that are dissected by scattered depres-

sions and shallow drainageways. These soils were developed in acid, loamy, marine sediments under a coniferous forest and were affected by a variable water table.

Goldsboro soils occupy 50 percent of the area of the association; Lynchburg soils, 25 percent; and Norfolk soils, 15 percent. The moderately well drained Bowie soils, the well drained Ruston soils, and the poorly drained Rains soil occupy the remaining 10 percent of the association. The moderately well drained Goldsboro and the well drained Norfolk soils have a very dark gray to grayish-brown loam or sandy loam surface layer. The somewhat poorly drained Lynchburg soils have a surface layer of very dark grayish-brown to black loam and sandy loam.

Most of this association is in timber, to which the soils are well suited. A few well-managed general farms are in operation. Pecans, forage crops, and row crops are suitable crops.

The soils in this association have medium texture and moderate percolation. They provide stable foundations for streets and buildings; consequently, they are suitable as sites for residential and commercial buildings. They are also suitable for parks, campsites, playgrounds, golf courses, wildlife habitats, or small reservoirs.

5. Bayboro-Coxville-Dunbar association

Level or nearly level, poorly drained soils that have clayey subsoil

This association is mainly in the southeastern part of the county on low, broad, nearly level and gently sloping uplands that, at intervals, are broken by shallow drains, swales, and depressions. These soils were developed in fine-textured, acid, Coastal Plain sediments under a coniferous forest and were affected by a high water table. The water table is at or near the surface throughout the year.

Bayboro soils make up about 60 percent of the association; Coxville soils, 15 percent; and Dunbar soils, 5 percent. Minor soils that make up the remaining 20 percent of the association include the somewhat poorly drained Scranton soils, the poorly drained Rains and Grady soils, Swamp, and Alluvial land. The surface layer of the poorly drained Bayboro and Coxville soils is silt loam, and that of the somewhat poorly drained Dunbar soils ordinarily is loam. All major soils in this association have a silty clay or clay subsoil.

These soils are not suitable for the commonly grown truck crops or other row crops unless the drainage is improved. Much of the association is being reforested with slash pine, to which the soils are well suited. A few farms, mostly livestock farms, are in operation. Most of the acreage in these farms is used as pasture.

The soils in this association have fine texture, slow percolation, and poor drainage. They are unstable as foundations for streets and buildings; consequently, they are not suitable as sites for homes or commercial buildings. Natural recreational areas may be developed satisfactorily, chiefly for hunting, but most of this association is unsuitable for golf courses, parks, or other recreational facilities for which good drainage is essential.

6. Susquehanna-Boswell-Bowie association

Rolling soils that have clayey subsoil

This association is in the northwestern corner of the county on short, narrow, rolling to steep ridges. Shallow beds of medium-textured sediments overlie beds of acid, plastic clay.

Susquehanna soils make up 50 percent of the association; Boswell soils, 25 percent; and Bowie soils, 20 percent. The remaining 5 percent consists of small areas of well-drained Ruston soils on ridgetops and poorly drained Rains soils that occur at the foot of slopes and around the head of drainageways. The surface layer of all these soils is grayish-brown loam, fine sandy loam, or silt loam. The subsoil is clayey. In the somewhat poorly drained Susquehanna soils it is mottled gray, red, and brown; in the Boswell soils it is red or yellowish red; and in the Bowie soils it is yellowish brown.

Most of the acreage in the association is forested. On the few farms, both cultivated crops and pasture are grown. These soils are better suited to permanent vegetation than to cultivated crops, because they are highly susceptible to erosion. They are well suited to longleaf pine and slash pine.

The soils in this association are suitable for wildlife habitats and developed recreational areas. Building and maintaining small reservoirs is relatively easy because there is little risk of seepage. Most areas are not suitable as sites for homes or commercial buildings, because the soils have slow percolation and are unstable if used as foundations for streets and buildings.

7. Alluvial Land association

Low flood plains

This association makes up approximately 20 percent of the county. It occupies low-lying areas along the Pascagoula River. Most of these areas are flooded several times a year and are submerged for long periods. The texture and color are varied.

Most of this association is presently used for trees, mainly hardwoods, and as wildlife habitats.

8. Tidal Marsh association

Level, wet land

This association is in the southern part of the county in areas that are affected by brackish water. It occurs around Graveline Bayou and Bangs Lake (or Point Clear Lake), along the Pascagoula River and its tributaries, and on Petit Bois, Horn, and Round Islands.

Tidal marsh and sandy land types make up this association. Tidal marsh predominates. It consists mostly of brown or black, partly or wholly decomposed marsh plants over mineral soil.

This association is a suitable habitat for waterfowl, fish, and marsh animals.

Use and Management of the Soils

This section discusses the system of land capability classification used by the Soil Conservation Service and gives the classification of the soils of Jackson County according to that system. It describes general management practices for groups of soils that have similar potentialities and management requirements, and it gives estimates of yields of specified crops. It groups the soils according to their suitability for use as woodland forage sites and woodland and gives information that is useful in the management of

woodland; it gives the suitability and management of the soils and plants for wildlife; and it interprets the soil characteristics that are significant in road construction and other engineering uses.

This section is a general guide to the management of the soils in the county. For more detailed information about managing the soils, consult the local staffs of the Agricultural Extension Service and the Soil Conservation Service at Pascagoula, Miss.

Capability Groups of Soils

The capability classification is a grouping that shows, in a general way, how suitable soils are for most kinds of farming. It is a practical grouping based on limitations of the soils, the risk of damage when they are used, and the way they respond to treatment.

In this system all the kinds of soils are grouped at three levels: the capability class, the subclass, and the unit. The eight capability classes in the broadest grouping are designated by Roman numerals I through VIII. In class I are the soils that have few 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, of forage, or of wood products.

The subclasses indicate major kinds of limitations within the classes. Within most of the classes there can be up to four subclasses. The subclass is 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 a 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*, used in only some parts of the country, 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 in it have little or no erosion hazard but have other limitations that limit their use largely to pasture, range, woodland, or wildlife.

Within the subclasses are the capability units, groups of soils enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity and other responses to management. The capability units are convenient groupings for making many statements about management of soils. Capability units are generally identified by numbers assigned locally, for example, IIe–1 or IIIe–2.

Soils are classified in capability classes, subclasses, and units in accordance with the degree and kind of permanent limitations, but without consideration of major and generally expensive landforming that would change the slope, depth, or other characteristics of the soil, and without consideration of possible but unlikely major reclamation projects.

The eight classes in the capability system, and the subclasses and units in this county, are described in the list that follows.

Class I: Soils that have few limitations that restrict their use.
- Unit I–1: Deep, well-drained, nearly level soils of the uplands.

Class II: Soils that have some limitations that reduce the choice of plants or require moderate conservation practices.
- Subclass IIe: Soils subject to moderate erosion if they are not protected.
  - Unit IIe–1: Well drained and moderately well drained, gently sloping soils of the uplands.
  - Unit IIe–2: Somewhat poorly drained, gently sloping soils of the uplands.
  - Unit IIe–3: Moderately well drained, gently sloping soils; clayey subsoil.
- Subclass IIw: Soils that have moderate limitations because of excess water.
  - Unit IIw–1: Moderately well drained, nearly level soils of the uplands.
  - Unit IIw–2; Somewhat poorly drained, nearly level soils of the uplands.
  - Unit IIw–3: Moderately well drained, nearly level soils of the uplands; clayey subsoil.

Class III: Soils that have severe limitations that reduce the choice of plants, or require special conservation practices, or both.
- Subclass IIIe: Soils subject to severe erosion if they are cultivated and not protected.
  - Unit IIIe–1: Deep, moderately sloping soils that have friable subsoil.
  - Unit IIIe–2: Moderately sloping, moderately deep soils that have clayey subsoil through which water moves slowly.
- Subclass IIIw: Soils that have severe limitations because of excess water.
  - Unit IIIw–2: Somewhat poorly drained, medium-textured soils with a fragipan.
  - Unit IIIw–3: Poorly drained soils of the coastal flatwoods; tough plastic clay subsoil.
  - Unit IIIw–4: Poorly drained soils of the coastal flatwoods; clay loam subsoil.
- Subclass IIIs: Soils that have severe limitations of moisture capacity or tilth.
  - Unit IIIs–1: Nearly level to gently sloping, somewhat excessively drained, sandy soils that have a very deep, sandy subsoil.
  - Unit IIIs–2: Nearly level to sloping, moderately well drained, sandy soils.

Class IV: Soils that have very severe limitations that restrict the choice of plants, or require very careful management, or both.
- Subclass IVe: Soils subject to very severe erosion if they are cultivated and not protected.
  - Unit IVe–1: Moderately well drained and well drained, strongly sloping soils.
  - Unit IVe–2: Somewhat poorly drained and moderately well drained, gently sloping, clayey soils.

Class IV—Continued
- Subclass IVw: Soils very severely limited because of excess water.
  - Unit IVw–1: Nearly level, poorly drained soils of the coastal flatwoods.
  - Unit IVw–2: Somewhat poorly drained, nearly level to gently sloping, sandy soils of the uplands.
- Subclass IVs: Soils very severely limited because of stoniness, low moisture capacity, or other soil features.
  - Unit IVs–1: Deep, sandy, sloping soils through which water moves rapidly.
  - Unit IVs–2: Deep, very sandy, excessively drained, nearly level to sloping soils through which water moves rapidly.

Class V: Soils that are not likely to erode but have other limitations, impractical to remove without major reclamation, that limit their use largely to pasture, range, woodland, or food and cover for wildlife.
- Subclass Vw: Soils too wet for cultivation; drainage or protection not feasible.
  - Unit Vw–1: Poorly drained, sandy soils of the coastal flatwoods.
  - Unit Vw–2: Very poorly drained soils in depressions.
  - Unit Vw–3: Frequently overflowed, mostly poorly drained soils of the bottom lands.

Class VI. Soils that have severe limitations that make them generally unsuitable for cultivated crops and that limit their use largely to pasture, range, woodland, or food and cover for wildlife.
- Subclass VIe: Soils severely limited, chiefly by risk of erosion if protective cover is not maintained.
  - Unit VIe–1: Very strongly sloping to steep, well-drained soils of the uplands.
  - Unit VIe–2: Moderately sloping and strongly sloping soils that have a plastic clay subsoil.
- Subclass VIs: Soils generally unsuitable for cultivation and limited for other uses by low moisture capacity, stones, or other features.
  - Unit VIs–1: Strongly sloping to steep, sandy soils through which water moves rapidly.

Class VII: Soils that have very severe limitations that make them unsuitable for cultivation without major reclamation and that restrict their use largely to grazing, woodland, or wildlife.
- Subclass VIIw: Soils very severely limited by excess water.
  - Unit VIIw–1: Very poorly drained, nearly level soils of the bottom lands.
  - Unit VIIw–2: Tidal marsh.

Class VIII: Soils and land types that have limitations that preclude their use for commercial plants and that restrict their use to recreation, wildlife, water supply, or esthetic purposes.
- Subclass VIIIs: Soils and land types that support little vegetation.
  - Unit VIIIs–1: Coastal beach; loose, deep sands.

General Management

The soils in Jackson County vary considerably in use suitability and in management, but some management practices are applicable to all the soils. Some areas produce high yields of cultivated crops, if well managed. These areas have a plow layer that is easy to work and to keep in good tilth. Some areas are better suited to woodland or pasture. Most of the soils are low in natural fertility and are strongly acid or very strongly acid. All except the more sandy soils pack and crust when bare.

Improving drainage of wet soils is the major management problem, if the soils are cultivated or used for improved pasture. Drainage can be provided by means of canals and W-type and V-type ditches.

Fertilizer and lime are needed for most crops grown in the county. Sandy soils are most likely to be deficient in nitrogen, phosphorus, and potash, If legumes are grown, periodic applications of lime are needed. All crop residues should be turned under. The amounts of fertilizer and lime required can be determined by soil tests. Assistance in determining the specific requirements of each soil can be obtained from the county agricultural agent or the local representative of the Soil Conservation Service.

The erosion hazard is slight because 85 percent of the county area is in forest. Contour tillage and use of crop residues help to retard runoff and to control erosion. Areas where the erosion hazard is severe should be kept in permanent vegetation.

Management by Capability Units

In the following pages each of the 29 capability units in Jackson County is described, the soils in each are listed, and some suggestions for use and management are given.

Capability unit I–1

This unit consists of deep, well-drained, nearly level soils that are uneroded or only slightly eroded. The surface layer is brown to gray fine sandy loam. The subsoil is red to yellowish-brown, friable loam or sandy clay loam. The soils in this unit are—

Norfolk fine sandy loam, 0 to 2 percent slopes.
Orangeburg fine sandy loam, 0 to 2 percent slopes.
Ruston and Orangeburg fine sandy loams, 0 to 2 percent slopes.

Water moves into and through these soils at a moderate rate. The available moisture capacity is moderate. These soils are easy to work, and they can be worked throughout a fairly wide range of water content.

These soils are well suited to cotton, corn, small grain, sorghum, sudangrass, millet, alyceclover, common bermudagrass, bahiagrass, crimson clover, truck crops, tung trees, and pecan trees.

If well managed, these soils are productive and can be used continuously for row crops. Crop residues should be shredded and left on the surface as a mulch.

Capability unit IIe–1

This unit consists of moderately well drained and well drained soils that are uneroded or only slightly eroded. The surface layer is brown to gray loam or fine sandy loam. The subsoil is yellowish-red to yellowish-brown fine sandy loam, loam, or clay loam. The soils in this unit are—

Bowie loam, 2 to 5 percent slopes.
Goldsboro loam, 2 to 5 percent slopes.
Norfolk fine sandy loam, 2 to 5 percent slopes.
Ruston and Orangeburg fine sandy loams, 2 to 5 percent slopes.
Savannah loam, 2 to 5 percent slopes.

Water moves into these soils at a moderate rate. Internal movement of water is moderate in the Ruston, Norfolk, and Goldsboro soils but slow in the lower part of the subsoil of the Bowie and Savannah soils. Runoff is moderate. These soils have fairly good tilth, and they can be worked throughout a wide range of water content.

These soils are well suited to cotton, corn, small grain, soybeans, sorghum, crimson clover, wild winter peas, alyceclover, Coastal bermudagrass, common bermudagrass, bahiagrass, truck crops, tung trees, and pecan trees.

If runoff is controlled by means of vegetated outlets and graded rows, these soils can be cultivated continuously. If runoff is not controlled with an adequate water-disposal system, close-growing crops should be grown half the time. Keeping a cover on the surface as much of the time as possible helps to control erosion and to increase infiltration of water.

Capability unit IIe-2

This unit consists of somewhat poorly drained, gently sloping, slightly erodible soils. Their surface layer is black to dark grayish-brown loam or very fine sandy loam. The subsoil is pale-yellow loam or sandy loam. The soils in this unit are—

Dunbar loam, 2 to 5 percent slopes.
Lynchburg very fine sandy loam, 2 to 5 percent slopes.

Dunbar loam is underlain by clay at a depth of 18 to 30 inches.

Water enters these soils at a moderate rate, and internal movement of water is moderate to slow. Runoff is slow to moderate. The available moisture capacity is moderate. The organic-matter content is moderate to low.

These soils are suited to soybeans, grain sorghum, corn, truck crops, small grain, Coastal bermudagrass, common bermudagrass, tall fescue (fig. 2), bahiagrass, wild winter peas, vetch, field peas, annual lespedeza, and whiteclover.

If adequately drained, these soils are productive. They can be cultivated continuously, if vegetated outlets and graded rows are used to control runoff. If runoff is not controlled with an adequate water-disposal system, close-growing crops should be grown half the time. Keeping a cover on the surface as much of the time as possible helps to control erosion and to increase infiltration of water.

Figure 2.—**Checking maturity of tall fescue on Lynchburg very fine sandy loam.**

688-773—64——2

Capability unit IIe-3

Fairhope very fine sandy loam, 2 to 5 percent slopes, is the only soil in this unit. It is a moderately well drained soil of the uplands. The surface layer is fine sandy loam, and the subsoil is clay.

Water moves into this soil at a moderate rate, but internal movement of water is slow in the lower part of the subsoil. The available moisture capacity is moderate. Productivity is fair.

This soil is suited to soybeans, grain sorghum, Coastal bermudagrass, common bermudagrass, tall fescue, bahiagrass, wild winter peas, annual lespedeza, whiteclover, and pecans.

A suitable cropping system, if graded rows and vegetated waterways are used to control runoff, consists of 2 years of soybeans grown in a small grain, then 2 years of annual lespedeza. If runoff is not controlled, a suitable cropping system is 4 years of sod crops and 2 years of row crops. Keeping a cover on the surface as much of the time as possible helps to control erosion and to increase infiltration of water.

Capability unit IIw-1

This unit consists of moderately well drained, nearly level soils that are uneroded or only slightly eroded. The surface layer is dark-gray loam, and the subsoil is yellowish-brown loam to clay loam. The soils in this unit are—

Bowie loam, 0 to 2 percent slopes.
Goldsboro loam, 0 to 2 percent slopes.
Savannah loam, 0 to 2 percent slopes.

Infiltration is moderate, and runoff is slow. Internal movement of water is moderate in the upper part of the subsoil and slow in the lower part. The available moisture capacity is moderate. The organic-matter content is moderate to low.

These soils are suited to corn, sorghum, soybeans, millet, small grain, bahiagrass, bermudagrass, and whiteclover.

These soils are productive, but they tend to be slightly too wet for crops that have to be planted early. They can be used for row crops every year if adequately drained. Graded rows, V-type and W-type ditches, and field laterals can be used to remove excess water. Unless an adequate drainage system has been estabished, crops are likely to be damaged by excess water.

Capability unit IIw-2

This unit consists of somewhat poorly drained, nearly level soils. Their surface layer is black to dark grayish-brown loam or very fine sandy loam, and the subsoil is pale-yellow loam or sandy loam. The soils in this unit are—

Dunbar loam, 0 to 2 percent slopes.
Lynchburg very fine sandy loam, 0 to 2 percent slopes.

The Dunbar soil is underlain by clay at a depth of 18 to 30 inches.

Water enters the soils of this unit at a moderate rate. Internal movement of water is moderate to slow. The available moisture capacity is moderate. The organic-matter content is medium to low.

If adequately drained, these soils are suited to soybeans, grain sorghum, corn, truck crops, small grain, Coastal

bermudagrass, common bermudagrass, tall fescue, bahiagrass, wild winter peas, vetch, field peas, annual lespedeza, and whiteclover.

These soils are productive. Row crops can be grown every year if the residues are shredded and left on the surface as a mulch. Graded rows, V-type and W-type ditches, and field laterals are needed to remove excess water.

Capability unit IIw–3

Fairhope very fine sandy loam, 0 to 2 percent slopes, is the only soil in this unit. It is a moderately well drained soil that has a surface layer of dark grayish-brown very fine sandy loam and a subsoil of yellowish-red clay loam.

The organic-matter content is low. The infiltration rate is medium, and internal movement of water is slow. The available moisture capacity is moderate to high. Productivity is only fair.

This soil is suited to grain sorghum, soybeans, Coastal bermudagrass, common bermudagrass, wild winter peas, vetch, field peas, annual lespedeza, and whiteclover.

If adequately drained, this soil can be used for row crops every year. Graded rows, V-type and W-type ditches, and field laterals can be used to remove excess water. Unless an adequate drainage system has been installed, crops are damaged by excess water in normal wet weather.

Capability unit IIIe–1

This unit consists of moderately well drained, moderately sloping soils that are severely erodible if cultivated. The surface layer is gray to brown loam or fine sandy loam. The subsoil is yellowish-red to yellow loam, fine sandy loam, or sandy clay loam. The soils in this unit are—

Goldsboro loam, 5 to 8 percent slopes.
Norfolk fine sandy loam, 5 to 8 percent slopes.
Ruston and Orangeburg fine sandy loams, 5 to 8 percent slopes.

Water moves into and through these soils at a moderate rate. The available moisture capacity is moderate. These soils are in good tilth, and they can be worked throughout a wide range of water content.

These soils are suited to cotton, corn, soybeans, grain sorghum, small grain, Coastal bermudagrass, common bermudagrass, bahiagrass, wild winter peas, vetch, annual lespedeza, crimson clover, truck crops, pecan trees, and tung trees.

If used for cultivated crops, these soils need a complete water-disposal system that includes vegetated outlets and graded rows. Row crops can be grown for 2 years if followed by a close-growing crop or a hay crop for 2 years. Field roads should be located on ridges. Crop residues should be shredded and left on the surface as a mulch. If not protected by a water-disposal system, these soils should be kept in sod or perennial vegetation most of the time.

Capability unit IIIe–2

The soils in this unit are moderately well drained and moderately sloping, and they are uneroded or only slightly eroded. The surface layer is grayish-brown loam or very fine sandy loam. The subsoil is yellowish-brown to yellowish-red clay loam over mottled clay. The soils in this unit are—

Bowie loam, 5 to 8 percent slopes.
Fairhope very fine sandy loam, 5 to 8 percent slopes.

Water moves into these soils at a moderate rate. Internal movement of water is moderate above the clay layer. Runoff is fairly rapid. The available moisture capacity is moderate. The organic-matter content is low. These soils are in good tilth and can be worked throughout a wide range of water content, but they will crust and pack when bare. These soils are suited to soybeans, grain sorghum, small grain, common bermudagrass, Coastal bermudagrass, bahiagrass, wild winter peas, vetch, annual lespedeza, tung trees, and pecan trees.

If used for row crops, these soils need a complete water-disposal system that includes terraces, vegetated outlets, and graded rows. A suitable cropping system consists of 4 years of sod and 2 years of row crops. Crop residues should be shredded and left on the surface as a mulch. Field roads should be located on ridges or parallel to terraces. If not protected by a water-disposal system, these soils should be kept in perennial vegetation. Keeping a cover on the surface as much of the time as possible helps to control erosion and to increase infiltration of water.

Capability unit IIIw–2

This unit consists of somewhat poorly drained, nearly level to gently sloping soils that have a fragipan at a depth of about 22 inches. The surface layer is very dark grayish-brown, friable loam, and the subsoil is yellowish-brown loam. The soils in this unit are—

Pheba loam, 0 to 2 percent slopes.
Pheba loam, 2 to 5 percent slopes.

Water moves into these soils at a moderate rate. Internal movement of water is moderate above the fragipan. The available moisture capacity is limited by the thickness of the soil above the fragipan. The organic-matter content is moderate. These soils are either too wet or too dry for many cultivated crops. Moisture conditions make preparation of a seedbed difficult. The surface will crust and pack when bare.

These soils are suited to small grain, common bermudagrass, bahiagrass, annual lespedeza, whiteclover, field peas, soybeans, and sorghum. Drainage by means of V-type and W-type ditches is needed if row crops are grown.

A cropping system suitable for drained areas consists of close-growing crops for 3 years and row crops for 2 years. Crop residues should be shredded and left on the surface as a mulch. Undrained areas should be kept in perennial vegetation.

Capability unit IIIw–3

The only soil in this unit is Coxville silt loam, a poorly drained, level to gently sloping soil of the coastal flatwoods. The surface layer is dark-gray silt loam, and the subsoil is mottled, plastic clay.

Water moves into and through this soil slowly. Runoff is slow, and the erosion hazard is slight. The organic-matter content is moderate.

This soil is suited to rice, soybeans, ryegrass, Coastal bermudagrass, bahiagrass, field peas, whiteclover, and annual lespedeza. Surface field ditches, graded rows, and vegetated outlets are needed if row crops are grown.

A suitable cropping system consists of 2 years of row crops and 3 years of close-growing crops.

Capability unit IIIw–4

The only soil in this unit is Bayboro silt loam, a poorly drained soil that occupies level areas and slight depressions in the coastal flatwoods. The surface layer is black or dark-gray silt loam, and the subsoil is mottled, gray, plastic clay loam.

Water moves into and through this soil slowly. The erosion hazard is slight, the available moisture capacity is high, and the organic-matter content is moderate.

This soil is suited to rice, Coastal bermudagrass, bahiagrass, annual lespedeza, and whiteclover. If adequately drained, it is suited to soybeans and to a fairly large number of truck crops.

If adequately drained by means of ditches and properly arranged rows, this soil can be cultivated continuously. Field laterals and W-type ditches can be used to drain pastures.

Capability unit IIIs–1

This unit consists of deep, nearly level to gently sloping soils that are uneroded or only slightly eroded. The surface layer is dark-gray loamy sand, and the subsoil is reddish-yellow to yellowish-brown loamy sand. The soils in this unit are—

Eustis loamy sand, 0 to 5 percent slopes.
Lakeland loamy sand, 0 to 5 percent slopes.

Water moves into and through these soils at a rapid rate. Runoff is slow, and the available moisture capacity is low. The organic-matter content is low, and it is hard to maintain or build up. These soils are easy to work and can be planted early. They are moderately productive. Crops respond to small, frequent applications of fertilizer.

These soils are suited to truck crops, grain sorghum, Coastal bermudagrass, common bermudagrass, crimson clover, vetch, lespedeza, tung trees, and pecan trees.

A suitable cropping system consists of truck crops for 2 years and sod or close-growing crops for 2 years or more. This system helps to control pests. Crimson clover or other winter legumes should be planted in pecan orchards, and these practices make another suitable cropping system.

Capability unit IIIs–2

Klej loamy sand, 0 to 5 percent slopes, is the only soil in this unit. It is deep and moderately well drained. The surface layer is dark grayish-brown loamy sand, and the subsoil is yellowish-brown loamy sand.

Water moves into this soil rapidly. Internal movement of water is rapid in the upper part of the subsoil and moderate to slow in the lower part. Runoff is slow. The available moisture capacity is low. The organic-matter content is low, and it is hard to maintain or increase. Tilth is good. Productivity is moderate.

This soil is suited to corn, soybeans, small grain, Coastal bermudagrass, common bermudagrass, bahiagrass (fig. 3), whiteclover, annual lespedeza, tung trees, and pecan trees.

If row crops are grown, the rows should be arranged so that excess surface water will drain off. An example of a suitable cropping system is 2 years of row crops and 2 years of lespedeza. Crops respond to frequent, moderate applications of fertilizer.

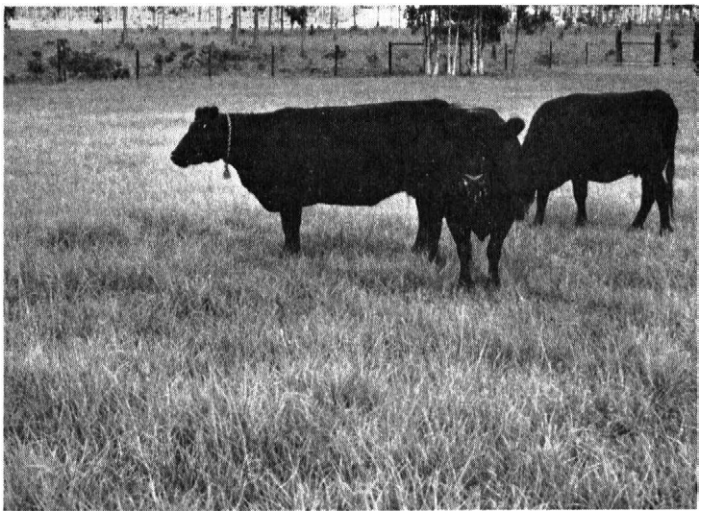

***Figure 3.*—Bahiagrass pasture on Klej loamy sand. The slope is 2 percent.**

Capability unit IVe–1

This unit consists of strongly sloping, well drained and moderately well drained soils that are only slightly eroded. The surface layer is dark grayish-brown fine sandy loam or loam. The subsoil is yellowish-red to yellowish-brown loam to clay loam. The soils in this unit are—

Bowie loam, 8 to 12 percent slopes.
Norfolk fine sandy loam, 8 to 12 percent slopes.
Ruston and Orangeburg fine sandy loams, 8 to 12 percent slopes.

Water moves into and through these soils at a moderate rate. Because of the strong slopes, runoff is rapid and the erosion hazard is moderate. The available moisture capacity is moderate. The organic-matter content is low. These soils have good tilth and can be worked throughout a wide range of water content.

These soils are suited to cotton, corn, soybeans, grain sorghum, common bermudagrass, bahiagrass, wild winter peas, vetch, lespedeza, crimson clover, pecan trees, tung trees, and truck crops.

If used for row crops, these soils need a complete water-disposal system that includes terraces, vegetated outlets, and graded rows. An example of a suitable cropping system is 6 years of sod and 2 years of row crops. Crop residues should be shredded and left on the surface as a mulch. Field roads should be located on ridges or parallel to terraces.

Areas not protected by a water-disposal system are best suited to permanent vegetation.

Capability unit IVe–2

This unit consists of Susquehanna, Bowie, and Boswell soils, 2 to 5 percent slopes, an undifferentiated group of gently sloping, somewhat poorly drained and moderately well drained soils that are uneroded or only slightly eroded. The surface layer is grayish-brown silt loam to very fine sandy loam. The subsoil ranges from yellowish-brown clay loam to mottled clay.

Water enters these soils at a moderate rate, but internal movement of water is generally slow. Runoff is moderate. The available moisture capacity is moderate to high. The organic-matter content is low. Tilth is fair to poor. These

soils can be worked only within a narrow range of water content.

These soils are suited to bahiagrass, wild winter peas, annual lespedeza, bermudagrass, and whiteclover.

If used for row crops, these soils need a complete water-disposal system that includes terraces, vegetated outlets, and graded rows. An example of a suitable cropping system is 6 years of sod crops and 2 years of soybeans. Keeping a cover on the surface as much of the time as possible helps to control runoff and to increase infiltration of water.

Capability unit IVw–1

Rains loam, dark surface, is the only soil in this unit. It is nearly level and poorly drained. The surface layer of black or very dark gray loam is underlain by mottled gray loam.

Water moves into this soil at a moderate rate, but a high seasonal water table prevents internal drainage. The available water capacity is moderate. The organic-matter content is medium.

This soil is suited to bahiagrass, Coastal bermudagrass, annual lespedeza, whiteclover, and wild winter peas.

If row crops are grown, rows should be arranged so that excess water will run into V-type and W-type ditches that have adequate outlets. Outlets are not available everywhere, however, and the cost of constructing suitable outlets is generally high. This soil is best suited to perennial vegetation (fig. 4).

Capability unit IVw–2

This unit consists of deep, nearly level to gently sloping soils that are somewhat poorly drained. The surface layer of black or dark-gray loamy sand is underlain by mottled, yellowish-brown loamy sand. The soils in this unit are—

Scranton loamy sand, 0 to 2 percent slopes.
Scranton loamy sand, 2 to 5 percent slopes.

Water enters these soils rapidly. The seasonal water table is near the surface and prevents internal drainage. The available moisture capacity is low. The organic-matter content is medium, and the natural supply of plant nutrients is low. These soils have good tilth, and they can be worked throughout a wide range of water content.

These soils are suited to bahiagrass, vetch, annual lespedeza, and whiteclover. If drained, they are suited to truck crops.

Figure 4.—**A good pasture on Rains loam, dark surface. This area was formerly wet and covered with a dense sod of wiregrass.**

Open ditches or tile drains, or both, can be used to remove excess surface water. Open ditches are likely to cave in because the subsoil is sandy. Bedding or crowning improves drainage in some places. Truck crops can be irrigated by the sprinkler system. Low areas used as pasture can be drained by V-type and W-type ditches and field laterals.

In drained areas, clean-tilled crops can be grown continuously. Crop residues should be shredded and left on the surface as mulch. Undrained areas are best suited to perennial vegetation.

Capability unit IVs–1

This unit consists of deep, sloping soils that are sandy, droughty, and subject to leaching. Their surface layer is dark gray, and the subsoil is reddish yellow to yellowish brown. The soils in this unit are—

Eustis loamy sand, 5 to 8 percent slopes.
Klej loamy sand, 5 to 12 percent slopes.
Lakeland loamy sand, 5 to 8 percent slopes.

Water moves into and through these soils rapidly. The available moisture capacity is low. The organic-matter content and the natural supply of plant nutrients are low.

These soils are suited to cotton, truck crops, small grain, grain sorghum, common bermudagrass, bahiagrass, crimson clover, pecan trees, and tung tress.

If row crops are grown, graded rows and grassed waterways are needed. An example of a suitable cropping system is 4 years of pasture and 2 years of row crops.

Capability unit IVs–2

This unit consists of Eustis and Lakeland sands, 0 to 8 percent slopes, an undifferentiated group of deep, nearly level to sloping, excessively drained soils. Their surface layer is dark gray, and the subsoil is reddish brown to yellowish brown.

Water moves into and through these soils rapidly. The available moisture capacity is very low. The organic-matter content and the natural supply of plant nutrients are very low.

These soils are droughty and low in productivity. They require frequent fertilization because they leach rapidly. Consequently, they are generally not suited to cultivated crops or to pasture. Watermelons can be grown, and bahiagrass is the best pasture plant.

Capability unit Vw–1

This unit consists of deep, level or nearly level soils. The surface layer is black or dark-gray loamy sand. The subsoil is gray loamy sand. It is about 30 to 50 inches thick and overlies finer textured material. Drainage is poor, and the water table is near the surface much of the time. The soils in this unit are—

Plummer loamy sand.
Plummer loamy sand, dark surface.

Water enters these soils at a rapid rate. The high water table prevents internal drainage. The available moisture capacity is low. The organic-matter content is moderate to low, and the natural supply of plant nutrients is low.

These soils are not suited to row crops, because drainage is poor and improvement of drainage is impractical. Most areas have no drainage outlets, and the sandy texture

of the subsoil makes it difficult to maintain open ditches. Most of the acreage is in trees. Open areas generally have a cover of sedges, rushes, and wiregrass.

Although difficult to manage, these soils can be used as pasture. Bahiagrass, whiteclover, common bermudagrass, and wild winter peas can be grown fairly successfully.

Capability unit Vw–2

This unit consists of Grady soils, a complex of very poorly drained soils that generally occur in small depressions and are under water for long periods each year. The surface layer is black to dark-gray silt loam to sandy loam. The subsoil is gray loam to clay.

These soils are not suited to crops or pasture. They are difficult to drain. Drainage by tile or ditches requires an outlet through the land that encloses the depression.

In their natural state, these soils are best suited to use as stock ponds or wildlife areas or to growing trees.

Capability unit Vw–3

This unit consists of Alluvial land, a land type of varied texture and color that occurs on the bottom lands of the larger streams in the country. These areas are very hard to drain. Frequent and extended floods restrict their use for crops and pasture. They are suited to many kinds of hardwoods and should be managed for the production of hardwoods, generally by caring for the established trees. Wildlife is abundant. Game is managed largely by private clubs.

Capability unit VIe–1

This unit consists of Ruston and Orangeburg fine sandy loams, 12 to 17 percent slopes, an undifferentiated group of very strongly sloping to steep, well-drained soils that are subject to erosion. Their surface layer is dark grayish-brown fine sandy loam, and the subsoil is strong-brown to red sandy loam to sandy clay loam.

Water moves into and through these soils at a moderate rate. Runoff is rapid. The available moisture capacity is high. The organic-matter content is low.

These soils are not suited to row crops but can be used as pasture or for orchards. They are suited to common bermudagrass, bahiagrass, crimson clover, pecan trees, and tung trees.

Capability unit VIe–2

This unit consists of somewhat poorly drained and moderately well drained, moderately sloping to strongly sloping soils that are subject to erosion. The surface layer is grayish-brown silt loam to very fine sandy loam. The subsoil is yellowish-brown or mottled clay. The soils in this unit are—

Susquehanna, Bowie, and Boswell soils, 5 to 8 percent slopes.
Susquehanna, Bowie, and Boswell soils, 8 to 12 percent slopes.

Water moves into and through these soils slowly. Runoff is rapid. The available moisture capacity is moderate. The organic-matter content is low.

These soils are not suited to clean-tilled crops. They are suited to common bermudagrass, bahiagrass, and annual lespedeza. They should remain in perennial vegetation.

Capability unit VIs–1

This unit consists of strongly sloping to steep soils that are predominantly sandy. Outcrops of clay occur on some slopes. The soils in this unit are—

Eustis loamy sand, 8 to 17 percent slopes.
Eustis and Lakeland sands, 8 to 12 percent slopes.
Lakeland loamy sand, 8 to 17 percent slopes.
Sandy and clayey land.

Except for the clayey areas, water moves into and through these soils rapidly. The available moisture capacity is low. The organic-matter content is low.

These soils are best suited to longleaf pine.

Capability unit VIIw–1

This unit consists of Swamp, a nearly level, very poorly drained land type that occurs on the bottom lands along small, sluggish streams. These areas are very difficult to drain. They are wet most of the time, and in wet weather they are covered with flowing water. The vegetation is a dense growth of trees. The surface is generally hummocky because vegetative debris twists around the growing plants during floods.

The production of hardwoods is the best use for this land type. Management generally involves caring for the established trees.

Capability unit VIIw–2

Tidal marsh, which makes up this unit, is a nearly level land type composed of partly decomposed marsh plants on top of mineral soil material. The areas are covered with brackish water during high tides. They are used for grazing and as wildlife habitats.

Capability unit VIIIs–1

The two land types that make up this unit consist of loose, deep sands. They are—

Coastal beach.
Dune land.

Coastal beach is along the Mississippi Sound. It is without vegetation.

Dune land consists of hills or low ridges of sand drifted and piled up by the wind. The dunes are either actively shifting or recently stabilized.

These areas are used for recreation.

Estimated Yields

Estimates of yields of the principal crops on most of the soils in Jackson County, under two levels of management, are shown in table 2. Alluvial land, Coastal beach, Dune land, Made land, Sandy and clayey land, Swamp, and Tidal marsh are not listed because they are not suitable for cultivation. The estimates represent yields expected under levels of management that are somewhat higher than are commonly practiced in the county but are considered feasible. Yields obtained under prevailing management practices are 20 to 35 percent less than the estimates given in table 2.

The estimates are based on data obtained by long-term experiments, on records of yields obtained from farmers in cooperative soil productivity-management studies, and on estimates made by agronomists who have had experience with the soils and the crops. Dashes in a column, instead

TABLE 2.—*Estimated average acre yields of principal crops under two levels of management*

[Yields are those expected under a level of management somewhat higher than that commonly practiced in the county. Absence of figure indicates crop is not suited to soil specified or is not commonly grown]

Soil	Corn		Oats [1]		Pasture	
	A	B	A	B	A	B
	Bushels	*Bushels*	*Bushels*	*Bushels*	*Animal-unit-months* [2]	*Animal-unit-months* [2]
Bayboro silt loam						4
Bowie loam, 0 to 2 percent slopes	45	60	25	40	3	4. 8
Bowie loam, 2 to 5 percent slopes	45	60	25	40	3	4. 8
Bowie loam, 5 to 8 percent slopes	35	50	20	35	2. 4	4
Bowie loam, 8 to 12 percent slopes					2. 4	4
Coxville silt loam					2. 4	3
Dunbar loam, 0 to 2 percent slopes					3	4
Dunbar loam, 2 to 5 percent slopes					3	4
Eustis loamy sand, 0 to 5 percent slopes	45	55	30	40	3	6
Eustis loamy sand, 5 to 8 percent slopes	45	55	30	40	3	6
Eustis loamy sand, 8 to 17 percent slopes						
Eustis and Lakeland sands, 0 to 8 percent slopes						
Eustis and Lakeland sands, 8 to 12 percent slopes						
Fairhope very fine sandy loam, 0 to 2 percent slopes					2. 4	3
Fairhope very fine sandy loam, 2 to 5 percent slopes					2. 4	3
Fairhope very fine sandy loam, 5 to 8 percent slopes					2. 4	3
Goldsboro loam, 0 to 2 percent slopes	50	60	30	40	3	6
Goldsboro loam, 2 to 5 percent slopes	50	60	30	40	3	
Goldsboro loam, 5 to 8 percent slopes					3	6
Grady soils						
Klej loamy sand, 0 to 5 percent slopes	50	60	30	40	3	6
Klej loamy sand, 5 to 12 percent slopes	50	60	30	40	3	6
Lakeland loamy sand, 0 to 5 percent slopes	45	55	30	40	3	6
Lakeland loamy sand, 5 to 8 percent slopes	45	55	30	40	3	6
Lakeland loamy sand, 8 to 17 percent slopes						
Lynchburg very fine sandy loam, 0 to 2 percent slopes					3	4
Lynchburg very fine sandy loam, 2 to 5 percent slopes					3	4
Norfolk fine sandy loam, 0 to 2 percent slopes	50	80	30	60	3	9
Norfolk fine sandy loam, 2 to 5 percent slopes	50	80	30	60	3	9
Norfolk fine sandy loam, 5 to 8 percent slopes	40	70	30	60	3	9
Norfolk fine sandy loam, 8 to 12 percent slopes					3	6
Orangeburg fine sandy loam, 0 to 2 percent slopes	50	80	30	60	3	9
Pheba loam, 0 to 2 percent slopes					3	6
Pheba loam, 2 to 5 percent slopes					3	6
Plummer loamy sand					2. 4	4
Plummer loamy sand, dark surface					2. 4	4
Rains loam, dark surface					2. 4	4
Ruston and Orangeburg fine sandy loams, 0 to 2 percent slopes	50	80	30	60	3	9
Ruston and Orangeburg fine sandy loams, 2 to 5 percent slopes	50	80	30	60	3	9
Ruston and Orangeburg fine sandy loams, 5 to 8 percent slopes	40	70	30	60	3	9
Ruston and Orangeburg fine sandy loams, 8 to 12 percent slopes						
Ruston and Orangeburg fine sandy loams, 12 to 17 percent slopes						
Savannah loam, 0 to 2 percent slopes	45	60	25	40	3	6
Savannah loam, 2 to 5 percent slopes	45	60	25	40	3	6
Scranton loamy sand, 0 to 2 percent slopes					3	6
Scranton loamy sand, 2 to 5 percent slopes					3	6
Susquehanna, Bowie, and Boswell soils, 2 to 5 percent slopes					2. 4	3
Susquehanna, Bowie, and Boswell soils, 5 to 8 percent slopes					2. 4	3
Susquehanna, Bowie, and Boswell soils, 8 to 12 percent slopes						

[1] Yield in bushels divided by 31 gives approximate yield (in tons) for hay.

[2] An animal-unit-month is a month's grazing for one animal unit without injury to the pasture.

of a figure, indicate that the crop is not suited to the particular soil or is not commonly grown. The estimates are for yields from soils that have not been irrigated.

Descriptions of the management practices under which the estimated yields can be expected are based on research and are in general agreement with present-day recommendations.

General management practices assumed for yields listed in table 2 consist of applications of fertilizer and lime as indicated by soil tests, fertilization and crop records, and other conditions; maintaining the organic-matter content at the highest practical level; proper selection of crops and cropping systems; well-prepared seedbeds; proper planting and seeding methods; inoculation of legume seed; use

of high-yielding varieties and hybrids; planting and seeding at recommended rates and at proper times; control of weeds; control of excess water by means of drainage, vegetated waterways, structures, and contour cultivation.

Specific management practices, by crops, assumed for the estimated yields in table 2 follow:

Corn.—For corn, practices at the two levels of management are—

Level A: 15 to 30 pounds of nitrogen, 15 to 30 pounds of phosphorus, 15 to 30 pounds of potash, and 30 to 60 pounds of nitrogen as a side dressing. 6,000 to 10,000 plants per acre; seed is from the crib, planting is not timely, and skips are common.

Level B: 90 to 120 pounds of nitrogen, 50 to 90 pounds of phosphorus, 50 to 90 pounds of potash, and 16 to 30 pounds of nitrogen as a side dressing when the corn is knee-high. 10,000 to 12,000 plants per acre; water controlled by adequate drainage, vegetated waterways, structures, and contour cultivation.

Oats.—For oats, practices at the two levels of management are—

Level A: Level A differs from level B in one or more of the following ways: Rate of fertilization is significantly lower than at level B; liming is inadequate; seed is planted late; seed used is not resistant to disease; or control of grazing is inadequate.

Level B: Seed planted on a fallow seedbed and fertilized with 50 pounds of nitrogen, 90 pounds of phosphorus, and 50 pounds of potash; soil limed to a pH of 6.0 (use soil test); crop is top-dressed with 20 to 30 pounds of nitrogen in December or January; no grazing is allowed after March 1, and a second top dressing of 20 to 30 pounds of nitrogen is applied.

Permanent pasture.—For permanent pasture, practices at the two levels of management are—

Level A: For grasses, fertilization approximately once every 2 to 4 years; for legumes, applications of lime, phosphorus, and potash according to needs as indicated by tests. Pasture clipped or sprayed occasionally for weed control. No well-defined system of grazing management practiced. Occasional renovation and reseeding.

Level B: For grasses, 60 to 90 pounds of nitrogren, phosphorus, and potash according to soil tests; for legumes, liming to a pH of 6.5 and applications of phosphorus and potash according to soil tests. Excess vegetation clipped as conditions justify, approximately two to three times annually. Weeds controlled by spraying when needed. Grazing regulated. Pasture renovated and reseeded when necessary.

In table 2, yields for pasture are given in animal-unit-months. An animal-unit-month is a month's grazing for one animal unit without injury to the pasture. An animal unit is one 1200-pound cow, two 500-pound yearlings, five ewes with lambs, five sows with litters to weaning age, twenty 50- to 150-pound pigs, one horse, or one mule.

Range Management [1]

Salt-marsh range and woodland range are the two kinds of range in Jackson County.

If the areas were managed and developed properly, about half of the 17,000 acres of salt marsh could be grazed profitably. This acreage could support about 2,000 head of cattle. Salt marsh is generally wet and is not suitable for cultivation or the commerical production of trees. Range and wildlife habitats are the only significant uses.

The production of timber is the primary use of woodland, and grazing is only a secondary use. There are about 375,000 acres of woodland in the county: 25,000 acres are in hardwoods, and 350,000 acres are in pine. The density of the timber canopy is one of the major factors affecting the production of woodland forage. As the degree of shade on the ground increases, the amount of forage produced decreases.

Grazing seriously damages hardwoods, but, if properly managed, about half of the pine woodland could be grazed without significant damage to the trees. The pine woodland areas could support about 5,800 head of cattle. Cattle damage pine much less than sheep, goats, or hogs do. Sheep and goats cause excessive damage by eating the growing tips of young pines. Hogs root up and eat the bark from the roots of pines. The damage is most severe to longleaf pine, next to slash pine, and least to loblolly pine and shortleaf pine.

Cattle tend to overgraze some spots, especially those near water, and to leave unused forage in other areas. Proper distribution of grazing is essential to prevent damage to the most desirable forage plants and to pine seedlings. This can be accomplished by moving salt and mineral boxes, fencing watering areas, and feeding in areas that are lightly grazed.

The condition of the forage site can be maintained or improved if no more than half of the current season's yield, by weight, is removed by grazing. Removing about half of the vegetation also helps to decrease the intensity of fires.

Native forage is not an adequate year-round diet for cattle. Breeding herds can be kept in satisfactory condition by feeding steamed bonemeal, utilizing native forage during seasons when it is highest in nutritive value, and supplementing the native forage with feed that is high in protein.

In the salt-marsh range areas, native vegetation supplies the following food values: An adequate amount of phosphorus the year long; only enough protein to maintain the herds from January through March, an inadequate amount of protein from April through December; an adequate amount of carbohydrates the year long.

In the woodland areas, native vegetation supplies the following food values: An inadequate amount of phosphorus the year long; an inadequate amount of protein from January through March and from October through December, an adequate amount of protein from April through June, and only enough protein to maintain the herds from July through September; an adequate amount of carbohydrates the year long.

[1] Prepared by DOUGLASS E. POST, forester, Soil Conservation Service.

TABLE 3.—*Forage sites*

[The mapping units represented by symbols Cb, Du, Ma, and Sa are land types of little or no value for growing forage and, therefore, are not included in forage sites]

Forage site and mapping unit	Principal species	Forage production (open canopy and good condition)	Best season	Proper degree of utilization of forage
		Pounds per acre		*Percentage, by weight of current years production*
A. Coastal flatwoods and coastal wet lands (30 percent of county). (Ba, Cx, DbA, DbB, FaA, FaB, FaC, GoA, GoB, GoC, Gr, KsB, KsD, LyA, LyB, Pm, Pn, Ra, ScA, ScB)	Pinehill bluestem, switchgrass, toothachegrass, maidencane, swamp sunflower, slender bluestem, cutover muhly.	1,800 to 3,300	April to September	Not over 50.
B. Coastal plain hills: medium-textured and fine-textured soils (40 percent of county). (BoA, BoB, BoC, BoD, NoA, NoB, NoC, NoD, OrA, PhA [1], PhB [1], RoA, RoB, RoC, RoD, RoE, SbA,[1] SbB,[1] SuB, SuC, SuD)	Pinehill bluestem, little bluestem, Indiangrass, perennial tickclover, slender bluestem, grassleaf goldenaster, low panicum.	1,900 to 2,280	April to September	Not over 50.
C. Coastal plain hills: coarse-textured soils (5 percent of county). (EsB, EsC, EsE, EuC, EuD, LaB, LaC, LaE)	Pinehill bluestem, little bluestem, Indiangrass, perennial tickclover, slender bluestem, three-awn.	1,400 to 2,200	March to August	Not over 40.
D. Tidal marsh (5 percent of county). (Tm)	Smooth cordgrass, marshhay cordgrass, seashore saltgrass, common reed, needlerush.	5,000 to 8,000	October to April	Not over 50.
E. Alluvial land: hardwood bottom lands (20 percent of county). (Ad, Sw)	No grazing. Flooded several times a year.			

[1] Fragipan.

Forage sites

Soils that produce about the same kind and amount of climax vegetation make up a forage site. The soils of Jackson County have been grouped in five such sites. The climax vegetation on the soils of any given site differs from that of any other site to such an extent that different management is required to maintain or improve the site. Climax vegetation is the stabilized plant community on a particular site; it reproduces itself and does not change so long as the environment remains unchanged.

Four forage condition classes express the present kind and amount of vegetation in relation to the potential kind and amount. A site is described as being in poor, fair, good, or excellent condition, depending upon the degree of departure from the potential plant community.

The five forage sites, which include most of the soils of the county, are described in the following pages. Table 3 gives the principal forage species on each site, the yields of forage, the proper degree of utilization of forage, and the best season to use the specified site.

FORAGE SITE A

COASTAL FLATWOODS AND COASTAL WET LANDS

This site consists of poorly drained to moderately well drained soils that have a water table near the surface much of the year. The high water table slows infiltration and the movement of water through the soils. Elevation is 5 to 50 feet. The soils are—

Ba Bayboro silt loam.
Cx Coxville silt loam.
DbA Dunbar loam, 0 to 2 percent slopes.
DbB Dunbar loam, 2 to 5 percent slopes.
FaA Fairhope very fine sandy loam, 0 to 2 percent slopes.
FaB Fairhope very fine sandy loam, 2 to 5 percent slopes.
FaC Fairhope very fine sandy loam, 5 to 8 percent slopes.
GoA Goldsboro loam, 0 to 2 percent slopes.
GoB Goldsboro loam, 2 to 5 percent slopes.
GoC Goldsboro loam, 5 to 8 percent slopes.
Gr Grady soils.
KsB Klej loamy sand, 0 to 5 percent slopes.
KsD Klej loamy sand, 5 to 12 percent slopes.
LyA Lynchburg very fine sandy loam, 0 to 2 percent slopes.
LyB Lynchburg very fine sandy loam, 2 to 5 percent slopes.
Pm Plummer loamy sand.
Pn Plummer loamy sand, dark surface.
Ra Rains loam, dark surface.
ScA Scranton loamy sand 0 to 2 percent slopes.
ScB Scranton loamy sand 2 to 5 percent slopes.

The original overstory vegetation consisted mostly of slash pine and longleaf pine, but it included scattered areas of cypress, bay, blackgum, water oak, persimmon, and red maple.

Fires and unrestricted grazing have kept pine from reseeding naturally, but a large acreage has been planted to slash pine.

The original ground cover consisted of pinehill bluestem, switchgrass, toothachegrass, maidencane, and swamp sunflower. Fires and overgrazing have reduced the percentage of these grasses. Slender bluestem, cutover muhly, three-awn, low panicum, sedge, rushes, broom-

sedge, bluestem, annual weeds, annual grasses, and carpetgrass have invaded this site. In some places the woodland forage areas have been so severely damaged that cutover muhly makes up more than 80 percent of the ground cover.

The understory shrubs are waxmyrtle and gallberry.

FORAGE SITE B

COASTAL PLAIN HILLS: MEDIUM-TEXTURED AND FINE-TEXTURED SOILS

This site consists of somewhat poorly drained to well-drained soils that formed in sand and clay of the Coastal Plain. In most places the surface layer is loam. In some places a fragipan occurs at a depth of 20 to 30 inches. Infiltration is moderate. Water moves through these soils at a slow to moderate rate. The available moisture capacity is adequate except in areas that have a subsoil of clay and in areas that have a fragipan near the surface. Elevation is 50 to 184 feet. The soils are—

- BoA Bowie loam, 0 to 2 percent slopes.
- BoB Bowie loam, 2 to 5 percent slopes.
- BoC Bowie loam, 5 to 8 percent slopes.
- BoD Bowie loam, 8 to 12 percent slopes.
- NoA Norfolk fine sandy loam, 0 to 2 percent slopes.
- NoB Norfolk fine sandy loam, 2 to 5 percent slopes.
- NoC Norfolk fine sandy loam, 5 to 8 percent slopes.
- NoD Norfolk fine sandy loam, 8 to 12 percent slopes.
- OrA Orangeburg fine sandy loam, 0 to 2 percent slopes.
- PhA Pheba loam, 0 to 2 percent slopes.
- PhB Pheba loam, 2 to 5 percent slopes.
- RoA Ruston and Orangeburg fine sandy loams, 0 to 2 percent slopes.
- RoB Ruston and Orangeburg fine sandy loams, 2 to 5 percent slopes.
- RoC Ruston and Orangeburg fine sandy loams, 5 to 8 percent slopes.
- RoD Ruston and Orangeburg fine sandy loams, 8 to 12 percent slopes.
- RoE Ruston and Orangeburg fine sandy loams, 12 to 17 percent slopes.
- SbA Savannah loam, 0 to 2 percent slopes.
- SbB Savannah loam, 2 to 5 percent slopes.
- SuB Susquehanna, Bowie, and Boswell soils, 2 to 5 percent slopes.
- SuC Susquehanna, Bowie, and Boswell soils, 5 to 8 percent slopes.
- SuD Susquehanna, Bowie, and Boswell soils, 8 to 12 percent slopes.

The original overstory vegetation was principally longleaf pine, but it included some shortleaf pine and loblolly pine on the hills. Slash pine, bay, yellow-poplar, blackgum, sweetgum, water oak, laurel oak, red maple, spruce pine, and cypress occurred along the streams. Trees reproduced naturally much better in this area than in the coastal flatwoods and coastal wet lands, but repeated wildfires and overgrazing have converted many acres from pine forests to scrub oak forests.

The present overstory species are longleaf pine, slash pine, shortleaf pine, loblolly pine, spruce pine, redgum, blackgum, bay, red maple, southern red oak, post oak, white oak, water oak, blackjack oak, turkey oak, bluejack oak, laurel oak, hickory, persimmon, magnolia, and yellow-poplar.

The understory shrubs originally included huckleberry, gallberry, waxmyrtle, and laurel. Yaupon, privet, French mulberry, and many other escaped domestic shrubs have augmented the original brush understory.

The original ground cover was composed largely of pinehill bluestem, little bluestem, big bluestem, Indiangrass, and perennial tickclover.

Fires and overgrazing have almost eliminated big bluestem and have greatly reduced the percentage of the better plants, or decreasers. Slender bluestem, three-awn, cutover muhly, broomsedge, and bluestem are now dominant in large areas.

FORAGE SITE C

COASTAL PLAIN HILLS: COARSE-TEXTURED SOILS

This site consists of deep, well-drained to excessively drained soils that formed in thick beds of acid sand of the Coastal Plain. These soils are droughty. Infiltration and internal movement of water are rapid. Fertility is low. Elevation is 15 to 184 feet. The soils are—

- EsB Eustis loamy sand, 0 to 5 percent slopes.
- EsC Eustis loamy sand, 5 to 8 percent slopes.
- EsE Eustis loamy sand, 8 to 17 percent slopes.
- EuC Eustis and Lakeland sands, 0 to 8 percent slopes.
- EuD Eustis and Lakeland sands, 8 to 12 percent slopes.
- LaB Lakeland loamy sand, 0 to 5 percent slopes.
- LaC Lakeland loamy sand, 5 to 8 percent slopes.
- LaE Lakeland loamy sand, 8 to 17 percent slopes.

These soils warm up earlier in the spring than the soils in the other forage sites, and they can be grazed earlier.

The original overstory vegetation was mainly longleaf pine, but it included shortleaf pine, loblolly pine, southern red oak, turkey oak, blackjack oak, bluejack oak, post oak, and laurel oak.

Because the soils in this site are droughty, natural reproduction has been slow. Repeated wildfires and overgrazing have converted large areas to scrub oak forests.

The understory vegetation consists primarily of huckleberry, gallberry, and palmetto.

Most of the ground cover was originally pinehill bluestem, big bluestem, little bluestem, and Indiangrass. Fires and unrestricted grazing have almost eliminated the Indiangrass and big bluestem. Slender bluestem, three-awn, broomsedge, bluestem, annual grasses, weeds, and palmetto have displaced many of the better grasses.

FORAGE SITE D

TIDAL MARSH

The one mapping unit in this site is Tidal marsh (Tm), which consists of deep, fine-textured soil material that contains deposits of peat or muck and overlies a mineral substratum. Permeability is very slow, and there is no internal drainage. Runoff is slow. The water table is above or near the surface most of the year. The soil material is slightly to strongly saline. Elevation is 0 to 5 feet.

Most areas of Tidal marsh are firm enough to be used for grazing.

No trees grow on this forage site. Most of the original vegetation was smooth cordgrass, big cordgrass, marshhay cordgrass, seashore saltgrass, bulrush, and common reed. These plants are still present, but in reduced numbers. Overgrazing and repeated wildfires have allowed seashore paspalum, longtom, needlerush, fimbry, bigleaf sumpweed, and rattlebox to invade.

FORAGE SITE E

ALLUVIAL LAND: HARDWOOD BOTTOM LANDS

This site consists of recently deposited alluvium washed from the coastal plain hills. The unclassified soil material is varied in texture. These areas are frequently

flooded. Runoff is slow. Elevation is 5 to 30 feet. The land types are—

Ad Alluvial land.
Sw Swamp.

The overstory vegetation is hardwood and baldcypress. Baldcypress and tupelo gum grow in the sloughs.

The understory consists of water-tolerant plants, such as American bamboo, planertree, roughleaf dogwood, swamp privet, hawthorn, peppervine, grape, other low shrubs, sedges, rushes, and grass.

Woodland [2]

A great part of the original vegetation of Jackson County was pine, chiefly longleaf pine (*Pinus palustris*) and slash pine (*Pinus caribaea*). Longleaf pine, commonly called yellow pine, was the most common species. It grew everywhere except on the first bottoms and tidal marshes. Both pines and hardwoods grew on the uplands and terraces, and hardwoods grew on bottom lands.[3]

Jackson County's virgin forests provided material for the naval stores industry and for logging and sawmilling operations. Timber accounted for the growth of towns and, in part, for the development of seaport and railroad facilities. After the Civil War, timber was the principal source of income.

Turpentining was an important industry before 1906, when a severe storm destroyed large numbers of pine trees. Only a few tracts of the virgin stands remained after this storm. Second-growth stands provided material for the lumber industry during World War II and the postwar period.

At present, 380,200 acres, approximately 80 percent of the total land area of the county, is in commercial woodland.

Forest cover types

There are five major types of forest cover in Jackson County. Two types are dominantly softwoods, and three types are dominantly hardwoods.

The longleaf pine-slash pine type and loblolly pine-shortleaf pine type make up the softwoods group. Forests of these types occupy 288,000 acres. They are distributed throughout the county, except on bottom lands and in the marshy areas in the extreme southeastern part of the county. The oak-pine type, oak-hickory type, and oak-gum-cypress type make up the hardwoods group. Forests of these types occupy 92,200 acres. They are on the flood plains of the Pascagoula and Escatawpa Rivers and their tributaries, and also on dry ridges throughout the county.[4]

Longleaf pine-slash pine type.—About 279,400 acres is in this type of forest cover. About 50 percent or more of the stand is longleaf pine or slash pine, separately or in combination. Common associates include other southern pines, oak, and gum.

Loblolly pine-shortleaf pine type.—About 8,600 acres is in this type of forest cover. About 50 percent or more of the stand is loblolly pine, shortleaf pine, or other southern yellow pines, except longleaf pine and slash pine, separately or in combination. Common associates include oak, hickory, and gum.

Oak-pine type.—About 5,800 acres is in this type of forest cover. About 50 percent or more of the stand is hardwoods, generally upland oaks, but southern pines make up 25 to 49 percent of the stand. Common associates include gum, hickory, and yellow-poplar.

Oak-hickory type.—About 8,600 acres is in this type of forest cover. About 50 percent or more of the stand is upland oaks or hickory, separately or in combination. If 25 to 49 percent is pine, the stand is classified as oak-pine. Common associates include yellow-poplar, elm, maple, and black walnut.

Oak-gum-cypress type.—About 77,800 acres of bottom land is in this type of forest cover. About 50 percent or more of the stand is tupelo-gum, blackgum, sweetgum, oak, or southern cypress, separately or in combination. If 25 to 49 percent is pine, the stand is classified as oak-pine. Common associates include cottonwood, willow, ash, elm, hackberry, and maple.

Woodland groups

Management of woodland can be planned more effectively if soils are grouped according to those characteristics that affect the growth of trees and management of the stands. For this reason, the soils of Jackson County have been placed in 11 woodland groups. Each group consists of soils that have about the same suitability for wood crops, require about the same management, and have about the same potential productivity. Important among the factors to be considered in planning woodland management are site index, plant competition, equipment limitation, seedling mortality, windthrow hazard, and erosion hazard. These factors are rated as slight, moderate, or severe.

Table 4 gives the site index of longleaf pine, slash pine, and loblolly pine for the soils of each suitability group. It lists the hazards and limitations that affect the management of each group.

Because data are not available, the following land types are not included in any woodland group: Coastal beach (Cb), Dune land (Du), Made land (Ma), and Tidal marsh (Tm).

SITE INDEX.—A site index for a given soil is the average height, in feet, that trees of a specified kind, growing on that soil, will attain in 50 years. It depends mainly on the capacity of the soil to supply moisture and to provide growing space for tree roots. Site index is a means of measuring the potential productivity of a site.

PLANT COMPETITION.—A site that has been disturbed by fire, cutting, grazing, or other operations may be invaded by brush and undesirable trees and plants. Competition from the invading vegetation hinders the establishment and growth of desirable trees.

A plant competition rating of slight indicates that competition from undesirable species is no special problem.

A rating of moderate indicates that, although competition does not ordinarily prevent the establishment of adequate stands of the designated species, development of a normal, fully stocked stand may be delayed and that some special management is needed.

[2] JOSEPH V. ZARY, woodland conservationist, Soil Conservation Service, prepared this section.

[3] ELWELL, J. AMBROSE, GOKE, A. W., MORAN, W. J., and others. SOIL SURVEY OF JACKSON COUNTY, MISSISSIPPI. U.S. Dept. Agr., Bur. of Chem. and Soils, Field Oper. v. 2. 1927.

[4] U.S. FOREST SERVICE. MISSISSIPPI FORESTS. U.S. Dept. Agr., Southern Forest Expt. Sta. Forest Survey Release 81. 1958.

A rating of severe indicates that natural regeneration cannot be relied upon. Competition can be controlled by careful preparation of the site and by special management practices that include controlled burning, spraying with chemicals, and girdling.

SEEDLING MORTALITY.—Even when healthy seedlings of suitable species are correctly planted and the environment is normal, some seedlings fail to survive because of unfavorable characteristics of the soil.

A rating of slight indicates that stands do not regenerate naturally and that not more than 25 percent of planted seedlings die.

A rating of moderate indicates that 25 to 50 percent of planted seedlings die and that some replanting is needed.

A rating of severe indicates that more than 50 percent of planted stock is likely to die. Replanting, special site preparation, and superior planting techniques are necessary for adequate restocking.

WINDTHROW HAZARD.—Soil characteristics affect the development of tree roots and the resistance of the trees to the force of the wind.. Root development may be prevented by a high water table or by an impermeable layer. The protection of surrounding trees also affects windthrow hazard. It is important to know the degree of this hazard when choosing tree species for planting and when planning release cuttings or harvest cuttings.

A rating of slight indicates that the roots hold the trees firmly against normal winds and that individual trees remain standing even if protective trees on all sides are removed.

A rating of moderate indicates that trees are likely to be blown over if the soil is excessively wet and the wind velocity is very high.

The windthrow hazard is rated only as slight or moderate in this county.

EQUIPMENT LIMITATION.—Drainage, slope, soil texture, or other soil characteristics or topographic features may restrict or prohibit the use of equipment ordinarily used in pruning, thinning, harvesting, or other woodland management operations. Different soils may require different kinds of equipment, or different methods of operation, or may be restricted at different seasons.

An equipment limitation rating of slight indicates that there is no restriction on the use of equipment at any time of the year.

A rating of moderate indicates that slopes are moderately steep, that the use of heavy equipment is restricted by wetness in winter and early in spring, and that the use of equipment slightly damages tree roots.

A rating of severe indicates that the type of equipment that can be used is limited, that equipment cannot be used for periods of more than 3 months each year, and that the use of equipment severely damages tree roots and causes serious damage to the structure and stability of the soils. In winter and early in spring, the use of equipment on first bottoms and on low terraces is severely limited.

EROSION HAZARD.—Woodland can be protected from erosion by growing certain species of trees, by adjusting the rotation age and cutting cycles, by using special techniques in management, and by carefully constructing and maintaining roads, trails, and landings. The erosion hazard is rated according to the risk of erosion on well-managed woodland that is not protected by special practices

A rating of slight indicates that only a small loss of soil is likely. Generally, such a rating applies if the slope is 0 to 2 percent and runoff is slow or very slow.

The erosion hazard is rated as slight for all the wooded areas in this county.

WOODLAND GROUP 1

This group consists of one land type, Alluvial land (Ad). The soil material is recent alluvium that is varied in texture. Floods occur several times a year. Water drains off slowly.

This land type is well suited to hardwoods and baldcypress. Suitable hardwoods include white ash, green ash, red maple, cherrybark oak, laurel oak, Nuttall oak, swamp chestnut oak, water oak, sweetgum, black tupelo, and yellow-poplar. Water tupelo and baldcypress grow in the sloughs. Scattered stands of loblolly pine and spruce pine grow in some areas.

Plant competition is moderate to severe, depending upon management and the type of harvesting. In places, competition delays natural regeneration and slows the initial growth of trees but does not prevent an adequate stand of desirable species from becoming established. Competition can be controlled by careful preparation of sites and special management practices that include burning, applying chemical sprays, clearing, and disking.

Seedling mortality is generally slight where there is adequate light and flooding is not too severe. The loss of planted stock is less than 25 percent.

The windthrow hazard is slight. Individual trees can be expected to remain standing even if released on all sides.

The equipment limitation is moderate to severe. The use of equipment may be restricted for periods of 1 to 6 months, depending upon the type of operation.

WOODLAND GROUP 2

This group consists of deep, nearly level to steeply sloping, well-drained soils of the uplands. The surface layer is fine sandy loam, and the subsoil is friable sandy loam to sandy clay loam. These soils are strongly acid. The rooting zone is deep. The organic-matter content is low, and the available moisture capacity is moderate. The soils are—

NoA Norfolk fine sandy loam, 0 to 2 percent slopes.
NoB Norfolk fine sandy loam, 2 to 5 percent slopes.
NoC Norfolk fine sandy loam, 5 to 8 percent slopes.
NoD Norfolk fine sandy loam, 8 to 12 percent slopes.
OrA Orangeburg fine sandy loam, 0 to 2 percent slopes.
RoA Ruston and Orangeburg fine sandy loams, 0 to 2 percent slopes.
RoB Ruston and Orangeburg fine sandy loams, 2 to 5 percent slopes.
RoC Ruston and Orangeburg fine sandy loams, 5 to 8 percent slopes.
RoD Ruston and Orangeburg fine sandy loams, 8 to 12 percent slopes.
RoE Ruston and Orangeburg fine sandy loams, 12 to 17 percent slopes.

The soils in this group are well suited to longleaf pine, slash pine, and loblolly pine. Longleaf is the predominant native species.

Plant competition is slight. Competition does not prevent desirable species from becoming established, but it sometimes delays the natural regeneration of trees and slows initial growth.

TABLE 4.—*Woodland groups and ratings for*

[Dashes indicate that data is not available for estimating site

Woodland group and map symbol	Description	Site index		
		Longleaf pine	Slash pine	Loblolly pine
Group 1: (Ad)	Alluvial soils that are flooded periodically			
Group 2: (NoA, NoB, NoC, NoD, OrA, RoA, RoB, RoC, RoD, RoE)	Deep, well-drained, medium-textured soils of the uplands.	75 to 85	80 to 90	80 to 90
Group 3: (BoA, BoB, BoC, BoD, DbA, DbB, GoA, GoB, GoC, LyA, LyB)	Somewhat poorly drained or moderately well drained, medium-textured soils.	80 to 90	85 to 100	90 to 100
Group 4: (KsB, KsD)	Moderately well drained loamy sand		77 to 91	88 to 98
Group 5: (Ba, Cx)	Nearly level, poorly drained and very poorly drained soils; high water table.		75 to 95	75 to 95
Group 6: (EuC, EuD)	Nearly level to strongly sloping, excessively drained soils.			
Group 7: (EsB, EsC, EsE, LaB, LaC, LaE, Sa)	Nearly level to strongly sloping, well-drained to excessively drained loamy sand. Included are some small areas that range from sand to clay.	76 to 86		
Group 8: (Pm, Pn, Ra, ScA, ScB)	Nearly level to gently sloping, poorly drained or somewhat poorly drained, medium-textured to coarse-textured soils.		79 to 99	
Group 9: (FaA, FaB, FaC, SuB, SuC, SuD)	Nearly level to strongly sloping, moderately well drained or somewhat poorly drained, clayey soils.	68 to 78	72 to 88	75 to 85
Group 10: (PhA, PhB, SbA, SbB)	Nearly level to gently sloping, somewhat poorly drained or moderately well drained soils; fragipan layer.	80 to 90	85 to 100	90 to 100
Group 11: (Gr, Sw)	Very poorly drained soils along minor streams and in depressions.			

Seedling mortality is generally slight. The loss of planted stock is less than 25 percent, and satisfactory restocking is obtained from the first planting.

The windthrow hazard is slight. Individual trees can be expected to remain standing, even if released on all sides.

The erosion hazard is slight. There is generally no problem in the use of equipment.

WOODLAND GROUP 3

This group consists of nearly level to strongly sloping, somewhat poorly drained or moderately well drained soils. The surface layer is loam or very fine sandy loam, and the subsoil is loam or fine sandy loam. Permeability is moderate in the upper part of the subsoil, but it is slow in the lower part. The available moisture capacity is moderate. The soils are—

BoA Bowie loam, 0 to 2 percent slopes.
BoB Bowie loam, 2 to 5 percent slopes.
BoC Bowie loam, 5 to 8 percent slopes.
BoD Bowie loam, 8 to 12 percent slopes.
DbA Dunbar loam, 0 to 2 percent slopes.
DbB Dunbar loam, 2 to 5 percent slopes.
GoA Goldsboro loam, 0 to 2 percent slopes.
GoB Goldsboro loam, 2 to 5 percent slopes.
GoC Goldsboro loam, 5 to 8 percent slopes.
LyA Lynchburg very fine sandy loam, 0 to 2 percent slopes.
LyB Lynchburg very fine sandy loam, 2 to 5 percent slopes.

Dunbar and Bowie soils are finer textured in the lower part of the subsoil than the other soils in this group. All the soils of this group are well suited to longleaf pine (fig. 5), loblolly pine, and slash pine. Sweetgum and cherrybark oak make fair to good growth on the lower slopes.

Plant competition is moderate to severe, depending upon management and the manner of harvesting. In places, competition delays natural regeneration and slows the initial growth of the trees, but it does not prevent an adequate stand of desirable species from becoming established. In areas where plant competition is severe, restocking with desirable species can be promoted by burning, applying chemical sprays, clearing, disking, and other methods

major limitations and hazards affecting management

index, or that the specified species is not commonly grown]

Suitable species	Plant competition	Seedling mortality	Windthrow hazard	Equipment limitation	Erosion hazard
White ash, green ash, red maple, cherrybark oak, laurel oak, Nutall oak, swamp chestnut oak, water oak, sweetgum, black-tupelo, water tupelo, yellow-poplar, and spruce pine.	Moderate to severe.	Slight	Slight	Moderate to severe.	Slight.
Longleaf pine, slash pine, and loblolly pine	Slight	Slight	Slight	Slight	Slight.
Longleaf pine, slash pine, loblolly pine, sweetgum, cherrybark oak.	Moderate to severe.	Slight	Slight	Slight to moderate.	Slight.
Longleaf pine, slash pine, loblolly pine	Slight	Slight	Slight	Slight to moderate.	Slight.
Slash pine, loblolly pine, spruce pine, sweetgum.	Severe	Slight to moderate.	Slight	Severe	Slight.
Longleaf pine	Severe	Severe	Slight	Moderate	Slight.
Longleaf pine, slash pine	Moderate	Slight to moderate.	Slight	Slight to moderate.	Slight.
Slash pine, loblolly pine, spruce pine, sweetgum	Moderate	Slight	Slight	Moderate	Slight.
Longleaf pine, slash pine, loblolly pine	Moderate to severe.	Slight	Slight	Moderate	Slight.
Longleaf pine, slash pine, loblolly pine, sweetgum, cherrybark oak.	Moderate	Slight	Slight to moderate.	Slight to moderate.	Slight.
Green ash, white ash, baldcypress, water tupelo, pondcypress, yellow-poplar.	Moderate to severe.	Slight	Slight	Severe	Slight.

of preparing seedbeds and removing competing vegetation.

Seedling mortality is generally slight; the loss of planted stock is generally less than 25 percent.

The windthrow hazard is slight. Individual trees can be expected to remain standing, even if released on all sides.

The equipment limitation is slight to moderate. There is generally no problem in the use of equipment, except on some of the low, flat areas that stay wet for periods of 1 to 3 months. The erosion hazard is slight.

WOODLAND GROUP 4

This group consists of nearly level to strongly sloping, moderately well drained soils. The surface layer and subsoil are loamy sand. Infiltration and permeability are rapid. The available moisture capacity is low. The water table, however, is moderately high, and the supply of moisture is adequate for trees. The soils are—

KsB Klej loamy sand, 0 to 5 percent slopes.
KsD Klej loamy sand, 5 to 12 percent slopes.

The soils in this group are suited to longleaf pine, slash pine, and loblolly pine.

Plant competition does not prevent desirable species from becoming established on these soils, but it delays the natural regeneration of trees and slows initial growth. Light preparation of the seedbed helps to establish adequate stands. Special seedbed preparation is not needed.

The equipment limitation is slight to moderate; the sandy texture of the soils, however, limits the use of some wheel equipment.

Seedling mortality is slight. The loss is generally less than 25 percent, and satisfactory restocking is obtained from the first planting.

The erosion hazard is slight because of the predominantly gentle slopes, rapid infiltration, and slow runoff.

The windthrow hazard is slight. Individual trees can be expected to remain standing, even if released on all sides. Cutting can be done without danger of future losses by windthrow, except from abnormally high winds.

Figure 5.—**Longleaf pine reseeding naturally on Lynchburg very fine sandy loam. The slope is 3 percent.**

WOODLAND GROUP 5

This group consists of nearly level, poorly drained and very poorly drained soils that have a high water table. The surface layer is black silt loam or loam, and the subsoil is gray heavy loam to clay. Infiltration and permeability are slow. Water stands on or near the surface much of the year. The soils are—

Ba Bayboro silt loam.
Cx Coxville silt loam.

These soils are suited to slash pine, loblolly pine, and spruce pine. Sweetgum makes fair to good growth.

Plant competition is severe. Natural regeneration does not provide adequate restocking of desirable trees. Prescribed burning, use of chemical sprays, girdling, clearing, disking, and other special practices may be needed to prepare sites before planting them to trees.

The equipment limitation is severe because these soils are wet much of the year. In some places, drainage is needed before a site can be utilized fully. Outlets are not available everywhere, however, and the cost of constructing suitable outlets is high.

Seedling mortality is slight to moderate. Losses of seedlings vary but generally are between 25 and 50 percent of the planted stock. Some replanting is needed to fill in openings.

The windthrow hazard is slight. Individual trees can be expected to remain standing, even if released on all sides.

WOODLAND GROUP 6

This group consists of nearly level to strongly sloping, excessively drained soils. The surface layer is sand, and the subsoil is loose sand and coarse loamy sand. Water moves into and through these soils at a very rapid rate. The available moisture capacity is very low. Natural fertility is low, and the organic-matter content is low. The soils are—

EuC Eustis and Lakeland sands, 0 to 8 percent slopes.
EuD Eustis and Lakeland sands, 8 to 12 percent slopes.

Sparse stands of longleaf pine, scrub oak, scrub palmetto, and grass are now growing on these soils. Longleaf pine is the species best suited.

Plant competition is severe because of the low available supply of water. Prescribed burning, spraying with chemicals, girdling, disking, and other special management practices are needed to prepare sites for planting the trees. Replanting is also needed.

Seedling mortality is severe. Planting of longleaf pine seedlings is difficult. Superior planting techniques are needed.

The windthrow hazard is not serious. Individual trees can be expected to remain standing, even if released on all sides.

There is a moderate limitation on the use of equipment because the soils are loose and sandy.

The erosion hazard is slight because infiltration is rapid and surface runoff is slow.

WOODLAND GROUP 7

This group consists of nearly level to strongly sloping, well-drained to excessively drained soils. The surface layer is loamy sand and the subsoil is loamy sand to coarse sandy loam. Included areas range from sand to clay but are predominantly sandy. Water moves into and through these soils at a rapid rate, and the available moisture capacity is low. Natural fertility is low, and the organic-matter content is low. These soils are strongly acid. The soils are—

EsB Eustis loamy sand, 0 to 5 percent slopes.
EsC Eustis loamy sand, 5 to 8 percent slopes.
EsE Eustis loamy sand, 8 to 17 percent slopes.
LaB Lakeland loamy sand, 0 to 5 percent slopes.
LaC Lakeland loamy sand, 5 to 8 percent slopes.
LaE Lakeland loamy sand, 8 to 17 percent slopes.
Sa Sandy and clayey land.

These soils are well suited to longleaf pine. Slash pine is suited to the lower slopes and level areas where the supply of moisture in the rooting zone is adequate.

Plant competition does not prevent desirable species from becoming established, but it delays the natural regeneration of trees and slows initial growth. Light preparation of the seedbed helps to establish adequate stands. Special seedbed preparation is generally not needed.

Seedling mortality is slight to moderate. In years of normal rainfall, the loss of planted stock is less than 25 percent and satisfactory restocking is obtained from the first planting. In years of low rainfall, losses of planted stock are much greater and additional plantings are necessary.

Windthrow is not a serious problem. Individual trees can be expected to remain standing, even if released on all sides.

The limitation on the use of equipment is slight to moderate because the soils are loose and sandy.

Erosion is not a serious problem, because of the short slopes, rapid infiltration, and slow runoff.

WOODLAND GROUP 8

This group consists of nearly level to gently sloping, poorly drained or somewhat poorly drained soils. The surface layer and subsoil are loam to loamy sand. These soils are strongly acid. Infiltration and permeability are moderate to rapid. The available moisture capacity is moderate to low. Natural fertility is low, and the organic-matter content is low to moderate. The water table is

on or near the surface for several months of the year. The soils are—

Pm Plummer loamy sand.
Pn Plummer loamy sand, dark surface.
Ra Rains loam, dark surface.
ScA Scranton loamy sand, 0 to 2 percent slopes.
ScB Scranton loamy sand, 2 to 5 percent slopes.

These soils are suited to slash pine and loblolly pine. Sweetgum makes fair to good growth.

Plant competition is moderate. Competition does not prevent desirable species from becoming established, but it delays the natural regeneration of trees and slows initial growth. Prescribed burning and other light preparation of the seedbed help to establish adequate stands. Special seedbed preparation is generally not needed.

Seedling mortality is slight. Loss of seedlings is generally less than 25 percent, and satisfactory restocking is obtained from the first planting.

The windthrow hazard is slight. Individual trees can be expected to remain standing, even if released on all sides. Cutting can be done without danger of future losses by windthrow, except from abnormally high winds.

The limitation on the use of equipment is generally moderate. Extreme wetness for periods of 1 to 3 months restricts the use of equipment.

WOODLAND GROUP 9

This group consists of nearly level to strongly sloping soils. The surface layer is very fine sandy loam to silt loam. The subsoil is heavy, plastic clay. Water enters these soils at a moderate to slow rate, and internal movement of water is slow. The available moisture capacity is moderate to high. The soils are—

FaA Fairhope very fine sandy loam, 0 to 2 percent slopes.
FaB Fairhope very fine sandy loam, 2 to 5 percent slopes.
FaC Fairhope very fine sandy loam, 5 to 8 percent slopes.
SuB Susquehanna, Bowie, and Boswell soils, 2 to 5 percent slopes.
SuC Susquehanna, Bowie, and Boswell soils, 5 to 8 percent slopes.
SuD Susquehanna, Bowie, and Boswell soils, 8 to 12 percent slopes.

Longleaf pine, slash pine, and loblolly pine are suited to these soils.

Plant competition is moderate to severe, depending upon management and the manner of harvesting. In places competition delays natural regeneration and slows the initial growth of trees, but it does not prevent an adequate stand of desirable species from becoming established. In areas where plant competition is severe, restocking with desirable species can be promoted by controlled burning, spraying with chemicals, clearing, disking, and other methods of preparing the seedbeds.

Seedling mortality is slight. When seedlings are properly planted, the loss is less than 25 percent and satisfactory restocking is obtained from the first planting.

The equipment limitation is moderate; the use of equipment is restricted to dry periods.

The erosion hazard is slight. Most of the soils are gently sloping, and the stronger slopes are short.

The windthrow hazard is slight. Individual trees can be expected to remain standing, even if released on all sides.

WOODLAND GROUP 10

This group consists of nearly level to gently sloping, somewhat poorly drained or moderately well drained soils that have a fragipan. The surface layer is friable loam, and the subsoil is heavy loam to fine sandy loam. The loamy fragipan is at a depth of about 18 to 30 inches and is 12 inches or more thick. It restricts the depth to which roots can grow and limits the amount of moisture available to plants. These soils are strongly acid. Natural fertility is low, and the organic-matter content is low to moderate. The soils are—

PhA Pheba loam, 0 to 2 percent slopes.
PhB Pheba loam, 2 to 5 percent slopes.
SbA Savannah loam, 0 to 2 percent slopes.
SbB Savannah loam, 2 to 5 percent slopes.

These soils are well suited to slash pine and loblolly pine. The higher and better drained areas are suited to longleaf pine. Sweetgum and cherrybark oak make fair to good growth on the lower slopes.

Plant competition is moderate. Competition does not prevent desirable species from becoming established, but it often delays the natural regeneration of trees and slows initial growth.

Seedling mortality is slight. The loss of planted stock is generally less than 25 percent.

Because the fragipan restricts the rooting zone in these soils, there is a slight to moderate windthrow hazard.

The equipment limitation is slight to moderate. There is generally no problem in the use of equipment except in low, flat areas that stay wet for periods of 1 to 3 months.

The erosion hazard is slight because the soils are nearly level to gently sloping.

WOODLAND GROUP 11

This group consists of very poorly drained soils along minor streams, in depressions, and in areas that are ponded. The surface layer is sandy loam to clay loam. The organic-matter content varies. In some areas there is a thick, black organic layer underlain by gray loamy sand or clay. The soils are—

Gr Grady soils.
Sw Swamp.

These soils are suited to green ash, white ash, baldcypress, pondcypress, water tupelo, and yellow-poplar.

Plant competition is moderate to severe, depending upon management and the manner of harvesting. In places moderate competition from other plants delays natural regeneration and slows the initial growth of trees. In areas where competition from other plants is severe, special preparation of the site by burning, applying chemical sprays, clearing, and disking helps to promote restocking with desirable species.

Seedling mortality is generally slight in areas that have adequate light and are not severely flooded.

Windthrow is not a serious problem on these soils. Individual trees can be expected to remain standing if released on all sides.

The use of equipment is severely limited because water stands on or near the surface most of the year. In some places drainage is needed before a site can be utilized fully. The cost of constructing suitable outlets is high.

Yields from woodland

Yields from stands that are unmanaged, though fully stocked, are not considered a true measure of productivity. They do, however, show how the productivity of one site is related to that of another. They also make it possible to compare yields of loblolly pine, longleaf pine, and slash pine on a given soil.

Forest stands have not been managed long enough to determine the total amount of wood that can be grown and harvested per acre in managed stands. Table 5, based on published research,[5] shows how site index ratings can be converted readily into cords or into board feet measure. This table can be used as a guide until information on managed stands is available.

[5] U.S. DEPARTMENT OF AGRICULTURE. VOLUME, YIELD, AND STAND TABLES FOR SECOND-GROWTH SOUTHERN PINES. Misc. Pub. No. 50. 202 p.

TABLE 5.—*Stand and yield information for fully stocked, unmanaged, second-growth stands of loblolly pine, longleaf pine, and slash pine*

[Statistics are compiled from United States Department of Agriculture Miscellaneous Publication No. 50. Absence of figure indicates that timber of specified size is not generally used for specified purpose]

LOBLOLLY PINE

Site index	Age	Total merchantable volume per acre		Average diameter at breast height	Average yearly growth per acre of stands that are—	
		More than 4 inches in diameter at breast height	More than 9 inches in diameter at breast height		More than 4 inches in diameter at breast height	More than 9 inches in diameter at breast height
	Years	*Cords of rough wood*	*Board feet (Doyle rule)*	*Inches*	*Cords of rough wood*	*Board feet (Doyle rule)*
70	20	17	---	5.4	0.85	---
	30	31	1,000	7.8	1.03	33
	40	42	3,500	9.6	1.05	88
	50	50	6,500	10.9	1	130
	60	55	10,000	12.1	.92	167
	70	59	12,500	13.0	.84	179
	80	62	15,000	13.8	.78	188
80	20	22	---	6.2	1.10	---
	30	38	2,000	8.7	1.27	67
	40	51	6,000	10.7	1.28	150
	50	60	11,500	12.2	1.20	230
	60	66	16,000	13.6	1.10	267
	70	70	19,500	14.6	1	279
	80	73	22,000	15.5	.91	275
90	20	27	---	6.9	1.35	---
	30	46	4,000	9.6	1.53	133
	40	61	10,000	11.7	1.52	250
	50	71	16,500	13.6	1.42	330
	60	78	22,000	15.0	1.30	367
	70	82	26,000	16.2	1.17	371
	80	85	29,000	17.2	1.06	362
100	20	32	500	7.4	1.60	25
	30	53	6,000	10.4	1.77	200
	40	71	14,500	12.8	1.78	352
	50	84	23,000	14.7	1.68	460
	60	92	29,500	16.2	1.53	492
	70	96	33,000	17.6	1.37	471
	80	100	35,500	18.6	1.25	444

TABLE 5.—*Stand and yield information for fully stocked, unmanaged, second-growth stands of loblolly pine, longleaf pine, and slash pine*—Continued

LONGLEAF PINE

Site index	Age	Total merchantable volume per acre		Average diameter at breast height	Average yearly growth per acre of stands that are—	
		More than 4 inches in diameter at breast height	More than 9 inches in diameter at breast height		More than 4 inches in diameter at breast height	More than 9 inches in diameter at breast height
	Years	*Cords of rough wood*	*Board feet (Doyle rule)*	*Inches*	*Cords of rough wood*	*Board feet (Doyle rule)*
60	20	8	---	4.5	.40	---
	30	19	---	6.2	.63	---
	40	27	500	7.4	.68	12
	50	34	2,000	8.4	.68	40
	60	40	3,500	9.2	.67	58
	70	45	5,000	9.9	.64	71
70	20	14	---	5.1	.70	---
	30	28	---	6.8	.93	---
	40	39	2,000	8.2	.98	50
	50	48	4,500	9.3	.96	90
	60	55	7,000	10.2	.92	117
	70	62	9,500	11.0	.89	136
80	20	20	---	5.6	---	---
	30	36	1,000	7.5	1.20	33
	40	49	4,000	9.0	1.22	100
	50	61	7,500	10.2	1.22	150
	60	70	11,500	11.2	1.17	192
	70	78	15,500	12.0	1.11	221
90	20	26	---	6.1	1.30	---
	30	43	2,000	8.0	1.43	67
	40	59	6,500	9.6	1.48	162
	50	72	11,500	11.0	1.44	230
	60	84	17,000	12.0	1.40	283
	70	94	22,500	12.9	1.34	321

SLASH PINE

70	20	28	---	5.2	1.40	---
	30	40	500	7.3	1.33	17
	40	49	2,500	8.9	1.22	62
	50	55	5,500	10.0	1.10	110
	60	59	7,500	10.8	.98	125
80	20	35	---	6.0	1.75	---
	30	48	1,500	8.3	1.60	50
	40	58	6,000	10.1	1.45	150
	50	65	10,000	11.4	1.30	200
	60	69	12,000	12.2	1.15	208
90	20	41	---	6.8	2.05	---
	30	54	4,000	9.4	1.80	133
	40	66	10,000	11.4	1.65	250
	50	73	15,000	12.4	1.46	300
	60	78	18,000	13.9	1.30	300
100	20	46	1,000	7.7	2.30	50
	30	59	7,000	10.5	1.97	233
	40	72	14,500	12.8	1.80	263
	50	81	19,500	14.5	1.62	390
	60	86	23,000	15.5	1.43	383

Table 6 gives data on the volume and annual cut of growing stock and sawtimber of softwoods and hardwoods for 1956 and 1957. Data are based on results of the third Forest Survey of Mississippi completed in 1957.[6]

TABLE 6.—*Volume and annual cut of growing stock and sawtimber of softwoods and hardwoods*

Composition of groups	Growing stock		Sawtimber	
	Volume by species, 1957	Annual cut, 1956	Volume by species, 1957	Annual cut, 1956
	Millions of cubic feet	*Millions of cubic feet*	*Millions of board feet*	*Millions of board feet*
Softwoods:				
Pine	86. 3	--------	325. 7	--------
Other softwoods	4. 0	--------	24. 1	--------
Total	90. 3	4. 4	349. 8	12. 7
Hardwoods:				
Oak	9. 8	--------	40. 3	--------
Other hard hardwoods [1]	4. 3	--------	14. 6	--------
Soft hardwoods [2]	55. 5	--------	218. 8	--------
Total	69. 6	1. 9	273. 7	8. 1
Total for all species	159. 9	6. 3	623. 5	20. 8

[1] "Other hard hardwoods" includes ash, hickory, and sycamore.

[2] "Soft hardwoods" includes cottonwood, sweetgum, and yellow-poplar.

Wildlife

The suitability of the soils of Jackson County as wildlife habitats is discussed in the following pages, by soil associations (see colored general map at the back of this report). More complete descriptions of the soil associations are given in the section "General Soil Map." Associations 1 and 5 are in the coastal flatwoods; associations 2, 3, 4, and 6 are in the coastal plain hills; association 7 is in areas of alluvial land; and association 8 is in tidal-marsh areas.

Table 7 rates the suitability of specific plants to specific soils. It also shows for what kinds of birds and animals each of the plants is a choice food. Tidal marsh is omitted from the table because it does not support the plants listed.

ASSOCIATIONS 1 AND 5.—These associations are in the coastal flatwoods. They consist of broad, nearly level to gently sloping areas broken by scattered drains, swales, and depressions. The soils are predominantly poorly drained.

Much of the acreage has been burned annually, and the vegetation consists chiefly of wiregrass. At the present time these areas are being reforested with slash pine, but a large acreage is idle. A few livestock farms are in operation. Most of the acreage in these farms is used as pasture, but a small acreage is in corn and truck crops.

Quail are limited to small areas around housesites and to small farms on which some row crops and forage crops are grown.

Doves are found in a few isolated areas.

Ducks and geese stop in a few swampy and ponded areas. The number of ducks and geese in these areas would increase if browntop millet and other food plants were grown.

ASSOCIATIONS 2, 3, 4, AND 6.—These associations are in the coastal plain hills. They consist of broad, nearly level to rolling uplands. The soils are predominantly moderately well drained and well drained, but in a few areas the soils are somewhat poorly drained or excessively drained.

The coastal plain hills are mostly in pine forests. There are some farms of the general type, and some pecan orchards.

Quail are fairly numerous in the coastal plain hills. They are found on the edges of pine forests, where they feed on annual lespedeza, tickclover, and seeds from trees and shrubs. Habitats for quail can be improved by maintaining native stands of common lespedeza near good cover plants; by planting common kobe or Korean lespedeza; by planting bicolor lespedeza (fig. 6) or japonica lespedeza in patches ⅛ acre to ¼ acre in size; and by planting other crops, such as browntop millet, cowpeas, or soybeans. Plantings of native food should be spaced so that there is sufficient food for a covey of quail on each 25 to 30 acres. Other food should be planted so that ½ acre to 1½ acres will be available for each covey of quail.

***Figure 6.*—Field border of bicolor lespedeza planted for food and cover for quail. The soil is Goldsboro loam and the slope is 2 percent.**

Cottontail rabbits are not common in this area. The number of rabbits will increase if ample cover is left along fence rows and field borders and in odd corners of fields; if small patches and strips of winter forage are provided, so that there is a year-round food supply; and if cover plants are grown along fences and on the edges of pastures used for winter grazing. Living fences of multiflora rose furnish excellent cover and travel lanes for rabbits.

Where there is sufficient food, doves are fairly plentiful in fall and winter. Corn and grain sorghum wastes left in harvesting are important sources of food. Browntop millet is one of the more productive crops to plant for dove food. Farm ponds and swamp areas supply ample water for doves.

The pine forests, especially areas in which there are scattered hardwoods and dens, are good habitats for fox squirrels, though not for gray squirrels. An understory of dogwood, chinkapin, and winter huckleberry is scattered throughout these coastal plain hills. Scrub oak, red oak, and white oak grow along the drains and on the lower slopes. These plants furnish much of the food for squirrels.

[6] See footnote 4, p. 16.

TABLE 7.—*Relative suitability*

Plant	Choice food for—	—Relative suitability of soils—								
		Alluvial land	Bayboro	Bowie	Coxville	Dunbar	Eustis loamy sand	Eustis and Lakeland sands	Fairhope	Goldsboro
Barnyardgrass	Turkey	Good	Fair	Good	Fair	Good	Poor	Poor	Fair	Good
Blackberry	Bobwhite, turkey	Fair	Fair	Good	Fair	Good	Fair	Poor	Good	Good
Bristlegrass	Bobwhite, dove, duck	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair	Fair
Browntop millet	Bobwhite, dove, duck	Fair	Fair	Good	Good	Good	Fair	Fair	Good	Good
Chinkapin	Squirrel, turkey	Poor	Poor	Fair	Poor	Fair	Good	Fair	Fair	Fair
Chufa	Deer, duck, goose, squirrel, turkey.	Poor	Poor	Fair	Poor	Poor	Fair	Poor	Fair	Fair
Crabgrass	Dove	Poor to fair.	Fair	Good	Fair	Fair	Fair	Poor	Good	Good
Croton, woolly	Bobwhite, dove	Fair to good.	Poor	Good	Poor	Fair	Good	Poor	Good	Good
Dewberry	Bobwhite, squirrel	Poor	Poor	Good	Poor	Fair	Fair	Poor	Fair	Good
Elder	Deer	Good	Fair	Good	Fair	Good	Fair	Poor	Good	Good
Grapes (all)	Deer	Fair	Poor	Good	Poor	Fair	Good	Poor	Good	Good
Greenbrier	Deer, rabbit	Good	Fair	Good	Fair	Good	Good	Fair	Good	Good
Honeysuckle	Deer	Fair	Fair	Good	Fair	Good	Fair	Poor	Good	Good
Lespedeza, bicolor	Bobwhite, deer	Poor	Poor	Good	Poor	Fair	Fair	Poor	Fair	Good
Milkpea	Bobwhite	Poor	Poor	Fair	Poor	Poor	Good	Fair	Fair	Fair
Paspalum grasses	Bobwhite, dove, duck, turkey.	Fair	Fair	Good	Fair	Good	Fair	Poor	Good	Good
Privet, swamp	Duck	Good	Good	Fair	Good	Good	Poor	Poor	Fair	Fair
Smartweed	Duck	Good	Good	Fair	Good	Good	Fair	Poor	Fair	Fair
Sumac	Deer, rabbit	Good	Fair	Good	Fair	Good	Good	Fair	Good	Good
Tickclover	Bobwhite, deer, turkey	Fair	Fair	Good	Fair	Good	Fair	Poor	Good	Good

Deer are fairly abundant in the woodland areas in the northwestern part of the coastal plain hills. Natural food is available for deer in most wooded areas. Supplemental food can be provided by planting winter forage in patches of 1 to 10 acres spaced over the area.

Turkeys are also plentiful in the coastal plain hills. Patches of winter grazing crops, grain, grass, or legumes planted adjacent to wooded areas benefit turkeys and deer. These plantings should be spaced over the range in plots 1 to 10 acres in size.

ASSOCIATION 7.—This association occupies low-lying areas along the Pascagoula River. Most of it is flooded several times a year.

Almost all of the acreage is in hardwoods and baldcypress. Oaks occupy 50 percent or more of the acreage. Management of the forest varies. Some places have grown up in vines and brush. Game is managed by private hunting clubs that have leased the hunting rights from the landowners.

Squirrels, particularly gray squirrels, are abundant in this association. Good habitats for them can be maintained by protecting the hardwood trees.

Rabbits, particularly swamp rabbits, are generally plentiful. No special management is necessary for them.

A few ducks feed in these areas. Natural lakes, streams, and sloughs offer some natural food. The woodland is utilized when rains flood parts of it and make acorns available to ducks.

Deer and wild turkeys are fairly plentiful, and native plants furnish the majority of their food. Patches of winter grazing crops, grain, grass, or legumes planted along the adjacent hills benefit these species. Plantings should be from 1 to 10 acres in size, spaced on both sides of the flood plain.

Fish, both game and commercial (rough), are plentiful in the Pascagoula River and its tributary streams, in the oxbow lakes, and in deep sloughs.

ASSOCIATION 8.—This association is in the southern part of the county, in areas that are affected by brackish water. These areas occur mostly around Graveline Bayou, around Bangs Lake, and along the Pascagoula River and its tributaries. The soil material consists of brown or black, partly or wholly decomposed plants over mineral soil.

Areas of Tidal marsh are suitable as habitats for waterfowl, fish, and marsh animals.

Game fish are abundant in the many narrow channels. The number depends on the season and the salinity of the water.

Ducks, in various numbers, winter in the Tidal marsh areas and along the nearby islands in the Mississippi Sound.

Engineering Uses of the Soils

Some soil properties are of special interest to engineers because they affect the construction and maintenance of roads, airports, pipelines, building foundations, facilities for water storage, erosion control structures, drainage systems, and sewage disposal systems. Permeability, compaction characteristics, drainage, grain size, plasticity, reaction, and shrink-swell characteristics are among the properties most important to engineers. Depth to the water

of soils for wildlife food plants

—Relative suitability of soils—Continued												
Grady	Klej	Lakeland loamy sand	Lynch-burg	Norfolk	Orange-burg	Pheba	Plummer	Rains	Ruston	Savannah	Scranton	Susque-hanna, Bowie, and Boswell soils
Poor	Fair	Poor	Good	Fair	Fair	Good	Good	Good	Fair	Good	Good	Good.
Poor	Good	Fair	Good	Good	Good	Fair	Fair	Fair	Good	Good	Fair	Fair.
Poor	Fair	Good	Fair	Fair	Fair	Good	Good	Good	Fair	Fair	Good	Good.
Poor	Good	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair	Fair.
Poor	Fair	Good	Fair	Good	Good	Fair	Poor	Poor	Good	Fair	Poor	Poor.
Poor	Fair	Fair	Poor	Good	Good	Poor	Poor	Poor	Good	Fair	Poor	Poor.
Poor	Good	Fair	Good	Good	Good	Fair	Fair	Fair	Good	Good	Fair	Fair.
Poor	Good	Good	Fair	Good	Good	Fair	Poor	Poor	Good	Good	Poor	Fair.
Poor	Good	Fair	Fair	Good	Good	Fair	Poor	Poor	Good	Good	Poor	Fair.
Poor	Good	Fair	Good	Fair	Fair	Good	Fair	Fair	Fair	Good	Fair	Fair.
Poor	Good	Good	Fair	Good	Good	Fair	Fair	Poor	Good	Good	Fair	Good.
Fair	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good.
Poor	Good	Fair	Good	Good	Good	Good	Good	Fair	Good	Good	Fair	Fair.
Poor	Fair	Fair	Fair	Good	Good	Fair	Poor	Poor	Good	Good	Fair	Fair.
Poor	Good	Good	Fair	Good	Good	Fair	Fair	Poor	Good	Good	Fair	Fair.
Poor	Good	Fair	Good	Good	Good	Good	Good	Fair	Good	Good	Fair	Fair.
Fair	Fair	Poor	Fair	Poor	Poor	Fair	Good	Good	Poor	Fair	Good	Fair.
Fair	Fair	Fair	Good	Fair	Fair	Good	Good	Good	Fair	Fair	Good	Good.
Poor	Good	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair	Good.
Poor	Good	Fair	Good	Good	Good	Fair	Fair	Fair	Good	Good	Fair	Fair.

table, depth to bedrock, and topography are also important.

This soil survey report contains information that engineers can use to—

1. Make soil and land use studies that will aid in selecting and developing industrial, business, residential, and recreational sites.
2. Assist in designing drainage systems, irrigation systems, farm ponds, diversion terraces, and other structures for soil and water conservation.
3. Make preliminary evaluations of soil and ground conditions that will aid in selecting highway, pipeline, airport, and cable locations and in planning detailed investigations at the selected locations.
4. Locate probable sources of sand, gravel, and other construction material.
5. Correlate performance of engineering structures with soil mapping units to develop information for overall planning that will be useful in designing structures and planning certain engineering practices.
6. Determine the suitability of soil mapping units for cross-country movement of vehicles and construction equipment.
7. Supplement the information obtained from other published maps, reports, and aerial photographs to make maps and reports that can be used readily by engineers.
8. Develop other preliminary estimates for construction purposes pertinent to the particular area.

This report will not eliminate the need for on-site sampling and testing of soils when the design and construction of specific engineering works are being considered. It should be used primarily for planning detailed field investigations to determine the condition of the soil material in place at the proposed site. The information in the report will enable soil engineers to concentrate on the most suitable soils, to take fewer soil samples, and to make an adequate investigation at minimum cost.

Some terms used by soil scientists may not be familiar to engineers, and some words—for example, sand, silt, parent material, and structure—have special meanings in soil science. These terms, and other special terms used in this report, are defined in the Glossary at the back of this report.

Engineering classification systems

Two systems of classifying soils are in general use among engineers. Both are used in this report.

Most highway engineers classify soil material in accordance with the system approved by the American Association of State Highway Officials (AASHO).[7] In this system, classification is based on the physical properties of the soil material and on the field performance of the soils in highways. All soils are classified in seven principal groups. The groups range from A–1 (gravelly soils of high bearing capacity) to A–7 (clay soils having

[7] AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS. STANDARD SPECIFICATIONS FOR HIGHWAY MATERIALS AND METHODS OF SAMPLING AND TESTING. Ed. 8, 2 v., 401 and 617 p., illus. 1961.

TABLE 8.—*Engineering*

[Tests performed by the Mississippi State Highway Department in cooperation with the U.S. Department of Commerce, Bureau

Soil name and location of profile	Assumed parent material	Bureau of Public Roads report No.	Depth	Horizon	Moisture-density	
					Maximum dry density	Optimum moisture
			In.		*Lb. per cu. ft.*	*In.*
Bayboro silt loam: NE¼SW¼ sec. 13, T. 6 S., R. 6 W.	Moderately fine textured, acid material.	S381037	4 to 8	A2	84. 0	29. 0
		S381038	11 to 21	B1	99. 6	21. 0
		S381039	38 to 72	Cg	94. 8	26. 3
Bayboro silt loam: SE¼SE¼ sec. 33, T. 6 S., R. 5 W.	Moderately fine textured, acid material.	S381040	4 to 9	A2	92. 1	23. 2
		S381041	29 to 38	B2	109. 5	14. 8
		S381042	38 to 60	Cg	105. 3	18. 2
Coxville silt loam: Sec. 6, T. 5 S., R. 5 W.	Fine-textured, acid material.	S381043	0 to 5	Ap	81. 6	30. 2
		S381044	8 to 24	Bg	99. 0	21. 0
Coxville silt loam: Sec. 25, T. 7 S., R. 7 W.	Fine-textured, acid material.	S381045	4 to 7	Ap	101. 7	17. 3
		S381046	10 to 16	B	105. 9	18. 7
		S381047	31 to 42	C	100. 5	21. 7
Eustis sandy loam: NE¼SW¼ sec. 16, T. 5 S., R. 5 W.	Coarse-textured, acid material.	S381054	4 to 7	A1	111. 0	12. 5
		S381055	13 to 26	B1	116. 4	10. 0
		S381056	37 to 72	B12	113. 1	10. 7
Eustis loamy sand: SW¼NW¼ sec. 8, T. 6 S., R. 4 W.	Coarse-textured, acid material.	S381057	0 to 3	A1	104. 2	14. 0
		S381058	8 to 23	B1	108. 6	10. 6
		S381059	34 to 55	B2	108. 0	12. 0
Goldsboro very fine sandy loam: NE¼SW¼ sec. 26, T. 6 S., R. 8 W.	Medium-textured, acid material.	S381048	0 to 7	Ap	103. 2	15. 2
		S381049	14 to 25	B2	113. 0	14. 6
		S381050	35 to 62	B3	117. 0	12. 2
Goldsboro loam: NE¼SW¼ sec. 3, T. 5 S., R. 5 W.	Medium-textured, acid material.	S381051	0 to 6	Ap	93. 8	20. 0
		S381052	30 to 40	B2	119. 7	11. 4
		S381053	53 to 64	C	119. 7	10. 3

[1] According to the American Association of State Highway Officials Designation: T88. Results obtained by this procedure frequently differ somewhat from results that would have been obtained by the soil survey procedure of the Soil Conservation Service (SCS). In the AASHO procedure, the fine material is analyzed by the hydrometer method and the various grain-size fractions are calculated on the basis of all the material, including that more than 2 millimeters in diameter. In the SCS procedure, the fine material is analyzed by the pipette method and the material more than 2 millimeters in diameter is excluded from calculations of grain-size fractions. The mechanical analysis data used in this table are not suitable for use in naming textural classes of soils.

low strength when wet). Within each group, the relative engineering value of the soil material is indicated by a group index number. Group indexes range from 0 for the best material to 20 for the poorest. The group index number is shown in parentheses, following the soil group symbol, for example, A–7 (14).

Some engineers prefer to use the Unified soil classification system established by the Waterways Experiment Station, Corps of Engineers.[8] This system is based on identification of soils according to their performance as engineering construction materials. Soil materials are identified as coarse grained (8 classes), fine grained (6 classes), or highly organic.

The estimated classifications of the major horizons of the soils in Jackson County, under both systems, are given in table 9.

[8] WATERWAYS EXPERIMENT STATION, CORPS OF ENGINEERS. THE UNIFIED SOIL CLASSIFICATION SYSTEM. Tech. memo. No. 3–357, 2 v. and app., 44 p., illus. 1953.

Soil properties and engineering interpretations

The information and interpretations of most significance to engineers are presented in tables 8, 9, and 10. Additional information can be found in the sections "Descriptions of the Soils" and "General Soil Map." Brief explanations of how the information in the tables was obtained and explanations of the significance of some of the items follow.

ENGINEERING TEST DATA.—The engineering interpretations made in this section are based on data obtained by testing samples from eight soil profiles. The tests were performed by the Mississippi State Highway Department under a cooperative agreement with U.S. Department of Commerce, Bureau of Public Roads. The test data are given in table 8. Moisture-density relationship, grain-size distribution, liquid limit, and plasticity index were determined. The soils were subsequently classified according to the Unified soil classification system and the system of the American Association of State Highway Officials.

test data

of Public Roads, in accordance with standard test procedures of the American Association of State Highway Officials (AASHO)]

Shrinkage factors			Mechanical analysis [1]						Liquid limit	Plasticity index	Classification	
			Percentage passing sieve—			Percentage smaller than—						
Limit	Ratio	Volumetric change	No. 10 (2.0 mm)	No. 40 (0.42 mm.)	No. 200 (0.074 mm.)	0.05 mm.	0.005 mm.	0.001 mm.			AASHO [2]	Unified [3]
Pct.		*Pct.*							*Pct.*			
26	1. 36	34	100	100	92	84	29	16	53	18	A–7(14)	OH.
18	1. 68	40	100	100	92	90	45	26	42	20	A–7(12)	OL.
17	1. 59	86	100	100	97	97	69	48	63	39	A–7(20)	CH.
27	1. 42	16	100	100	73	64	13	5	39	9	A–4(8)	OL.
15	1. 76	21	100	100	73	64	25	16	28	10	A–4(8)	CL.
14	1. 79	52	100	100	65	58	42	32	44	24	A–7(12)	CL.
31	1. 30	27	100	100	95	89	21	9	52	15	A–7(12)	OH.
18	1. 73	53	100	100	97	93	50	29	49	27	A–7(17)	CL.
21	1. 55	13	100	100	70	61	49	9	30	8	A–4(7)	OL.
15	1. 75	47	100	99	77	70	36	26	41	19	A–7(12)	CL.
15	1. 75	56	100	98	79	74	43	33	43	19	A–7(12)	CL.
			100	98	22	19	5	2	26	[4]	A–2(0)	SM.
			100	98	24	21	8	5	18	[4]	A–2(0)	SMd. [5]
			100	98	21	17	8	4	18	[4]	A–2(0)	SM.
			100	95	12	11	6	4	29	[4]	A–2(0)	SMd. [5]
			100	95	12	11	6	4	20	[4]	A–2(0)	SMd. [5]
			100	95	10	9	5	3	19	[4]	A–2(0)	SMd. [5]
			100	100	44	32	6	2	28	[4]	A–4(2)	SM.
16	1. 70	31	100	100	57	49	22	17	36	18	A–6(8)	ML-CL.
11	1. 76	61	100	99	52	43	16	12	21	4	A–4(3)	ML-CL.
25	1. 42	9	100	96	57	50	9	3	31	4	A–4(4)	OL.
15	1. 80	12	100	97	59	51	18	12	22	6	A–4(5)	ML-CL.
15	1. 77	12	100	98	59	50	17	12	23	7	A–4(5)	ML-CL.

[2] Based on Classification of Soils and Soil Aggregate Mixtures for Highway Construction Purposes. AASHO Designation: M145–49.
[3] Based on the Unified Soil Classification System, Tech. Memo. No. 3–357, v. 1, Waterways Experiment Station, Corps of Engineers, March 1953.
[4] Nonplastic.
[5] Suffix "d" indicates the liquid limit is 25 or less and the plasticity index is 5 or less. Ratings are in Appendix B of Technical Memorandum No. 3–357 cited in footnote 3.

If a soil material is compacted at successively higher moisture content, assuming that the compactive effort remains constant, the density of the compacted material will increase until the optimum moisture content is reached. After that, the density decreases with an increase in the moisture content. The highest dry density obtained in the compaction test is termed "maximum dry density." Data showing moisture density are important in earthwork, for as a rule, optimum stability is obtained if the soil is compacted to about the maximum dry density when it is at approximately the optimum moisture content.

Mechanical analysis to determine the relative proportions of the different size particles making up the soil sample was made by a combination of the sieve and hydrometer methods. The percentage of clay was obtained by the hydrometer method and should not be used as a basis for naming soil textural classes.

Liquid limit and plastic limit tests measure the effect of water on the consistence of soil material. As the moisture content of a clayey soil increases from a very dry state, the material changes from a solid to a semisolid then to a plastic state. As the moisture content is further increased, the material changes from a plastic to a liquid state. The plastic limit is the moisture content at which the soil material passes from a semisolid to a plastic state. The liquid limit is the moisture content at which the material passes from a plastic to a liquid state. The plasticity index is the numerical difference between the liquid limit and the plastic limit. It indicates the range of moisture content within which a soil material is in a plastic condition.

Estimated Properties of the Soils.—Because samples from only eight soil profiles were tested, it was necessary to estimate the AASHO and Unified engineering classifications and the significant physical properties of the rest of the soils mapped. The permeability, available water capacity, degree of dispersion, and shrink-swell potential have been estimated. These estimates are shown in table 9.

Available water, measured in inches per inch of soil

TABLE 9.—*Brief descriptions of soils and*

Map symbol	Mapping unit	Depth to seasonally high water table	Reaction	Brief description of soil
		Feet	*pH*	
Ad	Alluvial land.	Flooded part of the time.	4.0 to 5.5	Varied; unclassified soil material
Ba	Bayboro silt loam.	3 or less	4.0 to 5.5	6 to 10 inches of black silt loam; subsoil of dark-gray silt loam to clay loam; clay to clay loam at depth of 24 to 55 inches; parent material is acid clay.
BoA BoB BoC BoD	Bowie loam, 0 to 2 percent slopes. Bowie loam, 2 to 5 percent slopes. Bowie loam, 5 to 8 percent slopes. Bowie loam, 8 to 12 percent slopes.	3 to 4	4.5 to 5.5	6 to 12 inches of very dark gray loam; subsoil of yellowish-brown loam to clay loam; mottled gray clay loam at depth of 35 to 50 inches.
Cb	Coastal beach.	Flooded part of the time.		White sand; several feet thick
Cx	Coxville silt loam.	3 or less	4.0 to 4.5	6 to 10 inches of very dark gray silt loam; subsoil of olive-brown silt loam underlain by mottled gray silty clay.
DbA DbB	Dunbar loam, 0 to 2 percent slopes. Dunbar loam, 2 to 5 percent slopes.	3 or less	4.0 to 4.5	6 to 10 inches of black loam; subsoil of clay loam; mottled clay at depth of 18 to 30 inches.
Du	Dune land.	Variable		Loose sand to a depth of 72 inches
EsB EsC EsE	Eustis loamy sand, 0 to 5 percent slopes. Eustis loamy sand, 5 to 8 percent slopes. Eustis loamy sand, 8 to 17 percent slopes.	5+	5.0 to 5.5	6 to 12 inches of dark-gray to grayish-brown loamy sand; subsoil of yellowish-brown loamy sand underlain by strong-brown to reddish-yellow sand.
EuC EuD	Eustis and Lakeland sands, 0 to 8 percent slopes. Eustis and Lakeland sands, 8 to 12 percent slopes.	5+	5.0 to 5.5	1 to 6 feet of sand
FaA FaB FaC	Fairhope very fine sandy loam, 0 to 2 percent slopes. Fairhope very fine sandy loam, 2 to 5 percent slopes. Fairhope very fine sandy loam, 5 to 8 percent slopes.	2 to 3	4.5 to 5.5	4 to 8 inches of dark grayish-brown very fine sandy loam; subsoil of yellowish-brown to yellowish-red loam to clay loam; underlain by mottled gray clay.
GoA GoB GoC	Goldsboro loam, 0 to 2 percent slopes. Goldsboro loam, 2 to 5 percent slopes. Goldsboro loam, 5 to 8 percent slopes.	5+	4.5 to 5.5	4 to 10 inches of very dark gray loam; underlain by light olive-brown mottled loam at depth of about 24 to 30 inches; parent material is acid sandy loam and sandy clay loam.
Gr	Grady soils.	2 or less (flooded most of the year).	4.0 to 5.0	0 to 7 inches of black silt loam or loam over gray clay loam to mottled plastic clay.
KsB KsD	Klej loamy sand, 0 to 5 percent slopes. Klej loamy sand, 5 to 12 percent slopes.	5+	5.0 to 5.5	0 to 8 inches of very dark grayish-brown loamy sand; subsoil of yellowish-brown to pale-brown loamy sand.

See footnotes at end of table.

their estimated physical properties

Depth from surface	Classification			Grain sizes—		Permeability	Available water capacity	Dispersion	Shrink-swell potential
	USDA texture	Unified	AASHO	Passing No. 10 sieve (2.0 mm.)	Passing No. 200 sieve (0.074 mm.)				
Inches				*Percent*	*Percent*	*Inches per hour*	*Inches per inch*		
Variable	Varied								
0 to 8	Silt loam	ML or MH, OL or OH.	A–7	100	92	0.80 to 2.50	0.34	High	Moderate to high.
8 to 24	Clay loam	CL	A–7	100	92	0.05 to 0.20	0.30	Moderate	Moderate to high.
24 to 42	Clay loam	CL, CH	A–7	100	97	0.05	0.30	Low	Moderate to high.
0 to 8	Loam	ML, CL	A–4	100	60 to 75	0.80 to 2.50	0.15	Moderate	Low.
8 to 35	Loam to clay loam.	ML–CL	A–4	100	60 to 80	0.20 to 0.80	0.17	Moderate	Low to moderate.
35 to 50	Clay loam	CL–CH	A–7	100	55 to 80	0.05 to 0.20	0.30	Moderate	Moderate to high.
0 to 48+	Sand	SP	A–3	100	5 to 10	2.50 or more	<0.05	High	Low.
0 to 5	Silt loam	OL or OH, ML or MH.	A–4, A–7	100	70	0.80 to 2.50	0.34	High	Moderate.
5 to 7	Silt loam	ML, CL	A–4, A–7	100	77 to 95	0.2 to 0.05	0.34	High	Moderate.
7 to 56	Silty clay	CL, CH	A–7	100	79 to 95	0.05	0.23	Low	High.
0 to 5	Loam	OL–CL	A–4, A–6	100	65 to 75	0.8 to 2.50	0.15	High	Moderate.
5 to 18	Loam	CL	A–4, A–6	100	65 to 85	0.08 to 2.50	0.16	High to moderate.	Moderate.
18 to 42	Clay loam to clay.	CL–CH	A–7	100	75 to 95	0.05 to 0.20	0.24	Low	High.
0 to 72+	Sand	SP, SM	A–2, A–3	100	10 to 15	>10.00	<0.05	High	Low.
0 to 9	Loamy sand	SM	A–2	100	22	5.00 to 10.00	0.06	High	Low.
9 to 17	Loamy sand	SM	A–2	100	24	5.00 to 10.00	0.06	High	Low.
17 to 60	Loamy sand	SP, SM	A–2, A–3	100	21	5.00 to 10.00	0.06	High	Low.
0 to 54	Sand	SP, SM	A–3	100	5 to 15	>10.00	0.03	High	Low.
0 to 8	Very fine sandy loam.	SM	A–4	100	45 to 55	0.80 to 2.50	0.09	High	Low.
8 to 21	Loam to clay loam.	CL	A–6	100	60 to 80	0.20 to 0.80	0.22	Low	Moderate.
21 to 50	Clay	CH	A–7	100	80 to 90	0.50 to 0.05	0.20	Low	High.
0 to 9	Loam	ML or OL	A–4	100	55 to 70	0.80 to 2.50	0.12	Moderate	Low.
9 to 35	Loam	ML–CL	A–4	100	55 to 70	0.80 to 2.50	0.15	Moderate	Low.
35 to 50	Loam	ML, CL	A–4	100	55 to 70	0.80 to 2.50	0.18	Moderate	Low.
0 to 7	Silt loam or loam	ML–CL	A–4, A–6	100	70 to 80	0.80 to 2.50	0.22	High	Low.
7 to 29	Clay loam	CL	A–6, A–7	100	75 to 90	0.20 to 0.80	0.30	Low	Moderate.
29 to 50	Clay	CH	A–7	100	80 to 90	0.50 to 0.05	0.22	Low	High.
0 to 8	Loamy sand	SM	A–2	100	15 to 30	5.00 to 10.00	0.04 to 0.08.	High	Low.
8 to 24	Loamy sand	SM	A–2	100	15 to 30	0.80 to 2.50	0.04 to 0.08.	High	Low.
24 to 40	Loamy sand	SM	A–2	100	15 to 30	0.05 to 0.20	0.04 to 0.08.	High	Low.

TABLE 9.—*Brief descriptions of soils and*

Map symbol	Mapping unit	Depth to seasonally high water table	Reaction	Brief description of soil
		Feet	*pH*	
LaB LaC LaE	Lakeland loamy sand, 0 to 5 percent slopes. Lakeland loamy sand, 5 to 8 percent slopes. Lakeland loamy sand, 8 to 17 percent slopes.	5+	5.0 to 5.5	0 to 20 inches of dark grayish-brown, loose loamy sand; subsoil of brownish-yellow coarse loamy sand.
LyA LyB	Lynchburg very fine sandy loam, 0 to 2 percent slopes. Lynchburg very fine sandy loam, 2 to 5 percent slopes.	4 or less	4.5 to 5.5	0 to 7 inches of very dark grayish-brown to grayish-brown very fine sandy loam; subsoil of pale-yellow to yellowish-brown mottled fine sandy loam.
Ma	Made land. [1]			
NoA NoB NoC NoD	Norfolk fine sandy loam, 0 to 2 percent slopes. Norfolk fine sandy loam, 2 to 5 percent slopes. Norfolk fine sandy loam, 5 to 8 percent slopes. Norfolk fine sandy loam, 8 to 12 percent slopes.	5+	4.5 to 5.5	6 to 10 inches of grayish-brown to brown fine sandy loam; subsoil of yellowish-brown sandy loam; underlain by brownish-yellow loam mottled with yellowish red and yellowish brown.
OrA	Orangeburg fine sandy loam, 0 to 2 percent slopes.	5+	4.5 to 5.5	3 to 9 inches of grayish-brown fine sandy loam; subsoil of red sandy loam or loam.
PhA PhB	Pheba loam, 0 to 2 percent slopes. Pheba loam, 2 to 5 percent slopes.	3 or less	4.5 to 5.5	6 to 10 inches of very dark gray loam; subsoil of yellowish-brown clay loam; fragipan at a depth of approximately 18 inches.
Pm Pn	Plummer loamy sand. Plummer loamy sand, dark surface.	2 or less	4.5 to 5.5	3 to 13 inches of very dark gray to gray loamy sand; subsoil of grayish-brown mottled loamy sand.
Ra	Rains loam, dark surface.	2 or less	4.0 to 5.0	6 to 14 inches of black to very dark gray loam; subsoil of mottled gray sandy loam and clay loam.
RoA RoB RoC RoD RoE	Ruston and Orangeburg fine sandy loams, 0 to 2 percent slopes. Ruston and Orangeburg fine sandy loams, 2 to 5 percent slopes. Ruston and Orangeburg fine sandy loams, 5 to 8 percent slopes. Ruston and Orangeburg fine sandy loams, 8 to 12 percent slopes. Ruston and Orangeburg fine sandy loams, 12 to 17 percent slopes.	5+	4.5 to 5.5	5 to 8 inches of dark grayish-brown fine sandy loam; subsoil of red to yellowish-red sandy loam.
Sa	Sandy and clayey land.	3 to 10	5.0 to 5.5	6 to 12 inches of well-drained sandy loam underlain by sand and sandy clay.
SbA SbB	Savannah loam, 0 to 2 percent slopes. Savannah loam, 2 to 5 percent slopes.	4 or less	4.5 to 5.5	Dark grayish-brown loam to silt loam; subsoil of yellowish-brown heavy loam; fragipan at a depth of about 24 to 30 inches.
ScA ScB	Scranton loamy sand, 0 to 2 percent slopes. Scranton loamy sand, 2 to 5 percent slopes.	2 or less	5.0 to 5.5	Very dark gray to black loamy sand; subsoil of mottled loamy sand.

See footnotes at end of table.

their estimated physical properties—Continued

Depth from surface	Classification			Grain sizes—		Permeability	Available water capacity	Dispersion	Shrink-swell potential
	USDA texture	Unified	AASHO	Passing No. 10 sieve (2.0 mm.)	Passing No. 200 sieve (0.074 mm.)				
Inches				*Percent*	*Percent*	*Inches per hour*	*Inches per inch*		
0 to 20	Loamy sand	SM	A-2	100	15 to 30	>10.00	0.06	High	Low.
20 to 26	Loamy sand	SM	A-2	100	15 to 30	5.00 to 10.00	0.06	High	Low.
26 to 50	Loamy sand	SM	A-2	100	15 to 30		0.06	High	Low.
0 to 7	Very fine sandy loam.	SM-ML	A-4	100	45 to 55	0.20 to 0.80	0.10	High	Low.
7 to 17	Fine sandy loam	ML	A-4	100	45 to 50	0.20 to 0.80	0.11	High	Low.
17 to 28	Fine sandy loam to loam.	ML	A-4	100	50 to 60		0.15	High	Low.
0 to 7	Fine sandy loam	SM	A-4	100	45 to 55	2.50 to 5.00	0.10	High	Low.
7 to 29	Fine sandy loam	SM	A-4	100	45 to 55	2.50 to 5.00	0.13	Moderate	Low.
29 to 40	Loam to sandy loam.	SC, CL	A-4, A-6	100	40 to 65		0.13	Moderate	Moderate.
0 to 9	Fine sandy loam	SM	A-4	100	45 to 50	2.50 to 5.00	0.10	High	Low.
9 to 43	Fine sandy loam or loam.	SM, SC	A-4	100	50 to 65	2.50 to 5.00	0.13	Moderate	Low.
43 to 84	Fine sandy loam	SM, SC	A-4	100	50 to 65	0.80 to 2.50	0.10	Moderate	Low.
0 to 18	Loam	SC, CL	A-4	100	60 to 75	0.20 to 0.80	0.15	High	Low.
18 to 38	Loam	CL	A-4, A-6	100	45 to 55	0.05 to 0.20	[2] 0.03	High	Moderate.
38 to 50	Loam to clay loam.	MH-CL	A-7	100	95 to 98	<0.05	0.20	High	Moderate to high.
0 to 13	Loamy sand	SM	A-2	100	15 to 40	5.00 to 10.00	0.10	High	Low.
13 to 34	Loamy sand	SM	A-2	100	15 to 40	0.05 to 0.20	0.06	High	Low.
34 to 42	Loamy sand	SM	A-2	100	15 to 40		0.06	High	Low.
0 to 14	Loam	ML or OL	A-4	100	50 to 60	5.00 to 10.00	0.15	Moderate	Low.
14 to 21	Loam	ML	A-4	100	50 to 60	0.05 to 5.00	0.15	Moderate	Low.
21 to 44	Sandy loam to clay loam.	ML, CL	A-4, A-6	100	60 to 90		0.20	High	Low to moderate.
0 to 6	Fine sandy loam	SM	A-4	100	50 to 65	2.5 to 5.00	0.10	Moderate	Low.
6 to 40	Fine sandy loam	SM-SC	A-4	100	50 to 65	5.00 to 10.00	0.13	Moderate	Low.
40 to 58	Fine sandy loam	SM-SC	A-4	100	50 to 65		0.10	Moderate	Low.
0 to 6	Sandy loam	SM	A-4	100			0.10	High	Low.
6 to 12	Sand to clay						0.04 to 0.25.	High	Low.
0 to 8	Loam	SM, ML	A-4	100	50 to 75	0.80 to 2.50	0.15	Moderate	Low.
8 to 27	Heavy loam	CL	A-6	100	55 to 65	0.80 to 2.50	0.20	Moderate	Moderate.
27 to 50	Heavy loam	CL-CH	A-6, A-7	100	55 to 65	0.05	[2] 0.08	Moderate	Moderate to high.
0 to 6	Loamy sand	SM	A-2	100	15 to 40	5.00 to 10.00	0.09	High	Low.
6 to 16	Loamy sand	SP, SM	A-2, A-3	100	15 to 40	0.80 to 2.50	0.06	High	Low.
16 to 46	Loamy sand	SM	A-2	100	15 to 40	0.05 to 0.20	0.06	High	Low.

TABLE 9.—*Brief descriptions of soils and*

Map symbol	Mapping unit	Depth to seasonally high water table	Reaction	Brief description of soil
		Feet	*pH*	
SuB	Susquehanna, Bowie, and Boswell soils, 2 to 5 percent slopes.	4 or less	4.0 to 5.0	Mixed loam over mottled plastic clay at a depth of about 24 inches.
SuC	Susquehanna, Bowie, and Boswell soils, 5 to 8 percent slopes.			
SuD	Susquehanna, Bowie, and Boswell soils, 8 to 12 percent slopes.			
Sw	Swamp.[1]	1.5 or less [3]		About 36 inches of stratified sandy and clayey deposits.
Tm	Tidal marsh. [1]	1 or less [3]		Varied soil material

[1] Generally not suitable for engineering uses. [2] Fragipan.

depth, is the approximate amount of capillary water in a soil that is wet to field capacity. When the soil is air dry, this amount of water will wet the soil to a depth of 1 inch without deeper percolation.

Dispersion is the degree and rapidity with which soil structure breaks down or slakes in water. A rating of high means that the soil slakes readily.

The shrink-swell potential is an indication of the volume change to be expected with a change in moisture content. It is estimated primarily on the basis of the amount and type of clay present. In general, soils classified as CH and A–7 have a high shrink-swell potential. Clean sands and gravels (single-grain structure) and those having small amounts of nonplastic to slightly plastic fines, as well as most other nonplastic to slightly plastic soil material, have a low shrink-swell potential.

The permeability of the soil is based on the rate of movement of water through the soil material in its undisturbed state. It depends largely upon the soil texture and structure.

INTERPRETATIONS OF ENGINEERING PROPERTIES.—Table 10 gives estimates of the suitability of the soils of Jackson County for highway construction and for specified engineering uses. It rates the soils as to their suitability for winter (or wet weather) grading, and as material for road subgrade and for road fill. Two land types, Made land and Sandy and clayey land, are not listed in the table. Each soil is rated as a source of topsoil and sand; as foundations for low buildings; and as sewage disposal fields. The features affecting suitability for farm ponds, agricultural drainage, irrigation, terraces and diversions, and waterways are also listed in table 10.

The suitability of the soils for winter (or wet weather) grading depends largely on the texture of the soil material and its natural water content. Clay soils are difficult to handle when wet and must be dried to proper moisture content for compaction. Therefore, these soils are rated poor.

The suitability of the soil material for road subgrade and road fill depends largely on the texture of the soil material and its natural water content. Road subgrade is the prepared and compacted soil immediately below the pavement and to such depth as may affect the structural design. Highly plastic soil material is rated poor for road subgrade and poor or fair for road fill, depending on the natural water content and the ability to handle, dry, and compact the soil material. Highly erodible soils, such as those composed primarily of fine sand or silt, require moderately gentle slopes, close moisture control during compaction, and fast vegetation of side slopes to prevent erosion. These soils are rated fair for road subgrade and fair for road fill.

Summary of engineering problems by physiographic areas

The soils of Jackson County formed in Coastal Plain material. So that soil engineering can be discussed more readily, the two physical divisions of the county are described—the coastal flatwoods and the coastal plain hills.

COASTAL FLATWOODS.—The southern part of the county is flat or nearly flat. Scattered shallow drainageways and swales dissect the landscape. This area is known as the coastal flatwoods. Surface drainage is very slow, and the lower flat areas are often under water, which may be brackish during stormy seasons. From June to September, the monthly rainfall is between 7 and 9.5 inches. The water table is higher during this period than at other times of the year, and consequently the amount of earthwork that can be done is limited.

The chief soils in the coastal flatwoods area are Rains, Plummer, Scranton, Lynchburg, Bayboro, Coxville, and Dunbar. They are poorly drained and somewhat poorly drained. Rains, Plummer, Scranton, and Lynchburg soils are medium textured to coarse textured; their permeability is moderate to rapid, and their dispersion rate is high. Plummer and Scranton soils are good sources of sand and

their estimated physical properties—Continued

Depth from surface	Classification			Grain sizes—		Permeability	Available water capacity	Dispersion	Shrink-swell potential
	USDA texture	Unified	AASHO	Passing No. 10 sieve (2.0 mm.)	Passing No. 200 sieve (0.074 mm.)				
Inches				*Percent*	*Percent*	*Inches per hour*	*Inches per inch*		
0 to 4	Loam	SM–CL	A–4, A–6	100	35 to 55	0.20 to 0.80	0.10	Low	Moderate.
4 to 24	Varied					0.05 to 0.20	0.10 to 0.25.	Moderate to low.	Moderate.
24 to 50	Clay	CH	A–7	100	70 to 90	<0.05	0.22	Moderate to low.	High.
Varied	Varied								

[3] Inundated.

fill. Rains and Lynchburg soils are fair to good sources of fill.

Bayboro, Coxville, and Dunbar soils are fine textured. They contain a moderate amount of montmorillonite clay, and consequently they have a fairly high shrink-swell potential. These soils are sticky when wet. Permeability is slow, and the dispersion rate is low.

Bayboro, Coxville, and Dunbar soils need special preparation if used as roadbeds and building sites. They are poor for subgrades because contraction and expansion cause pavements to warp and crack. Cracking and warping can be minimized by using a foundation course (a thick layer of soil that shrinks and swells very little) beneath the pavement. The foundation course should extend through the shoulder of the road.

Coastal Plain Hills.—This part of the county consists of broad, nearly level to rolling uplands. The major streams have developed distinct valleys, and the soils in general have good surface drainage. Eustis, Lakeland, Klej, Ruston, Orangeburg, Goldsboro, Susquehanna, Bowie, and Boswell soils are predominant. They are predominantly well drained and moderately well drained. Ruston, Orangeburg, Lakeland, Eustis, Klej, and Goldsboro soils are medium textured to coarse textured. Permeability is moderate to rapid, and the dispersion rate is high. These soils are good sources of sand and fill and need little, if any, special preparation if used as roadbeds and building sites. They are stable for subgrades because of the low contraction and expansion. Lakeland, Eustis, and Klej soils are coarse textured, and are poorly suited to use as reservoir areas. Ruston, Orangeburg, and Goldsboro soils are medium textured and have a moderate seepage risk.

Susquehanna, Bowie, and Boswell soils are moderately fine textured to fine textured. They contain a moderate amount of montmorillonite clay, and consequently they have a fairly high shrink-swell potential. Permeability is slow, and the dispersion rate is moderate to low. The subsoil is sticky when wet. These soils need special preparation if used as roadbeds and building sites. They are poor for subgrades because of contraction and expansion. They are generally suited to use as reservoir areas.

Soils in the coastal plain hills are erodible, and ditches and gutters should be protected by sod, pavement, and check dams.

Descriptions of the Soils

In this section the soils mapped in Jackson County are briefly described. Descriptions of the soil series, arranged in alphabetic order, give the characteristics that are common to all the soils in each series. Descriptions of the mapping units give the characteristics that differentiate types and phases within each series. A more detailed description of a modal profile of each soil series is included in the section "Genesis, Morphology, and Classification of the Soils." Information on the use and management of each soil is given in the section "Use and Management of the Soils." Technical terms used in the soil descriptions are defined in the Glossary.

A list of the soils mapped is given in the "Guide to Mapping Units" at the back of this report. The location and distribution of the individual soils are shown on the detailed soil map at the back of this report.

The approximate acreage and proportionate extent of the soils are given in table 11.

Alluvial Land

Alluvial land (Ad).—This land type consists of stratified material of varied textures. It lacks profile development. It consists of recent alluvium deposited by the Pascagoula and Escatawpa Rivers. There are many oxbow lakes and old river runs and countless narrow sloughs

TABLE 10.—*Interpretations of*

Soil series and map symbols	Suitability for winter or wet weather grading	Suitability as source of—			Suitability for—		
		Topsoil	Sand	Road fill	Road subgrade	Foundations for low buildings (undisturbed areas)	Sewage disposal fields
Alluvial land (Ad)	Variable	Variable	Good in local areas.	Variable	Variable	Poor	Unsuitable
Bayboro (Ba)	Poor	Poor	Poor	Fair to poor	Poor	Poor	Unsuitable
Bowie (BoA, BoB, BoC, BoD)	Poor; high water table.	Fair	Poor	Fair to poor	Fair	Fair	Fair to poor
Coastal beach (Cb)	Good	Unsuitable	Good	Fair to good	Fair; good if stabilized.	Poor	Unsuitable
Coxville (Cx)	Poor; high water table.	Poor	Poor	Poor	Poor	Poor	Unsuitable
Dunbar (DbA, DbB)	Poor	Fair	Poor	Fair to poor	Poor	Poor	Poor
Dune land (Du)	Good	Unsuitable	Good	Fair to good	Fair; good if stabilized.	Poor	Poor
Eustis (EsB, EsC, EsE, EuC,[1] EuD[1])	Good	Poor	Fair	Fair to good	Fair; good if stabilized.	Good	Good
Fairhope (FaA, FaB, FaC)	Poor	Poor	Poor	Fair	Poor	Poor	Poor
Goldsboro (GoA, GoB, GoC)	Fair	Good	Poor	Fair to good	Fair to good	Good	Fair
Grady (Gr)	Poor	Poor	Poor	Poor	Poor	Unsuitable	Unsuitable
Klej (KsB, KsD)	Good	Poor	Fair	Good	Fair	Good	Good
Lakeland (LaB, LaC, LaE)	Good	Poor	Fair	Good	Fair	Good	Good
Lynchburg (LyA, LyB)	Poor	Fair to good	Poor	Fair to good	Fair to good	Good	Poor to fair
Made land (Ma)							

See footnotes at end of table.

engineering properties of the soils

Soil features affecting—					
Farm ponds		Agricultural drainage	Irrigation	Terraces and diversions	Waterways
Reservoir area	Embankment				
Variable	Variable	Variable	Variable		
Low seepage risk.	Moderate strength and stability; slow permeability.	Seasonal high water table; slow permeability.	High water-holding capacity; low to moderate intake rate.	Not needed	Low fertility; high water-holding capacity; slow permeability.
Low seepage risk.	Moderate strength and stability; slow permeability.	Moderate to slow permeability.	Moderate water-holding capacity; low to moderate intake rate.	Erodibility	Low fertility; moderate water-holding capacity; high erodibility.
High seepage risk.	Very rapid permeability.				
Low seepage risk.	Moderate to low strength; slow permeability.	Seasonal high water table; slow permeability.	High water-holding capacity; low intake rate.	Not needed	Low fertility; high water-holding capacity; slow permeability.
Low seepage risk.	Moderate to low strength and stability; slow permeability.	Seasonal high water table; slow permeability.	Moderate to high water-holding capacity; low to moderate intake rate.	Not needed	Low fertility; high water-holding capacity; slow permeability.
High seepage risk.	Very rapid permeability.		Low water-holding capacity; high intake rate.		
High seepage risk.	Low strength and stability; rapid permeability.	Not needed	Low water-holding capacity; high intake rate.	Uniform rapid permeability throughout.	Low fertility; low water-holding capacity; rapid permeability.
Low seepage risk.	Moderate to low strength and stability; slow permeability.	Moderate to slow permeability.	High water-holding capacity; low to moderate intake rate.	Erodibility	Low fertility; high water-holding capacity; high erodibility.
Moderate to low seepage risk.	Moderate to high strength and stability; moderate to slow permeability.	Moderate to slow permeability.	Moderate water-holding capacity; moderate intake rate.	Erodibility	Low fertility; moderate water-holding capacity; moderate erodibility.
Low seepage risk.	Moderate to low strength and stability; slow permeability.	Usually ponded; slow permeability.	Ponded areas	Not needed	Low fertility; high water-holding capacity.
High seepage risk.	Low to moderate strength and stability; moderate to high permeability.	Seasonal high water table; moderate permeability.	Low water-holding capacity; high intake rate.	Uniform rapid permeability.	Low fertility; low water-holding capacity; rapid permeability.
High seepage risk.	Low to moderate strength and stability; high permeability.	Not needed	Low water-holding capacity; high intake rate.	Uniform rapid permeability.	Low fertility; low water-holding capacity; rapid permeability.
Moderate to low seepage risk.	Moderate strength and stability; moderate permeability.	Seasonal high water table at depth of 6 to 18 inches.	Moderate water-holding capacity; moderate intake rate.	Erodibility	Low fertility; moderate water-holding capacity; moderate erodibility.
	Variable				Variable.

TABLE 10.—*Interpretations of*

Soil series and map symbols	Suitability for winter or wet weather grading	Suitability as source of—			Suitability for—		
		Topsoil	Sand	Road fill	Road subgrade	Foundations for low buildings (undisturbed areas)	Sewage disposal fields
Norfolk (NoA, NoB, NoC, NoD)	Good	Good	Fair	Good	Fair to good	Good	Good
Orangeburg (OrA)	Good	Good	Fair	Good	Fair to good	Good	Good
Pheba (PhA, PhB)	Poor	Poor	Poor	Fair	Poor	Fair	Poor
Plummer (Pm, Pn)	Fair	Poor	Good	Good	Fair	Good	Unsuitable
Rains (Ra)	Poor	Fair	Poor	Fair	Poor	Fair	Unsuitable
Ruston (RoA, RoB, RoC, RoD, (RoE)[2]	Good	Good	Fair	Good	Fair to good	Good	Good
Savannah (SbA, SbB)	Poor to fair	Fair	Poor	Poor to fair	Poor to fair	Good	Poor to fair
Scranton (ScA, ScB)	Fair	Poor	Good	Fair to good	Fair to good	Good	Poor to fair
Susquehanna, Bowie, and Boswell soils. (SuB, SuC, SuD)[3]	Poor	Poor	Poor	Poor	Poor	Poor	Unsuitable
Unclassified wet land types. (Sw, Tm)	Poor	Variable	Poor to good	Poor to fair	Poor	Poor	Unsuitable

[1] Undifferentiated units consisting of Eustis and Lakeland sands.
[2] Undifferentiated units consisting of Ruston and Orangeburg fine sandy loams. Orangeburg fine sandy loam is rated under the Orangeburg series.

engineering properties of the soils—Continued

Soil features affecting—					
Farm ponds		Agricultural drainage	Irrigation	Terraces and diversions	Waterways
Reservoir area	Embankment				
Moderate seepage risk.	Moderate to high strength and stability; moderate permeability.	Not needed	Moderate water-holding capacity; moderate intake rate.	Erodibility	Low fertility; moderate water-holding capacity; moderate erodibility.
Moderate seepage risk.	Moderate to high strength and stability; moderate permeability.	Not needed	Moderate water-holding capacity; moderate intake rate.	Erodibility	Low fertility; moderate water-holding capacity; moderate erodibility.
Low to moderate seepage risk.	Moderate to low stability; slow permeability.	Seasonal high water table at depth of 6 to 18 inches.	Moderate water-holding capacity; moderate intake rate.	Not needed	Low fertility; moderate water-holding capacity; moderate to slow permeability.
High seepage risk.	Low strength and stability; high permeability.	Seasonal water table near or above surface.	Low water-holding capacity; rapid intake rate.	Not needed	Low fertility; low water-holding capacity; rapid permeability.
Moderate seepage risk.	Moderate strength and stability; slow to moderate permeability.	Seasonal water table near or above surface.	Moderate water-holding capacity; moderate intake rate.	Not needed	Low fertility; moderate water-holding capacity; slow to moderate permeability.
Moderate seepage risk.	Moderate to high strength and stability; moderate permeability.	Not needed	Moderate water-holding capacity; moderate intake rate.	Erodibility	Low fertility; moderate water-holding capacity; moderate erodibility.
Moderate to low seepage risk.	Moderate to high strength and stability; moderate permeability.	Not needed	Moderate water-holding capacity; moderate intake rate.	Erodibility	Low fertility; moderate water-holding capacity; moderate erodibility.
High seepage risk.	Low to moderate strength and stability; high permeability.	Seasonal high water table at depth of 6 to 18 inches.	Low water-holding capacity; high intake rate.	Not needed	Low-fertility; low water-holding capacity; rapid permeability.
Low seepage risk.	Moderate to low strength and stability; slow permeability.	Seasonal high water table at depth of 6 to 18 inches.	High water-holding capacity; low intake rate.	Erodibility	Low fertility; high water-holding capacity; high erodibility; slow permeability.
Variable	Variable	Water on the surface	Variable	Variable	Variable in fertility and water-holding capacity.

[3] Undifferentiated units consisting of Susquehanna, Bowie, and Boswell soils. Bowie loam is rated under the Bowie series.

TABLE 11.—*Approximate acreage and proportionate extent of the soils*

Soil	Acres	Percent	Soil	Acres	Percent
Alluvial land	47, 346	9. 9	Norfolk fine sandy loam, 0 to 2 percent slopes	3, 382	. 7
Bayboro silt loam	9, 896	2. 1	Norfolk fine sandy loam, 2 to 5 percent slopes	19, 160	4. 0
Bowie loam, 0 to 2 percent slopes	3, 262	. 7	Norfolk fine sandy loam, 5 to 8 percent slopes	5, 261	1. 1
Bowie loam, 2 to 5 percent slopes	7, 973	1. 7	Norfolk fine sandy loam, 8 to 12 percent slopes	1, 380	. 3
Bowie loam, 5 to 8 percent slopes	4, 795	1. 0	Orangeburg fine sandy loam, 0 to 2 percent slopes	488	. 1
Bowie loam, 8 to 12 percent slopes	862	. 2	Pheba loam, 0 to 2 percent slopes	3, 494	. 7
Coastal beach	2, 861	. 6	Pheba loam, 2 to 5 percent slopes	897	. 2
Coxville silt loam	5, 844	1. 2	Plummer loamy sand	14, 432	3. 0
Dunbar loam, 0 to 2 percent slopes	7, 287	1. 5	Plummer loamy sand, dark surface	1, 904	. 4
Dunbar loam, 2 to 5 percent slopes	1, 047	. 2	Rains loam, dark surface	54, 651	11. 5
Dune land	1, 819	. 4	Ruston and Orangeburg fine sandy loams, 0 to 2 percent slopes	3, 834	. 8
Eustis loamy sand, 0 to 5 percent slopes	12, 399	2. 6	Ruston and Orangeburg fine sandy loams, 2 to 5 percent slopes	12, 627	2. 7
Eustis loamy sand, 5 to 8 percent slopes	1, 713	. 4	Ruston and Orangeburg fine sandy loams, 5 to 8 percent slopes	3, 786	. 8
Eustis loamy sand, 8 to 17 percent slopes	815	. 2	Ruston and Orangeburg fine sandy loams, 8 to 12 percent slopes	1, 809	. 4
Eustis and Lakeland sands, 0 to 8 percent slopes	2, 486	. 5	Ruston and Orangeburg fine sandy loams, 12 to 17 percent slopes	476	. 1
Eustis and Lakeland sands, 8 to 12 percent slopes	357	. 1	Sandy and clayey land	13, 224	2. 8
Fairhope very fine sandy loam, 0 to 2 percent slopes	367	. 1	Savannah loam, 0 to 2 percent slopes	551	. 1
Fairhope very fine sandy loam, 2 to 5 percent slopes	1, 332	. 3	Savannah loam, 2 to 5 percent slopes	627	. 1
Fairhope very fine sandy loam, 5 to 8 percent slopes	568	. 1	Scranton loamy sand, 0 to 2 percent slopes	6, 438	1. 4
Goldsboro loam, 0 to 2 percent slopes	17, 368	3. 6	Scranton loamy sand, 2 to 5 percent slopes	809	. 2
Goldsboro loam, 2 to 5 percent slopes	34, 858	7. 3	Susquehanna, Bowie, and Boswell soils, 2 to 5 percent slopes	5, 926	1. 2
Goldsboro loam, 5 to 8 percent slopes	6, 187	1. 3	Susquehanna, Bowie, and Boswell soils, 5 to 8 percent slopes	7, 080	1. 5
Grady soils	974	. 2	Susquehanna, Bowie, and Boswell soils, 8 to 12 percent slopes	4, 114	. 9
Klej loamy sand, 0 to 5 percent slopes	18, 409	3. 9	Swamp	53, 360	11. 2
Klej loamy sand, 5 to 12 percent slopes	5, 772	1. 2	Tidal marsh	24, 114	5. 1
Lakeland loamy sand, 0 to 5 percent slopes	3, 008	. 6			
Lakeland loamy sand, 5 to 8 percent slopes	1, 057	. 2			
Lakeland loamy sand, 8 to 17 percent slopes	324	. 1			
Lynchburg very fine sandy loam, 0 to 2 percent slopes	15, 378	3. 2			
Lynchburg very fine sandy loam, 2 to 5 percent slopes	14, 472	3. 0			
Made land	1, 500	. 3	Total	476, 160	100. 0

in these areas. Floods occur several times a year, and water drains off slowly.

Alluvial land is heavily forested with ash, tupelo-gum, sweetgum, and oaks. In the sloughs are baldcypress and water tupelo. (Capability unit Vw–3; woodland group 1; forage site E)

Bayboro Series

The Bayboro series consists of very poorly drained soils of the coastal flatwoods. These soils were formed in acid clay loam of the Coastal Plain. The surface layer is black silt loam. The subsoil is dark-gray clay loam underlain by clay to clay loam at a depth of 24 to 55 inches.

These soils are moderately low in natural fertility, moderate to high in organic-matter content, and strongly acid or very strongly acid.

Bayboro soils occur on broad, level to nearly level areas. They are not so fine textured in the subsoil as Coxville soils. They are more poorly drained than Dunbar soils.

Bayboro soils occur as large areas, chiefly in the southern part of the county. Natural vegetation consists of slash pine, pondcypress, blackgum, and an understory of wiregrass, rushes, sedges, and gallberry. Poor drainage limits the suitability of these soils for cultivation.

Bayboro silt loam (Ba).—This is a poorly drained soil of the coastal flatwoods. The major horizons are—

0 to 8 inches, black, friable silt loam; fine, crumb structure.
8 to 24 inches, dark-gray clay loam mottled with yellowish brown; medium, blocky structure.
24 to 42 inches, gray, firm clay loam mottled with yellowish brown and red; medium, blocky structure.

The surface layer ranges from sandy loam to silt loam It is 3 to about 9 inches thick. The subsoil is clayey. Included in the areas mapped are areas of Coxville and Dunbar soils that are too small to be mapped separately.

This soil is strongly acid. Natural fertility is moderately low. The available moisture capacity is medium to high. The subsoil is slowly permeable. It is sticky when wet, and it is hard and cracked when dry. Slow permeability and lack of slope cause surface ponding. Tilth is good. (Capability unit IIIw–4; woodland group 5; forage site A)

Boswell Series

The Boswell series consists of gently sloping to strongly sloping, moderately well drained soils of the uplands. These soils were formed in clayey Coastal Plain material. The surface layer is dark grayish-brown very fine sandy loam, and the subsoil is yellowish-red, plastic clay.

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

Boswell soils occur with Bowie and Susquehanna soils. Boswell soils are similar to Susquehanna soils in texture,

but they are redder and better drained. They are finer textured and redder in the upper part of the subsoil than Bowie soils.

In Jackson County, Boswell soils are mapped only in undifferentiated units, with Bowie and Susquehanna soils. These units occur as fairly large areas in the northwestern part of the county. The native vegetation consists chiefly of longleaf pine; but includes some slash pine, loblolly pine, and hardwoods. The understory consists chiefly of dogwood, hawthorn, shrubs, and grass. Most of the acreage is in longleaf pine. Shallowness to the dense plastic clay limits the suitability of these soils for cultivation.

A representative profile of Boswell very fine sandy loam is described under the heading "Susquehanna, Bowie, and Boswell soils, 2 to 5 percent slopes."

Bowie Series

The Bowie series consists of moderately well drained, strongly acid soils of the uplands. These soils were formed in acid loam and sandy loam of the Coastal Plain. The surface layer is dark grayish-brown or gray loam, and the subsoil is yellowish-brown clay loam overlying mottled clay. The slope range is 0 to 12 percent.

Bowie soils are much like Savannah soils, but Savannah soils have a fragipan in the lower part of the subsoil. Bowie soils have a yellowish-brown subsoil, and Ruston soils have a yellowish-red subsoil. Bowie soils have more fine material in the lower part of the subsoil than Ruston soils.

Bowie soils occur as small areas throughout this county. The largest area is northwest of Vancleave. Natural vegetation consists of pine, some hardwoods, and an understory of dogwood, shrubs, and wiregrass. Most of the acreage is in forest, but some areas are cultivated or used for permanent pasture.

Bowie loam, 2 to 5 percent slopes (BoB).—This is a moderately well drained soil of the uplands. The major horizons are—

0 to 8 inches, very dark grayish-brown loam; weak, fine, crumb structure.
8 to 35 inches, yellowish-brown loam to clay loam mottled with yellowish red, light gray, and red; medium, blocky structure.
35 to 50 inches, yellowish-brown clay loam mottled with gray and red; fine, medium, blocky structure.
50 to 62 inches+, light gray, firm silty clay.

The texture of the surface layer ranges from sandy loam to loam. The color varies from yellow to yellowish red in the lower layers. The upper layers of the subsoil range from sandy loam to loam, and the lower layers range from silty clay loam to clay. Included in the areas mapped are areas of Goldsboro soils that are too small to be mapped separately.

This soil is strongly acid. Natural fertility is low, and the organic-matter content is moderate to low. The available moisture capacity is moderate. Runoff is moderate. The surface layer is easy to keep in good tilth.

Most of the acreage is in forest and pasture, but this soil is suited to a wide range of crops. It requires careful management that controls erosion. Crops respond to fertilizer. (Capability unit IIe–1; woodland group 3; forage site B)

Bowie loam, 0 to 2 percent slopes (BoA).—The surface layer of this soil is 9 to 11 inches thick. Most of the acreage is in forest, but a small acreage is in pasture. This soil is suited to most crops, and it is well suited to pasture and to longleaf pine and slash pine. (Capability unit IIw–1; woodland group 3; forage site B)

Bowie loam, 5 to 8 percent slopes (BoC).—The surface layer of this soil is more varied and in places is 1 to 2 inches thinner than the surface layer of Bowie loam, 2 to 5 percent slopes. Most of the acreage is in forest. A small acreage is in pasture. This soil is well suited to pasture and to longleaf pine and slash pine. (Capability unit IIIe–2; woodland group 3; forage site B)

Bowie loam, 8 to 12 percent slopes (BoD).—The surface layer of this soil is 6 or 7 inches thick. All of the acreage is in forest. This soil is suited to pasture. It is well suited to slash pine and longleaf pine. (Capability unit IVe–1; woodland group 3; forage site B)

Coastal Beach

Coastal beach (Cb).—This land type is composed of clean, white sand. It occurs as relatively narrow bands along the beaches of the Mississippi Sound and around Petit Bois, Horn, and Round Islands. The slope range is 0 to 5 percent. (Capability unit VIIIs–1)

Coxville Series

The Coxville series consists of poorly drained soils of the coastal flatwoods. These soils were formed in acid clay and silty clay of the lower Coastal Plain. The surface layer is very dark gray silt loam. The subsoil is gray clay mottled with red and yellow. This mottled clay layer is at a depth of 6 to 18 inches. The slope range is 0 to 2 percent.

These soils are low in natural fertility, moderate in organic-matter content, and very strongly acid. Water enters these soils at a moderate to slow rate, but the internal movement of water is very slow.

Coxville soils have a finer textured subsoil than Rains and Bayboro soils. Coxville soils are more poorly drained than Dunbar soils and are finer textured in the upper part of the subsoil.

Coxville soils occur mostly in the southern part of this county. Natural vegetation consists of slash pine, low shrubs, rushes, sedges, and wiregrass. These soils are poorly suited to cultivated crops. They are suited to pasture and to wood crops.

Coxville silt loam (Cx).—This is a poorly drained soil of the coastal flatwoods. The major horizons are—

0 to 5 inches, very dark gray, friable silt loam; medium, crumb structure.
5 to 7 inches, light olive-brown silt loam mottled with yellowish brown and very dark gray; fine, crumb structure.
7 to 56 inches +, gray silty clay or clay mottled with red; massive; slightly plastic.

The surface layer is black to very dark gray sandy loam to silt loam. The subsoil is silty clay or clay. Depth to the clay layer varies from 5 to 18 inches. Included in the areas mapped are areas of Dunbar and Bayboro soils that are too small to be mapped separately.

This soil is very strongly acid. Natural fertility is low, and the organic-matter content is moderate. The available moisture capacity is medium to high. The surface layer is fairly easy to till, but tillage is restricted to a fairly nar-

row range of water content. The subsoil is slowly permeable. It is sticky when wet, and it is hard and cracked when dry. Because of slow permeability and flat topography, runoff is very slow.

This soil is suited to permanent pasture and to slash pine. Poor drainage and the dense plastic clay layer greatly limit its suitability for cultivation. (Capability unit IIIw–3; woodland group 5; forage site A)

Dunbar Series

The Dunbar series consists of nearly level to gently sloping, somewhat poorly drained soils that were formed in Coastal Plain material, chiefly clay and loam. The surface layer is black to dark grayish-brown loam, and the subsoil is olive-brown loam over mottled clay. The clay is at a depth of about 24 inches.

These soils are low in natural fertility, moderate in organic-matter content, and strongly acid.

Dunbar soils occur with Goldsboro, Lynchburg, and Coxville soils. They are more poorly drained than Goldsboro soils and are finer textured in the lower part of the subsoil. They are finer textured in the lower part of the subsoil than Lynchburg soils. Dunbar soils are better drained than Coxville soils and are coarser textured in the upper part of the subsoil.

Dunbar soils occur mostly as fairly large areas in the southern part of this county. The native vegetation consists of longleaf pine, slash pine, loblolly pine, and some hardwoods. The understory consists chiefly of gallberry, rushes, sedges, and wiregrass. Most of the acreage is being planted to slash pine. A small acreage is used for pasture and crops.

Dunbar loam, 0 to 2 percent slopes (DbA).—This is a somewhat poorly drained soil of the coastal flatwoods. The major horizons are—

0 to 5 inches, black loam; medium, crumb structure.
5 to 18 inches, dark grayish-brown to light olive-brown, friable loam; medium, subangular blocky structure.
18 to 42 inches +, mottled, light brownish-gray, red, and yellow clay loam to gray clay mottled with yellowish brown and red; medium, blocky structure.

The texture of the surface layer ranges from silt loam to very fine sandy loam. The subsoil is plastic. Depth to the mottled clay layer ranges from 18 to 30 inches. Included in the areas mapped are areas of Lynchburg and Coxville soils that are too small to be mapped separately.

The soil is strongly acid. Natural fertility is low, and the organic-matter content is moderate. The available moisture capacity is moderate. Permeability is very slow in the lower part of the subsoil. Runoff is slow. The surface layer is in good tilth.

If excess surface water is drained off, this soil is suitable for cultivation. Crops respond to good management. This soil is well suited to pasture and to pine forest. (Capability unit IIw–2; woodland group 3; forage site A)

Dunbar loam, 2 to 5 percent slopes (DbB).—This soil has a friable surface layer. Water is absorbed readily, but it moves slowly through the tight subsoil. Natural fertility is low, the organic-matter content is moderate, and the reaction is strongly acid.

If well managed, this soil is suited to cultivation. It is well suited to permanent pasture and to pine forest. (Capability unit IIe–2; woodland group 3; forage site A)

Dune Land

Dune land (Du).—This land type consists of hillocks or low ridges of sand drifted and piled up by the wind and either actively shifting or so recently stabilized that no soil horizons have been developed.

This land type occurs on Petit Bois, Horn, and Round Islands and along some of the broad beaches. (Capability unit VIIIs–1)

Eustis Series

The Eustis series consists of nearly level to strongly sloping, well-drained to excessively drained soils that were formed in sandy Coastal Plain material. The surface layer is dark-gray loamy sand, and the subsoil is strong-brown to yellowish-red loamy sand. Eustis soils are loose and sandy to a depth of 30 inches or more.

These soils are low in natural fertility, low to very low in available moisture capacity, and strongly acid.

Eustis soils occur with Lakeland, Ruston, and Klej soils on the uplands. Eustis soils are similar to Lakeland soils in drainage and texture, but they have a strong-brown to yellowish-red subsoil and, in contrast, Lakeland soils have a yellowish-brown subsoil. Eustis soils are coarser textured than Ruston soils. They are better drained than Klej soils.

Eustis soils occur mostly as small to medium-sized areas in this county. Natural vegetation consists chiefly of longleaf pine, but includes scrub oak. The understory is chiefly scrub palmetto, low shrubs, and grass. Most of the acreage is in forest. These soils are suited to early truck crops, the commonly grown row crops, orchard crops, and pasture.

Eustis loamy sand, 0 to 5 percent slopes (EsB).—This is a somewhat excessively drained soil of the uplands. The major horizons are—

0 to 9 inches, very dark gray to dark grayish-brown loamy sand; friable; weak, medium, crumb structure.
9 to 17 inches, yellowish-brown, friable loamy sand.
17 to 60 inches +, strong-brown to reddish-yellow, loose, friable loamy sand.

The texture ranges from loamy sand to coarse sandy loam. The color of the subsoil is yellowish red to strong brown. Included in the areas mapped are areas of Lakeland and Ruston soils that are too small to be mapped separately.

This soil is strongly acid. Natural fertility is low, and the organic-matter content is low. The available moisture capacity is low. Water enters and moves through this soil at a rapid rate, and little or no water runs off. The surface layer has good tilth.

This soil is suited to a wide range of cultivated crops, to pasture, and to forest. Crops respond to good management. (Capability unit IIIs–1; woodland group 7; forage site C)

Eustis loamy sand, 5 to 8 percent slopes (EsC).—This soil is more droughty than Eustis loamy sand, 0 to 5 percent slopes, and it is more susceptible to erosion.

All of this soil is presently being used for the production of wood crops. (Capability unit IVs–1; woodland group 7; forage site C)

Eustis loamy sand, 8 to 17 percent slopes (EsE).—This soil is more droughty than Eustis loamy sand, 0 to 5 per-

cent slopes, it loses more water through runoff, and it is more likely to erode. The surface layer is 5 to 7 inches thick.

All of this soil is used for the production of wood crops. (Capability unit VIs–1; woodland group 7; forage site C)

Eustis and Lakeland sands, 0 to 8 percent slopes (EuC).—This unit occurs as relatively small areas throughout the county.

The major horizons of Eustis sand are—

0 to 13 inches, very dark gray to brown sand.
13 to 50 inches, yellowish-brown to strong-brown loamy sand.
50 to 72 inches +, reddish-yellow, loose sand mottled with pale brown.

The major horizons of Lakeland sand are—

0 to 5 inches, grayish-brown, loose sand.
5 to 28 inches, brownish-yellow fine sand.
28 to 54 inches +, yellow to reddish-yellow, loose fine sand.

Water moves into and through these soils at a very rapid rate. The available moisture capacity is very low. Natural fertility is low, and the organic-matter content is low. The reaction is strongly acid.

These soils are low in productivity. They support sparse stands of scrub oak, longleaf pine, shrubs, and grass. (Capability unit IVs–2; woodland group 6; forage site C)

Eustis and Lakeland sands, 8 to 12 percent slopes (EuD).—These soils are more susceptible to erosion than Eustis and Lakeland sands, 0 to 8 percent slopes. They are porous, and much of the rainwater percolates through them. The available moisture capacity is very low. (Capability unit VIs–1; woodland group 6; forage site C)

Fairhope Series

The Fairhope series consists of moderately well drained soils of the coastal flatwoods. These soils were formed in beds of heavy clay and fine sandy clay. The slope range is 0 to 8 percent.

These soils are low in natural fertility, moderate in available moisture capacity, and low in organic-matter content.

Fairhope soils are better drained than Coxville, Dunbar, and Bayboro soils. They are redder than Goldsboro soils and are finer textured in the subsoil.

Fairhope soils occur as narrow bands along drainageways, mainly north of the Escatawpa River. The native vegetation is a mixed stand of hardwoods, longleaf pine, and loblolly pine. The understory is gallberry, waxmyrtle, low shrubs, and grass. These soils are suited to most pasture crops and to a limited number of row crops.

Fairhope very fine sandy loam, 2 to 5 percent slopes (FaB).—This is a moderately well drained soil of the coastal flatwoods. The major horizons are—

0 to 7 inches, dark grayish-brown, friable very fine sandy loam; weak, medium, crumb structure.
7 to 21 inches, yellowish-brown to yellowish-red loam to clay loam; moderate, medium, blocky structure.
21 to 50 inches +, mottled, brown, red, yellowish-red, brownish-gray, and light-gray clay; strong, medium, blocky structure.

The surface layer is 5 to 7 inches thick. In some areas the upper subsoil at 7 to 21 inches is sandier than in the profile described.

This soil is strongly acid. Natural fertility is low, and the organic-matter content is low. Water moves into and through the upper layer at a moderate rate but is retarded in the clay layer. Runoff is moderate.

This soil is suited to wood crops, to a limited number of row crops, and to pasture. All of the acreage is in forest. (Capability unit IIe–3; woodland group 9; forage site A)

Fairhope very fine sandy loam, 0 to 2 percent slopes (FaA).—The surface layer of this soil is 7 to 9 inches thick. Runoff is slow. This soil can be worked easily over a wide range of moisture content. Surface drainage is needed if row crops are grown. (Capability unit IIw–3; woodland group 9; forage site A)

Fairhope very fine sandy loam, 5 to 8 percent slopes (FaC).—This soil is more susceptible to erosion than Fairhope very fine sandy loam, 2 to 5 percent slopes. The surface layer is 5 to 7 inches thick. Runoff is rapid. All of the acreage is used for the production of wood crops. (Capability unit IIIe–2; woodland group 9; forage site A)

Goldsboro Series

The Goldsboro series consists of nearly level to moderately sloping, moderately well drained soils that were formed in medium-textured Coastal Plain material. The surface layer is very dark gray loam, and the subsoil is yellowish-brown loam. The subsoil is mottled at a depth of about 24 inches.

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

Goldsboro soils occur with Norfolk, Dunbar, and Lynchburg soils on the uplands. Goldsboro soils are more poorly drained than Norfolk soils. They are better drained than Dunbar soils and are coarser textured in the lower part of the subsoil. They are better drained than Lynchburg soils.

Goldsboro soils occur as fairly large areas throughout the county. The native vegetation consists mostly of longleaf pine, but includes some loblolly pine, slash pine, and hardwoods. The understory consists chiefly of dogwood, hawthorn, gallberry, and grass. Most of the acreage is in forest. Some areas are used for crops and pasture. These soils are well suited to truck crops, row crops, pasture, and pecans.

Goldsboro loam, 0 to 2 percent slopes (GoA).—This is a moderately well drained soil of the uplands. The major horizons are—

0 to 9 inches, very dark gray to light olive-brown, friable loam; crumb structure.
9 to 33 inches, yellowish-brown to olive-yellow, friable loam mottled with yellowish red and pale yellow; moderate, blocky structure.
33 to 50 inches +, light olive-brown, friable loam mottled with yellowish brown and pale yellow; moderate, blocky structure.

Areas under cultivation have a light olive-brown plow layer. The texture of the surface layer ranges from sandy loam to silt loam. The subsoil is chiefly loam, but in some places it is sandy loam or clay loam. Depth to mottling ranges from 18 to 30 inches. Included in the areas mapped are areas of Lynchburg and Norfolk soils that are too small to be mapped separately.

This soil is strongly acid. Natural fertility is low, and the organic-matter content is low. The available moisture capacity is moderate. Water moves into and through this soil at a moderate rate. Runoff is slow. Surface drainage is generally needed. The surface layer is in good tilth and can be worked throughout a wide range of moisture content.

This is an important agricultural soil. It is productive, but it generally needs surface drainage. It is well suited to a wide variety of crops, to permanent pasture, and to trees. Crops respond to good management. (Capability unit IIw–1; woodland group 3; forage site A)

Goldsboro loam, 2 to 5 percent slopes (GoB).—This soil has more rapid runoff than Goldsboro loam, 0 to 2 percent slopes, and is more susceptible to erosion. The surface layer is 7 to 9 inches thick. Most of the acreage is in forest. Small areas are used for pasture and cultivated crops. (Capability unit IIe–1; woodland group 3; forage site A)

Goldsboro loam, 5 to 8 percent slopes (GoC).—The surface layer of this soil is 7 to 9 inches thick. Runoff is more rapid than on Goldsboro loam, 0 to 2 percent slopes, and the erosion hazard is greater. (Capability unit IIIe–1; woodland group 3; forage site A)

Grady Series

The Grady series consists of poorly drained to very poorly drained, medium-textured soils underlain by clay. These soils occur in depressions that have a dense growth of swamp-type vegetation. In many of these depressions, seepage or runoff water collects. In some areas, water stands on the surface most of each year. For this reason these areas are referred to locally as Grady ponds.

Grady soils are similar to Bayboro and Coxville soils, but they are more poorly drained. They have a finer textured subsoil than Rains and Plummer soils.

The native vegetation consists of pondcypress, water tupelo, baldcypress, bay, rushes, sedges, and grass. These soils are suited to wood crops. They can also be used as wildlife habitats and as sites for stock ponds.

Grady soils (Gr).—These are shallow, medium-textured, poorly drained soils. The major horizons are—

0 to 7 inches, black to very dark gray silt loam or loam; friable; crumb structure.
7 to 29 inches, gray clay loam mottled with brownish yellow; slightly plastic; crumb structure.
29 to 50 inches +, gray, plastic clay; many, prominent mottles of red and brownish yellow; blocky structure.

The surface layer ranges from sandy loam to silt loam. The plastic clay layer is solid gray in some places.

Natural vegetation consists of water tupelo, pondcypress, and bay. Most of this soil is in forest. (Capability unit Vw–2; woodland group 11; forage site A)

Klej Series

The Klej series consists of coarse-textured, moderately well drained soils that were formed in thick beds of acid loamy sand and sandy loam. The surface layer is very dark grayish-brown loamy sand, and the subsoil is yellowish-brown to pale-brown loamy sand. The slope range is 0 to 12 percent.

Natural fertility is low. The available moisture capacity is low. Water moves into and through these soils at a rapid rate. These soils are in good tilth and can be worked throughout a very wide range of moisture content.

Klej soils are less well drained than Ruston and Norfolk soils, and they have a coarser textured subsoil. They are less well drained than Lakeland and Eustis soils. They have a yellow subsoil, and Ruston and Eustis soils have a yellowish-red or strong-brown subsoil. Klej soils are better drained than Scranton soils.

Klej soils occur as moderate-sized areas throughout this county. The native vegetation consists chiefly of longleaf pine but includes some slash pine, loblolly pine, and hardwoods. The understory consists chiefly of dogwood, shrubs, and grass. These soils are suited to truck crops, to most commonly grown row crops, and to pasture crops.

Klej loamy sand, 0 to 5 percent slopes (KsB).—This is a moderately well drained soil. The major horizons are—

0 to 8 inches, very dark grayish-brown to grayish-brown, very friable loamy sand; crumb structure.
8 to 24 inches, yellowish-brown to brownish-yellow, very friable loamy sand.
24 to 40 inches +, brownish-yellow to mottled, pale-brown, brownish-yellow, and yellowish-red, loose loamy sand.

Areas under cultivation have a light brownish-gray plow layer. The surface layer is loamy sand to coarse sandy loam. The subsoil varies from coarse sandy loam to loamy sand. Mottling occurs at a depth of more than 24 inches. Included in the areas mapped are some areas of Lakeland and Goldsboro soils that are too small to be mapped separately.

This soil is strongly acid. Natural fertility is low, and the organic-matter content is low. The available moisture capacity is low. Water moves into and through this soil at a rapid rate. Surface runoff is slow. The surface layer is easy to work.

This soil is suited to a wide range of crops. It is well suited to permanent pasture and to forest. Crops respond to good management. (Capability unit IIIs–2; woodland group 4; forage site A)

Klej loamy sand, 5 to 12 percent slopes (KsD).—This 0 to 5 percent slopes. The surface layer is 6 to 8 inches thick. (Capability unit IVs–1; woodland group 4; forage site A)

Lakeland Series

The Lakeland series consists of nearly level to strongly sloping, well-drained to excessively drained soils that were formed in sandy Coastal Plain material. The surface layer is dark grayish-brown loamy sand, and the subsoil is brownish-yellow to yellowish-brown loamy sand. Lakeland soils are loose and sandy to a depth of 30 inches or more.

These soils are low in natural fertility, low to very low in available moisture capacity, and strongly acid.

Lakeland soils occur with Eustis, Norfolk, and Klej soils on the uplands. Lakeland soils are similar to Eustis soils in drainage and texture, but they have a yellowish-brown or brownish-yellow subsoil, and Eustis soils have a strong-brown to yellowish-red subsoil. Lakeland soils are coarser textured than Norfolk soils. They are better drained than Klej soils.

Lakeland soils occur mostly as small to medium-sized areas in this county. Natural vegetation consists chiefly of longleaf pine but includes scrub oak. The understory is chiefly scrub palmetto, low shrubs, and grass. Most of the acreage is in forest. These soils are suited to early truck crops, to the commonly grown row crops, to orchard crops, and to pasture crops.

Lakeland loamy sand, 0 to 5 percent slopes (LaB).—This is a somewhat excessively drained soil of the uplands. The major horizons are—

0 to 20 inches, dark grayish-brown to olive-brown, loose loamy sand.
20 to 36 inches, brownish-yellow, loose loamy sand.
36 to 50 inches +, yellow, loose loamy sand.

Areas under cultivation have a light grayish-brown plow layer. The subsoil ranges from coarse sandy loam to loamy sand. It is 30 to 60 inches thick. Included in the areas mapped are areas of Eustis and Norfolk soils that are too small to be mapped separately.

This soil is strongly acid. Natural fertility is low, and the organic-matter content is low. The available moisture capacity is low. Water moves into and through this soil at a rapid rate. The surface layer is in good tilth.

This soil is suited to a wide variety of row crops, but yields are low in dry years. It is well suited to pasture and to forest. (Capability unit IIIs–1; woodland group 7; forage site C)

Lakeland loamy sand, 5 to 8 percent slopes (LaC).—This soil is more susceptible to erosion than Lakeland loamy sand, 0 to 5 percent slopes. All of the acreage is presently used for the production of wood crops. (Capability unit IVs–1; woodland group 7; forage site C)

Lakeland loamy sand, 8 to 17 percent slopes (LaE).—This soil is more droughty than Lakeland loamy sand, 0 to 5 percent slopes, has more rapid runoff, and is more susceptible to erosion. The surface layer is 5 to 7 inches thick.

All of the acreage is used for the production of wood crops. (Capability unit VIs–1; woodland group 7; forage site C)

Lynchburg Series

The Lynchburg series consists of nearly level to gently sloping, somewhat poorly drained soils that were formed in sandy Coastal Plain material. The surface layer is very dark grayish-brown very fine sandy loam, and the subsoil is pale-yellow to light yellowish-brown very fine sandy loam. Mottles occur at a depth of about 12 inches.

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

Lynchburg soils occur with Goldsboro, Rains, and Dunbar soils. Lynchburg soils are more poorly drained than Goldsboro soils. They are better drained than Rains soils. They are coarser textured in the lower part of the subsoil than Dunbar soils.

Lynchburg soils occur as small to fairly large areas, mostly in the southern part of this county. The native vegetation consists mostly of longleaf pine, slash pine and loblolly pine but includes some hardwoods. The understory consists chiefly of gallberry, woody shrubs, and grass. Most of the acreage is in forest. Small areas are cultivated or used for pasture. If adequately drained, these soils are suited to most of the commonly grown row crops. The undrained areas are best suited to pasture and to pine trees.

Lynchburg very fine sandy loam, 2 to 5 percent slopes (LyB).—This is a somewhat poorly drained soil of the coastal flatwoods. The major horizons are—

0 to 7 inches, very dark grayish-brown to dark grayish-brown, friable very fine sandy loam; crumb structure.
7 to 28 inches, pale-yellow to light yellowish-brown fine sandy loam mottled with yellow, olive yellow, and yellowish red; weak, blocky structure.
28 to 50 inches +, mottled, light-red, light-gray, and brownish-yellow fine sandy loam; moderate, blocky structure.

Areas under cultivation have a light grayish-brown plow layer. The surface layer varies from very fine sandy loam to loam. The texture of the lower layers ranges from sandy loam to clay loam. Included in the areas mapped are some areas of Goldsboro and Rains soils that are too small to be mapped separately.

This soil is strongly acid. Natural fertility is low, and the organic-matter content is low. The available moisture capacity is moderate. Permeability is moderate to slow in the surface layer. Water moves into and through this soil at a moderate rate. The surface layer has good tilth.

Cultivated areas of this soil need graded rows and W-type ditches for the removal of excess water. Undrained areas are well suited to pasture and to wood crops. Crops respond to good management. (Capability unit IIe–2; woodland group 3; forage site A)

Lynchburg very fine sandy loam, 0 to 2 percent slopes (LyA).—This soil is more poorly drained than Lynchburg very fine sandy loam, 2 to 5 percent slopes. It has much slower runoff and a darker colored surface layer. The surface layer is 7 to 9 inches thick.

If adequately drained, this soil is well suited to cultivated crops. Undrained areas are well suited to pasture and to wood crops. (Capability unit IIw–2; woodland group 3; forage site A)

Made Land

Made land (Ma).—This land type is made up of areas that are along the beaches and marshes and that have been diked and then filled, by pumping, with silt, mud, and sand. After these areas are dry, they are leveled and then they are used for industrial sites and residential sites. (No capability classification)

Norfolk Series

The Norfolk series consists of deep, well-drained soils of the uplands. These soils were formed in thick beds of Coastal Plain material consisting of layers of loamy sand, sandy loam, loam, and sandy clay loam. The surface layer is grayish-brown fine sandy loam, and the subsoil is yellowish-brown, friable sandy loam to loam.

These soils are low in natural fertility, low in organic-matter content, and strongly acid.

Norfolk soils are better drained than Goldsboro soils. They are better drained than Bowie soils and are coarser textured in the lower part of the subsoil. They are finer textured throughout the profile than Lakeland soils. Norfolk soils are yellowish brown, and Ruston soils are yellowish red.

688–773—64——5

Norfolk soils generally occur in the central part of the county. Natural vegetation consists mostly of longleaf pine and slash pine, but it includes a little scattered red oak, post oak, scrub white oak, and blackjack oak. The understory consists chiefly of gallberry, waxmyrtle, and wiregrass.

Norfolk soils are among the most important agricultural soils in the county. A fairly large acreage is in cultivated crops and permanent pasture.

Norfolk fine sandy loam, 2 to 5 percent slopes (NoB).—This is a well-drained soil. The major horizons are—

0 to 7 inches, grayish-brown to brown, very friable fine sandy loam; crumb structure.
7 to 29 inches, yellowish-brown, very friable sandy loam; weak, blocky structure.
29 to 50 inches +, brownish-yellow, friable loam faintly mottled with yellowish red and yellowish brown; moderate, medium, blocky structure.

Areas under cultivation have a light grayish-brown surface layer. The texture of the subsoil ranges from sandy loam to light sandy clay loam. Some areas contain a few, small, round concretions. Included in the areas mapped are areas of Ruston, Savannah, and Goldsboro soils that are too small to be mapped separately.

The available moisture capacity is moderate. Runoff is medium to slow. Internal drainage is medium. The surface layer has good tilth.

This soil is well suited to cultivated crops, permanent pasture, and forest. (Capability unit IIe–1; woodland group 2; forage site B)

Norfolk fine sandy loam, 0 to 2 percent slopes (NoA).—This soil has much slower runoff than Norfolk fine sandy loam, 2 to 5 percent slopes. The surface layer is 7 to 9 inches thick.

This is one of the most important agricultural soils in the county. A large acreage is in cultivation, and a large acreage is used as permanent pasture. (Capability unit I–1; woodland group 2; forage site B)

Norfolk fine sandy loam, 5 to 8 percent slopes (NoC).—The surface layer of this soil is 5 to 7 inches thick. The rate of runoff is more rapid than on Norfolk fine sandy loam, 2 to 5 percent slopes. In cultivated areas erosion is a greater management problem. Most of the acreage is in forest. (Capability unit IIIe–1; woodland group 2; forage site B)

Norfolk fine sandy loam, 8 to 12 percent slopes (NoD).—The erosion hazard is more severe on this soil than on any of the other Norfolk soils. Runoff is much more rapid than on Norfolk fine sandy loam, 2 to 5 percent slopes. All of the acreage is in forest. (Capability unit IVe–1; woodland group 2; forage site B)

Orangeburg Series

The Orangeburg series consists of deep, nearly level to strongly sloping, well-drained soils of the uplands. These soils were formed in Coastal Plain material consisting of sandy loam, loam, and sandy clay loam. The surface layer is grayish brown and sandy, and the subsoil is red sandy loam to sandy clay loam.

These soils are low in natural fertility, low in organic matter content, and strongly acid.

Orangeburg soils occur with Ruston and Eustis soils. They have a red subsoil, and Ruston soils have a strong-brown or yellowish-red subsoil. Orangeburg soils are redder than Eustis soils and are finer textured.

Orangeburg soils are mapped separately in the far northeastern corner of the county. In other areas they are mapped as part of an undifferentiated unit with Ruston soils. Natural vegetation consists chiefly of longleaf pine, but it includes a little slash pine, loblolly pine, and dogwood, and also shrubs and grass. These soils are suited to most of the commonly grown crops and to orchards. They are well suited to pine trees.

Orangeburg fine sandy loam, 0 to 2 percent slopes (OrA).—This is a deep, well-drained soil of the uplands. The major horizons are—

0 to 9 inches, dark grayish-brown to very dark grayish-brown, very friable fine sandy loam; moderate, medium, crumb structure.
9 to 17 inches, yellowish-red, friable fine sandy loam; weak, blocky structure.
17 to 43 inches, red to dark-red, friable heavy fine sandy loam; moderate, blocky structure.

Areas under cultivation have a light grayish-brown surface layer.

This soil is strongly acid. Natural fertility is low, and the organic-matter content is low. The available moisture capacity is medium. Crops respond to good management.

This soil is well suited to most of the commonly grown crops, to orchard crops, to pasture, and to forest. (Capability unit I–1; woodland group 2; forage site B)

Pheba Series

The Pheba series consists of nearly level to moderately sloping, somewhat poorly drained soils that have a fragipan. These soils were formed in sandy loam Coastal Plain material. The surface layer is very dark-gray loam or sandy loam, and the subsoil is yellowish-brown loam or sandy loam. The loam fragipan is at a depth of about 18 inches, and it is 12 inches or more thick.

These soils are low in natural fertility, moderate in organic-matter content, and strongly acid.

Pheba soils occur with Savannah, Lynchburg, and Rains soils on the uplands. They are more poorly drained than Savannah soils. Pheba soils are similar to Lynchburg soils in drainage and texture, but Lynchburg soils do not have a fragipan. Pheba soils are better drained than Rains soils, which have no fragipan.

Pheba soils occur mostly as small areas throughout the county. The native vegetation consists mostly of slash pine and loblolly pine but includes some hardwoods. The understory consists chiefly of gallberry, hawthorn, shrubs, and wiregrass. These soils are only moderately productive, even if drained. They are suited to a limited number of row crops, to pasture, and to trees.

Pheba loam, 0 to 2 percent slopes (PhA).—This is a somewhat poorly drained soil that has a very weak to prominent fragipan layer. The major horizons are—

0 to 6 inches, very dark gray, friable loam; weak, fine, crumb structure.
6 to 18 inches, yellowish-brown, friable fine sandy loam to loam; weak, blocky structure.
18 to 25 inches, mottled, brownish-yellow, pale-brown, and strong-brown loam; compact, brittle (fragipan).

The depth to the fragipan ranges from 18 to 24 inches, and the thickness varies from a few inches to about 3 feet.

This soil is suited to permanent pasture and to forest. It is limited in use by the fragipan layer. (Capability unit IIIw–2; woodland group 10; forage site B)

Pheba loam, 2 to 5 percent slopes (PhB).—This soil has better surface drainage than Pheba loam, 0 to 2 percent slopes, and is more susceptible to erosion if cultivated. The depth to the fragipan is slightly less than in the nearly level soil.

This soil is suited to permanent pasture and to forest. (Capabiity unit IIIw–2; woodland group 10; forage site B)

Plummer Series

The Plummer series consists of nearly level, poorly drained sandy soils of the coastal flatwoods. These soils were formed in Coastal Plain material consisting of sand, loamy sand, and sandy loam. The surface layer is black or very dark gray loamy sand, and the subsoil is gray loamy sand.

These soils are low in natural fertility, low to moderately low in organic-matter content, and strongly acid. The water table is near the surface much of the year.

Plummer soils occur with Lynchburg, Scranton, and Rains soils. They are sandier and more poorly drained than Lynchburg soils, more poorly drained than Scranton soils, and coarser textured than Rains soils.

Plummer soils occur as fairly large areas in the southern part of this county. The native vegetation consists of slash pine and loblolly pine and an understory of shubs and wiregrass. Much of the timber has been cut, and wiregrass is growing in the open areas. Most of the acreage is now being planted to slash pine.

These soils are suited to slash pine. If adequately drained, they are suited to a limited number of row crops and to pasture plants.

Plummer loamy sand (Pm).—This is a poorly drained soil of the coastal flatwoods. The major horizons are—

0 to 13 inches, very dark gray to gray very friable loamy sand; moderate, medium, crumb structure.
13 to 34 inches, grayish-brown, friable loamy sand mottled with very pale brown and yellowish brown.
34 to 42 inches, mottled, light brownish-gray, brownish-gray, and yellowish-brown sandy loam; friable; weak, medium, blocky structure.

The surface layer is 2 to 9 inches thick. Included in the areas mapped are areas of Rains and Scranton soils that are too small to be mapped separately.

Because of excessive wetness this soil is not suited to cultivated crops. In most places there are no adequate drainage outlets. Because the subsoil is sandy, open ditches are hard to maintain. (Capability unit Vw–1; woodland group 8; forage site A)

Plummer loamy sand, dark surface (Pn).—The surface layer of this soil is 5 to 8 inches thick, and it is darker colored than that of Plummer loamy sand. The major horizons are—

0 to 9 inches, black to mottled black, loose loamy sand.
9 to 33 inches, light brownish-gray, loose loamy sand mottled with light yellowish brown, brownish yellow, and reddish yellow.
33 to 48 inches, gray, loose loamy sand mottled with red, brown, and yellow.

The organic-matter content is 1.5 to 2.5 percent. Included in the areas mapped are areas of Rains and Scranton soils that are too small to be mapped separately.

Excessive wetness limits the use of this soil to pasture and to woods. (Capability unit Vw–1; woodland group 8; forage site A)

Rains Series

The Rains series consists of nearly level, poorly drained soils that were formed in Coastal Plain material consisting of loam and sandy loam. The surface layer is black or very dark gray loam, and the subsoil is mottled gray loam or sandy loam.

These soils are low in natural fertility, moderate in organic-matter content, and strongly acid.

Rains soils occur with Plummer, Bayboro, and Lynchburg soils. They are finer textured than Plummer soils and are coarser textured than Bayboro soils. Rains soils are more poorly drained than Lynchburg soils.

Rains soils occur as small to large areas, mostly in the southern part of the county. The native vegetation consists of slash pine, loblolly pine, and a mixture of hardwoods. The understory consists chiefly of gallberry, titi, shrubs, and wiregrass. Most areas are idle or have just recently been planted to slash pine. Some areas are in pasture. These soils are seldom used for row crops, because of poor drainage.

Rains loam, dark surface (Ra).—This is a poorly drained soil of the coastal flatwoods. The major horizons are—

0 to 14 inches, black to very dark gray, friable loam; weak, fine, crumb structure.
14 to 44 inches, dark-gray to light brownish-gray, friable loam; weak, blocky structure.
44 to 56 inches, mottled, gray clay loam; slightly plastic; structureless.

The texture ranges from sandy loam to silt loam, and the color varies from gray to black. The depth to the gray clayey material varies from 30 to 50 inches. Included in the areas mapped are some areas of Lynchburg and Bayboro soils that are too small to be mapped separately.

The available moisture capacity is moderate. Water moves through this soil slowly because of a seasonally high water table. Surface drainage is difficult because this soil is nearly level. The surface layer has good tilth.

This soil is best suited to permanent pasture and to forest. (Capability unit IVw–1; woodland group 8; forage site A)

Ruston Series

The Ruston series consists of deep, nearly level to steeply sloping, well-drained soils that were formed in Coastal Plain material consisting of sandy loam. The surface layer is dark grayish-brown sandy loam, and the subsoil is strong-brown or yellowish-red fine sandy loam or sandy clay loam.

These soils are low in natural fertility, low in organic-matter content, and strongly acid.

Ruston soils occur with Orangeburg, Norfolk, Bowie, and Goldsboro soils on the uplands. They are similar to Orangeburg and Norfolk soils in texture, depth, and drainage. Ruston soils are strong brown to yellowish red,

Orangeburg soils are red, and Norfolk soils are yellowish brown. Ruston soils are redder than Bowie and Goldsboro soils and are better drained. They have a coarser textured subsoil than Bowie soils.

The Ruston soils in Jackson County are mapped in undifferentiated units with Orangeburg soils. The two kinds of soil are much alike and occur in a mixed pattern. They occur in the northern part of the county. The native vegetation consists mostly of longleaf pine, but it includes some slash pine and loblolly pine and hardwoods. The understory consists chiefly of dogwood, hawthorn, shrubs, and grass. Much of the acreage is now in cultivation or is used as pasture. These soils are suited to most of the commonly grown crops.

Ruston and Orangeburg fine sandy loams, 2 to 5 percent slopes (RoB).—About 65 percent of this mapping unit consists of Ruston soil. Some areas are entirely Ruston fine sandy loam, and some are entirely Orangeburg fine sandy loam, but most areas include some of both.

The major horizons of Ruston fine sandy loam (cultivated) are—

0 to 6 inches, dark grayish-brown, friable fine sandy loam; weak, medium, crumb structure.
6 to 40 inches, strong-brown to yellowish-red fine sandy loam or heavy fine sandy loam; friable; blocky structure.
40 to 58 inches +, strong-brown, friable fine sandy loam; weak, blocky structure.

The surface layer ranges from loam to fine sandy loam. The subsoil ranges from clay loam to sandy loam.

The major horizons of Orangeburg fine sandy loam, 2 to 5 percent slopes (cultivated) are—

0 to 8 inches, dark grayish-brown to strong-brown, fine sandy loam; weak, fine, crumb structure.
8 to 31 inches, red, friable fine sandy loam; weak, blocky structure.
31 to 71 inches, dark-red, friable sandy clay loam; moderate, blocky structure.
71 to 78 inches, dark-red, friable sandy loam; medium, blocky structure.

The surface layer ranges from loam to fine sandy loam. The subsoil ranges from clay loam to sandy loam. A general description of Orangeburg soils is given under the heading "Orangeburg Series."

These soils are easy to work. Natural fertility is low, and the organic-matter content is low. The available moisture capacity is moderate, and the reaction is very strongly acid. The root zone is thick. Water moves into and through these soils at a moderate rate.

These soils are suited to a wide range of crops. Contour cultivation, vegetated outlets, and good management of crop residues help to control erosion. A fairly large acreage is in cultivated crops and pasture. The remainder is in pine forest. (Capability unit IIe–1; woodland group 2; forage site B)

Ruston and Orangeburg fine sandy loams, 0 to 2 percent slopes (RoA).—Nearly level relief, moderate available moisture capacity, good internal drainage, and a thick root zone make these soils suitable for a wide range of crops. Natural fertility is low, but crops respond to fertilization. Most of the acreage is in pasture or forest. (Capability unit I–1; woodland group 2; forage site B)

Ruston and Orangeburg fine sandy loams, 5 to 8 percent slopes (RoC).—Runoff is more rapid on these soils than on Ruston and Orangeburg fine sandy loams, 2 to 5 percent slopes, and the erosion hazard is greater. These soils are suited to a wide range of crops, but they will erode unless carefully managed. Most of the acreage is in forest. A small acreage is in pasture. (Capability unit IIIe–1; woodland group 2; forage site B)

Ruston and Orangeburg fine sandy loams, 8 to 12 percent slopes (RoD).—Because of strong slopes, rapid runoff, and erodibility, these soils are not suitable for regular cultivation. If erosion is controlled, they can be used occasionally for row crops. All of the acreage is presently in forest. (Capability unit IVe–1; woodland group 2; forage site B)

Ruston and Orangeburg fine sandy loams, 12 to 17 percent slopes (RoE).—Because of steep slopes, rapid runoff, and erodibility, these soils are best suited to perennial vegetation. The entire acreage is in forest. (Capability unit VIe–1; woodland group 2; forage site B)

Sandy and Clayey Land

This land type consists of unconsolidated acid marine sediments. It occurs on the uplands of the Coastal Plain. The texture ranges from loamy sand to clay. Fertility is low, the available moisture capacity is variable, and the reaction is very strongly acid.

Sandy and clayey land (Sa).—This land type varies in texture, depth, and drainage. In all places the slope is at least 5 percent, and in most places it is 12 percent. Infiltration is rapid to slow. Runoff is slow to very rapid, and the erosion hazard is severe. All of the acreage is presently in forest. (Capability unit VIs–1; woodland group 7)

Savannah Series

The Savannah series consists of nearly level to gently sloping, moderately well drained soils that have a fragipan. These soils were formed in Coastal Plain material, chiefly loam and fine sandy loam. The surface layer is dark grayish-brown, friable loam, and the subsoil is yellowish-brown heavy loam. The heavy loam fragipan, 12 inches or more thick, is at a depth of about 25 inches.

These soils are low in natural fertility, low in organic-matter content, and strongly acid.

Savannah soils occur with Norfolk, Goldsboro, Bowie, and Pheba soils. Norfolk, Goldsboro, and Bowie soils do not have a fragipan. Savannah soils are less well drained than Norfolk soils. They have less clay in the subsoil than Bowie soils. They are better drained and browner than Pheba soils.

Savannah soils occur as fairly small areas throughout this county. The native vegetation consists mainly of longleaf pine, slash pine, and loblolly pine but includes a few hardwoods. The understory consists chiefly of dogwood, hawthorn, shrubs, and grass. Most of the acreage is in forest. A small acreage is in pasture. These soils are suited to most of the commonly grown crops.

Savannah loam, 2 to 5 percent slopes (SbB).—This is a moderately deep, moderately well drained soil that has a very weak to prominent fragipan. The major horizons are—

0 to 8 inches, dark grayish-brown to yellowish-brown, friable loam or silt loam; crumb structure.

8 to 27 inches, yellowish-brown heavy loam; friable; moderate, blocky structure.
27 to 50 inches +, yellowish-brown heavy loam mottled with strong brown and olive yellow; compact, brittle (fragipan).

The surface layer is fine sandy loam, loam, or silt loam. The depth to the fragipan varies from 22 to 30 inches. Included in the areas mapped are some areas of Goldsboro and Norfolk soils that are too small to be mapped separately.

This soil is strongly acid. Natural fertility is low, and the organic-matter content is low. The fragipan restricts the depth to which roots can grow and consequently limits the amount of moisture available to plants. The surface layer is easy to keep in good tilth. Crops respond to fertilization. Most of the acreage is in forest or pasture. (Capability unit IIe–1; woodland group 10; forage site B)

Savannah loam, 0 to 2 percent slopes (SbA).—This nearly level soil has moderate available moisture capacity and is suited to a wide range of crops. Crops respond to fertilization. Runoff is slow, so graded rows and W-type ditches are generally needed for the removal of excess surface water in wet periods. Most of the acreage is in pine forest or pasture. (Capability unit IIw–1; woodland group 10; forage site B)

Scranton Series

The Scranton series consists of nearly level to gently sloping, somewhat poorly drained soils that were formed in sandy Coastal Plain material. The surface layer is black to very dark gray loamy sand. The subsoil is light brownish yellow and mottled. It becomes grayer as the depth increases.

These soils are low in natural fertility, moderate in organic-matter content, and strongly acid.

Scranton soils occur with Plummer, Rains, and Lynchburg soils on the uplands. Scranton soils are similar to Plummer soils in texture but are better drained. They are better drained and coarser textured than Rains soils. Scranton soils are similar to Lynchburg soils in drainage but are coarser textured.

Scranton soils occur as fairly large areas in the southern part of the county. The native vegetation consists of slash pine, loblolly pine, a mixture of hardwoods, and an understory of gallberry and wiregrass.

Scranton loamy sand, 0 to 2 percent slopes (ScA).—This is a somewhat poorly drained soil. The major horizons are—

0 to 16 inches, black to mottled pale-brown, friable loamy sand; weak, crumb structure.
16 to 32 inches, mottled, light brownish-yellow, yellowish-brown, and light-gray, friable, loose loamy sand.
32 to 46 inches +, mottled, light-gray, very friable sandy loam.

The texture is loamy sand to sandy loam. The surface layer is 10 to 20 inches thick. Included in the areas mapped are some areas of Plummer and Rains soils that are too small to be mapped separately.

This soil is strongly acid. Natural fertility is low, and the organic-matter content is moderate. The available moisture capacity is low. The surface layer is easy to keep in good tilth. Permeability is rapid.

Most of the acreage is planted to slash pine, but some of it is in cultivated crops and pasture. If row crops and truck crops are grown, either tile drainage or bedding is generally needed. If this soil is adequately drained, crops respond to frequent fertilization. (Capability unit IVw–2; woodland group 8; forage site A)

Scranton loamy sand, 2 to 5 percent slopes (ScB).—This soil generally occurs as small, narrow bands adjacent to higher and better drained areas. Runoff is more rapid than on Scranton loamy sand, 0 to 2 percent slopes, but there is seepage from the adjacent higher areas. Most of the acreage is in forest. (Capability unit IVw–2; woodland group 8; forage site A)

Susquehanna Series

The Susquehanna series consists of gently sloping to strongly sloping, somewhat poorly drained soils that were formed in clayey Coastal Plain material. The surface layer is grayish-brown silt loam to very fine sandy loam, and the subsoil is mottled clay.

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

Susquehanna soils occur with Bowie and Boswell soils on the uplands. They are better drained than Bowie soils and are finer textured in the upper part of the subsoil. Susquehanna soils are more poorly drained than Boswell soils and have a grayer subsoil.

These units are fairly large and occur in the northwestern part of the county. The native vegetation consists mostly of longleaf pine, but includes some slash pine, loblolly pine, and hardwoods. The understory consists chiefly of gallberry, hawthorn, low shrubs, and grass.

Most of the acreage is in longleaf pine. These soils are not suited to most of the commonly grown crops.

Susquehanna, Bowie, and Boswell soils, 2 to 5 percent slopes (SuB).—These soils vary in texture and depth. Bowie soils are described under the heading "Bowie Series." Descriptions of representative profiles of Susquehanna silt loam and Boswell very fine sandy loam follow.

The major horizons of Susquehanna silt loam are—

0 to 6 inches, grayish-brown, friable silt loam; weak, medium, crumb structure.
6 to 12 inches, reddish-yellow, firm silty clay; faint mottles of yellowish-red, yellow, and pale yellow; strong, medium, blocky structure.
12 to 45 inches +, mottled, pale-yellow, red, and light-gray, firm clay; strong, blocky structure.

The major horizons of Boswell very fine sandy loam are—

0 to 7 inches, dark grayish-brown to light yellowish-brown, friable very fine sandy loam; weak, fine, crumb structure.
7 to 17 inches, reddish-yellow clay; moderate, blocky structure.
17 to 42 inches +, mottled, red, yellow, and light-gray firm clay; strong, blocky structure.

These soils are very strongly acid. Natural fertility is low, and the organic-matter content is low. The available moisture capacity is moderate to high. Infiltration is moderate, but the internal movement of water is slow.

Most of the acreage is in pine forest. A small acreage is in pasture. (Capability unit IVe–2; woodland group 9; forage site B)

Susquehanna, Bowie, and Boswell soils, 5 to 8 percent slopes (SuC).—These soils occur on stronger slopes than Susquehanna, Bowie, and Boswell soils, 2 to 5 per-

cent slopes, and they lose more water through runoff. The erosion hazard would be severe if these areas were cleared. All of the acreage is now in forest. (Capability unit VIe–2; woodland group 9; forage site B)

Susquehanna, Bowie, and Boswell soils, 8 to 12 percent slopes (SuD).—These soils occur as narrow bands along drainageways. They have more rapid runoff than Susquehanna, Bowie, and Boswell soils, 2 to 5 percent slopes, and are more likely to erode if the areas are cleared or disturbed. The total acreage is small, and all of it is in forest. (Capability unit VIe–2; woodland group 9; forage site B)

Swamp

Swamp (Sw).—This land type consists of level to gently sloping, poorly drained areas of coarse-textured to medium-textured, highly organic soil material that is stratified with layers of mineral soil.

The soil material is strongly acid. Fertility is usually low. The available moisture capacity is variable. Water stands on the surface a large part of the year if rainfall is average.

The Swamp areas of Jackson County occur along minor streams, along intermittent drainageways, and in depressions. The vegetation consists of a dense growth of bay, tupelo-gum, titi, and gallberry. These areas are best used for growing hardwoods or to provide wildlife habitats. (Capability unit VIIw–1; woodland group 11; forage site E)

Tidal Marsh

Tidal marsh (Tm).—This land type occurs along the coast. It is covered by or adjoins salt or brackish water. The three main areas are around Graveline Bayou, around Bangs Lake, and along the Pascagoula River and its tributaries. The largest area is between the East Pascagoula River and the West Pascagoula River. In this area the soil material is composed principally of brown, partly decomposed marsh grass over mineral soil material. Variations occur in the degree of decomposition and in depth to and in character of the mineral material. The greatest variations occur in the area at Bangs Lake where high tides and waves have deposited sand. Along the coast, where the water is always salty, the vegetation is predominantly marsh grass. Along the Pascagoula River, where the water is brackish, there are more and larger trees. (Capability unit VIIw–2; forage site D)

Genesis, Morphology, and Classification of the Soils

This section consists of two main parts. The first part discusses the factors of soil formation as they relate to the development of soils in Jackson County. The second part discusses the great soil groups in the county, classifies the soil series according to great soil groups and orders, describes the characteristics of each group, and describes a profile representative of each series.

Factors of Soil Formation

Soil is the product of the forces of weathering and other soil development agencies acting upon material deposited or accumulated by geologic agencies. The characteristics of the soil are determined by the physical and mineralogical composition of the parent material; the climate under which the soil material has accumulated and has existed since accumulation; the plant and animal life in and on the soil; the relief, or lay of the land; and the length of time the forces of development have acted on the material.

Climate and vegetation are the active forces of soil formation. They act on parent material accumulated through the weathering of rocks and slowly change it into a natural body with genetically related horizons. The effects of climate and vegetation are conditioned by relief. The nature of the parent material also affects the kind of profile that can be formed and in extreme cases may dominate it. Finally, time is needed for the changing of the parent material into a profile. The time needed for horizon differentiation may be much or little, but some time is always required. Usually a long time is required for the development of distinct horizons.

The factors of soil genesis are so closely interrelated in their effects on the soil that few generalizations can be made regarding the effects of any one unless conditions are specified for the other four. The effects of climate on soil development depend not only on such factors as temperature, rainfall, and humidity, but also on the physical characteristics of the soil material and on the relief. Relief, in turn strongly influences drainage, aeration, runoff, erosion, and exposure to sun and wind. Many of the processes of soil development are unknown.

Brief discussions of the factors of soil formation in Jackson County follow.

Parent material

The parent material of the soils of Jackson County consists of unconsolidated beds of fine-textured to coarse-textured Coastal Plain deposits.

The formations are coastal deposits of the Recent and Pleistocene epochs, the Citronelle of the Pliocene epoch, and the Pascagoula and Hattiesburg of the Miocene epoch.

The bright-colored soils of Jackson County developed from material that, throughout the period of soil development, was entirely above the ground-water level, and consequently was subjected only to the influence of such water as has percolated through it from the surface. The dark-colored soils are on the low, flat areas where the water table is high and drainage is poor.

Table 12 shows the texture of the parent material and the drainage sequence of each soil series. About half of the soils in the county formed from medium-textured Coastal Plain material, about 22 percent from moderately fine textured Coastal Plain material, about 20 percent from coarse-textured Coastal Plain material, and 8 percent from fine-textured Coastal Plain material.

The soils are strongly acid to very strongly acid because calcium carbonate was lacking in most areas and was leached out in the other areas.

Climate

The climate of Jackson County is that of the warmer part of the North Temperate Zone. The temperature is

moderated considerably by the Gulf of Mexico. Average temperatures and the distribution of rainfall by months are given in table 15, page 62.

The warm and moist weather that prevails most of the year favors rapid chemical reactions. The relatively high precipitation leaches the soluble material, such as bases, and accelerates the translocation of less soluble material, such as colloidal matter. As a result, the soils of Jackson County are strongly leached and have strongly expressed horizons in which the effects of other soil-forming factors are not easy to see. In the warm, humid climate of the county, the mature soils have been highly leached and the geologically young soils are in the process of being leached.

Relief is of such low intensity that differences in microclimate are not recognized. Soils of north slopes are very similar to soils of south slopes. Soils on slopes are not much different from soils on ridgetops.

Vegetation and animal life

The higher plants, micro-organisms, earthworms, and other organisms that live on or in the soil have some effect on soil development. The kind of organisms, however, and their effect on the soil are influenced by climate and by many other factors.

The organic matter that accumulates in the upper part of the soil as a result of the decay of leaves and other parts of plants is changed into other chemical compounds by living organisms. The organic acids released by decomposition of organic matter dissolve the slowly soluble mineral constituents and speed the leaching and translocation of inorganic materials.

The native vegetation of Jackson County consists predominantly of coniferous trees. At one time longleaf pine, slash pine, and a little loblolly pine grew in all parts of the county except the treeless tidal marshes and alluvial flats. Some blackjack oak, turkey oak, and dwarf post oak are associated with longleaf pine on the dry, sandy, and somewhat sterile soils. Deciduous hardwood trees, chiefly tupelo-gum, blackgum, sweetgum, willow oak, water oak, red maple, sweetbay, and willow, are in the swampy alluvial areas along the Pascagoula River. Baldcypress is the only important coniferous tree in these areas. The difference in native vegetation seems to be associated mainly with variation in drainage. Very little of this difference is reflected in the soils, except that the soils of the treeless tidal marshes and alluvial flats are characterized by greater amounts of organic matter.

Relief

Jackson County is in the physiographic province known as the Gulf Coastal Plain. The southern part of the county is low and level and is known as the flatwoods. In the flatwoods, drainage is poor and runoff is slow. During wet seasons the lower, flat areas are mostly covered with water. The very poorly drained soils are in the lowest areas. The poorly drained and somewhat poorly drained soils occupy higher positions.

Toward the northern part of the county the elevation gradually increases and culminates in a series of ridges that run north and south. Farther north is a level or slightly undulating plain modified by poorly drained swales and by depressed strips of land along drainageways. The highland section of the county differs distinctly from the flatwoods and is much better drained. The relief is rolling or undulating, and the larger streams have developed definite valleys. A line drawn roughly from a point a short distance south of Big Point westward toward Vancleave would separate the highlands on the north from the flatwoods on the south. The northwestern part of the county has fairly rolling relief and a widely branching drainage system. The northeastern part does not have these characteristics, except in the extreme northern part and in narrow strips along the Pascagoula and Escatawpa Rivers.

The soils in the highland section of the county have more clearly expressed horizons than those in the flatwoods. The processes of soil formation have been more rapid in this part of the county than in the flatwoods because of the increased movement of water through the solum. The soils of the ridgetops and slopes have less organic matter in the surface layer, and have been more affected by iron oxidation and by translocation of silicate clay minerals than associated soils at the base of slopes, in draws, and at the bottom of depressions.

Time

Time is necessary for the development of soils from the parent material. The length of time required for a mature soil to develop depends largely on the other factors of soil formation.

Even though the soils in Jackson County are relatively young, they show much evidence of development, especially in color. The coastal flatwoods date from the Pleistocene epoch, and the upper coastal plain, from the Miocene. However, the strong effects of climate have obliterated differences resulting from the difference in age. The soils in both parts of the county are strongly leached.

Classification of the Soils by Higher Categories

Soils are placed in narrow classes for the organization and application of knowledge about their behavior within farms or counties. They are placed in broad classes for study and comparison of large areas such as continents. The comprehensive system of soil classification used in the United States consists of six categories. Beginning with the most inclusive, these categories are the order, the suborder, the great soil group, the family, the series, and the type.

There are three orders and thousands of types. The suborder and family categories have never been fully developed and consequently have been little used. Attention has been concentrated on the classification of soils into types and series within counties or comparable areas and on the subsequent grouping of series into great soil groups and orders.

All three soil orders—the zonal, intrazonal, and azonal—are represented in Jackson County. The great soil groups recognized in the county are Red-Yellow Podzolic soils, Low-Humic Gley soils, Humic Gley soils, Planosols, and Regosols. Some of the soils are not representative of the central concept of any one great soil group but are intergrades between one great soil group and another. The classification of the soils in this county is based largely on characteristics observed in the field. The classification may be revised after further study.

The soil series of Jackson County are listed by orders and great soil groups in table 12.

The zonal order consists of soils that have well-developed characteristics that reflect the predominant influence of climate and living organisms in their formation. Zonal soils are considered normal because their profiles are essentially in equilibrium with the climate and other soil-forming factors in the area. All of the zonal soils in Jackson County are in the Red-Yellow Podzolic great soil group.

The intrazonal order consists of soils that have more or less well-developed characteristics that reflect the dominating influence of a local factor of relief or parent material over the normal influence of climate and living organisms. In places intrazonal soils occur in association with zonal soils. The intrazonal soils in this county are in the Low-Humic Gley, Humic Gley, and Planosol great soil groups.

The azonal order consists of soils that lack well-developed profile characteristics because of their youth, or because the nature of their parent material or their relief prevents normal development of such characteristics. The azonal soils in this county belong to the Regosol great soil group.

Red-Yellow Podzolic soils

The Red-Yellow Podzolic great soil group is made up of well-developed, well-drained, acid soils that have a thin organic A0 horizon, a thin organic-mineral A1 horizon, a light-colored, leached A2 horizon, and a red, yellowish-red, or yellow, more clayey B horizon. The parent material is more or less siliceous. Coarse, reticulate streaks or mottles of red, yellow, brown, and light gray are characteristic of the deep horizons of certain of the Red-Yellow Podzolic soils that are underlain by a thick layer of parent material.

Red-Yellow Podzolic soils form under deciduous, coniferous, or mixed forests, in a humid, warm-temperate climate. Under such conditions the leaching of plant nutrients is rapid. Consequently, the soils are strongly acid or very strongly acid and are low in calcium, magnesium, and other bases. The clay fraction is dominated by kaolinite. It generally contains moderate to large amounts of free iron oxides or hydroxides, or it may contain small amounts of aluminum. Hydrous mica, montmorillonite, or both, may form part of the clay fraction in some of the soils.

Differences in morphology among the Red-Yellow Podzolic soils in this county are largely, but not entirely, associated with the nature of the parent material, especially with its texture. In cultivated areas the soil material in the A0 and A1 horizons has been mixed so that the two horizons are no longer distinguishable. A few soils of this group, especially the more sandy soils, lack the horizon that has reticulate streaks or mottles.

The soils in Jackson County that most nearly fit the concept of Red-Yellow Podzolic soils are those of the Boswell, Bowie, Fairhope, Goldsboro, Norfolk, Orangeburg, Ruston, and Savannah series. The Dunbar, Lynchburg, and Susquehanna soils also are classified as Red-Yellow Podzolic soils, but they have some of the properties of Low-Humic Gley soils and are considered intergrades toward that great soil group.

Boswell series.—The Boswell series consists of moderately well drained soils that have an unmottled layer underlying the surface layer. In Jackson County, Boswell soils are mapped only in undifferentiated units with Susquehanna and Bowie soils.

Profile of Boswell very fine sandy loam south of University Forest on the west side of the county.

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

A2—3 to 5 inches, light yellowish-brown (2.5Y 6/4) very fine sandy loam; weak, fine, crumb structure; friable; many fine roots; strongly acid; clear, wavy boundary.

A3—5 to 7 inches, brownish-yellow (10YR 6/6) very fine sandy loam; weak, fine, subangular blocky structure; friable; many fine roots; very strongly acid; clear, smooth boundary.

B1—7 to 9 inches, reddish-yellow (7.5YR 6/8) sandy clay loam; moderate, medium, subangular blocky structure; friable; many fine roots; very strongly acid; clear, smooth boundary.

B21—9 to 17 inches, yellowish-red (5YR 5/6) clay; faint and distinct mottles of brownish yellow (10YR 6/8) and red (2.5YR 4/8); strong, medium, subangular and angular blocky structure; firm; plastic; few fine roots; very stongly acid; gradual, smooth boundary.

B22—17 to 25 inches, yellowish-brown (10YR 5/8) clay; many, medium, distinct mottles of red (2.5YR 4/8); strong, medium, subangular and angular blocky structure; firm; plastic; very strongly acid; gradual, smooth boundary.

B3—25 to 35 inches, yellow (10YR 7/6) clay; medium, distinct mottles of light brownish gray (10YR 6/2) and red (2.5YR 4/8); strong, medium, angular blocky structure; firm; plastic; very strongly acid; gradual, smooth boundary.

C—35 to 42 inches, mottled, red (10R 4/8), yellow (2.5Y 7/6), and light-gray (10YR 7/2) clay; many, fine to coarse, prominent mottles; strong, angular blocky structure; very strongly acid.

The B horizon ranges in color from red to yellowish red or reddish brown (hues of 10R to 7.5YR). The C horizon is mottled with light olive gray and pale yellow in many areas, and ranges in texture from clay to sandy clay below a depth of 30 inches.

Susquehanna series.—The Susquehanna series consists of soils that have a mottled clay layer underlying the surface layer. In Jackson County, Susquehanna soils are mapped only in undifferentiated units with Bowie and Boswell soils.

Profile of Susquehanna silt loam south of University Forest on the west boundary of the county.

A1—0 to 6 inches, grayish-brown (2.5Y 5/2) silt loam; weak, medium, crumb structure; friable; many fine roots; small bits of charcoal; very strongly acid; clear, smooth boundary.

B1—6 to 12 inches, reddish-yellow (5YR 4/4) silty clay; many, medium, faint mottles of yellowish red (5YR 5/8), yellow (10YR 7/6) and pale yellow (2.5Y 8/4); strong, medium, angular and subangular blocky structure; firm; few fine roots; very strongly acid; clear, wavy boundary.

B2—12 to 45 inches, mottled, pale-yellow (2.5Y 8/4), red (2.5YR 4/8), and light-gray (2.5Y 7/2); mottles are few, medium, prominent; strong, medium, angular blocky structure; few fine roots; very strongly acid; gradual, wavy boundary.

Cg—45 to 50 inches, gray (2.5Y 7/2) clay with many, medium, prominent mottles of red (2.5YR 4/8) and yellow (10YR 7/8); massive; slightly plastic; very strongly acid.

TABLE 12.—*Classification of soils and some of the significant factors in soil formation*

Parent material	Zonal order			Intrazonal order				Azonal order		
	Red-Yellow Podzolic soils			Low-Humic Gley soils		Humic Gley soils	Planosols	Regosols		
	Central concept		Intergrade to Low-Humic Gley soils							
	Well drained	Moderately well drained	Somewhat poorly drained	Poorly drained	Poorly drained to very poorly drained	Very poorly drained	Somewhat poorly drained	Well drained to excessively drained	Moderately well drained	Somewhat poorly drained
Coarse-textured, acid Coastal Plain material consisting of loamy sand, coarse sandy loam, and sand.	----------	----------	----------	Plummer	----------	----------	----------	Eustis,[1] Lakeland.[2]	Klej	Scranton.
Medium-textured, acid Coastal Plain sediments consisting of sandy loam, loam, and sandy clay loam.	Orangeburg,[3] Ruston,[4] Norfolk.[5]	Goldsboro, Savannah.[6]	Lynchburg	Rains	----------	----------	Pheba	----------	----------	----------
Moderately fine textured, acid Coastal Plain sediments consisting of silt loam, clay loam, and silty clay.	----------	Bowie	Dunbar	----------	----------	Bayboro	----------	----------	----------	----------
Fine-textured, acid Coastal Plain sediments consisting of silty clay loam, silty clay, and clay.	----------	Boswell, Fairhope.	Susquehanna.	Coxville	Grady	----------	----------	----------	----------	----------

[1] The subsoil is yellowish red.
[2] The subsoil is brownish yellow.
[3] The B horizon is red.
[4] The B horizon is yellowish red..
[5] The B horizon is yellowish brown.
[6] Fragipan.

Norfolk series.—Norfolk soils are associated with Goldsboro and Lynchburg soils. They are better drained than Goldsboro soils and are free of mottling to a greater depth. They are better drained than Lynchburg soils. The soils of all three series formed from the same kind of parent material.

Profile of Norfolk fine sandy loam along Seaman Road, 1 mile southwest of Vancleave.

A0—1 inch to 0, decomposed pine needles.
A1—0 to 4 inches, grayish-brown (10YR 5/2) fine sandy loam; weak, fine and medium, granular structure; very friable; few worm casts; many fine roots; strongly acid; clear, smooth boundary.
A2—4 to 7 inches, brown (10YR 5/3) fine sandy loam; moderate, medium, granular structure; very friable; common worm casts; strongly acid; gradual, smooth boundary.
B1—7 to 11 inches, yellowish-brown (10YR 5/6) fine sandy loam; weak, medium, subangular blocky structure; very friable; some mixing of material from above; strongly acid; gradual, smooth boundary.
B21—11 to 19 inches, yellowish-brown (10YR 5/8) fine sandy loam to loam; weak, medium, subangular blocky structure; few clay films on some peds; friable; strongly acid; gradual, smooth boundary.
B22—19 to 29 inches, yellowish-brown (10YR 5/8) heavy loam; moderate, medium, subangular blocky structure; faint, patchy clay films on some ped faces; friable; strongly acid; gradual, smooth boundary.
B3—29 to 40 inches, yellowish-brown (10YR 5/8) loam; few, medium, faint, light yellowish-brown (10YR 6/4) silt coatings; moderate, medium, subangular and angular blocky structure; firm; few, fine, yellowish-red (5YR 5/6) concretions; gradual, smooth boundary.
C—40 to 50 inches, mottled, brownish-yellow (10YR 6/8), yellowish-red (5YR 5/6), and light yellowish-brown (10YR 6/4) loam; mottles are many, medium, and distinct; moderate, medium, subangular and angular blocky structure; firm; slightly acid; gradual, smooth boundary.
C2—50 to 62 inches +, mottled brownish-yellow (10YR 6/8) and red (2.5YR 4/8) loam; moderate, medium, subangular and angular blocky structure; firm; strongly acid.

The texture of the surface layer ranges from loamy sand to loam. The texture of the subsoil is chiefly loam, but it ranges from sandy loam to silt loam. Some areas contain a few small, round concretions.

Goldsboro series.—Goldsboro soils are mottled in the lower part of the subsoil. They are associated with Norfolk and Lynchburg soils. They are more poorly drained than Norfolk soils.

Profile of Goldsboro loam, 2 miles southeast of Hurley in the NW¼NW¼ sec. 10, T. 5 S., R. 5 W.

A1—0 to 4 inches, very dark gray (10YR 3/1) loam; weak, fine, crumb structure; friable; many roots; strongly acid; clear, smooth boundary.
A3—4 to 9 inches, light olive-brown (2.5Y 5/4) loam; weak, medium, crumb to subangular blocky structure; very friable; worm casts of very dark gray (10YR 3/1) surface material; numerous roots; strongly acid; clear, smooth boundary.
B22—9 to 17 inches, light olive-brown (2.5Y 5/6) to olive-yellow (2.5Y 6/6) loam; weak, medium, subangular blocky structure; friable; few roots; strongly acid; clear, smooth boundary.
B23—17 to 33 inches, yellowish-brown (10YR 5/6) to light olive-brown (2.5Y 5/6) loam; many, medium, distinct mottles of yellowish red (5YR 6/8) and pale yellow (10YR 7/4); moderate, medium, subangular blocky structure; friable; no roots present; strongly acid; gradual, smooth boundary.
C1—33 to 50 inches, light olive-brown (2.5Y 5/6) loam; many, medium, distinct mottles of yellowish brown (10YR 5/8); many, coarse, distinct mottles of pale yellow (2.5Y 7/4); moderate, medium, angular blocky structure; friable; few soft concretions; strongly acid.

The texture of the surface layer ranges from sandy loam to silt loam. The subsoil is chiefly loam, but in some places it is sandy loam or silt loam.

Lynchburg series.—Lynchburg soils are associated with Goldsboro and Norfolk soils. They are more poorly drained than either the Goldsboro or Norfolk soils and are more highly mottled.

Profile of Lynchburg very fine sandy loam along a paved road, 1 mile north of Latimer Church of Christ.

A1—0 to 4 inches, very dark grayish-brown (10YR 3/2) very fine sandy loam; weak, fine, crumb structure; friable; many fine roots; strongly acid; clear, wavy boundary.
A2—4 to 7 inches, dark grayish-brown (2.5Y 4/2) very fine sandy loam; worm casts filled with very dark grayish-brown (10YR 3/2) material; A1 material in the root channels; weak, fine, crumb structure; friable; many fine roots; strongly acid; clear, wavy boundary.
B1—7 to 17 inches, pale-yellow (2.5Y 7/4) very fine sandy loam; common, fine, faint mottles of yellow (10YR 8/8); weak, fine, subangular blocky structure; few fine roots; friable; very strongly acid; gradual, smooth boundary.
B2—17 to 28 inches, light yellowish-brown (2.5Y 6/4) to olive-yellow (2.5Y 6/6) fine sandy loam; common, fine, distinct, yellowish-red (5YR 5/8) mottles; weak, medium, subangular blocky structure; friable; few, fine, soft, brown concretions; strongly acid; clear, wavy boundary.
B3—28 to 50 inches, mottled, light-red (2.5 YR 6/6), light-gray (10YR 7/2), and brownish-yellow (10YR 6/8) fine sandy loam; moderate, medium, subangular blocky structure; firm in place; strongly acid.

The color of the B horizon ranges from 10YR 5/6 with some mottles to 2.5Y 7/4 with many mottles. The texture of the B horizon ranges from sandy loam to clay loam.

Orangeburg series.—Most of the Orangeburg soils in Jackson County are mapped as part of an undifferentiated unit with the Ruston soil. Orangeburg soils have a red B horizon, and Ruston soils have a reddish-brown or yellowish-red B horizon. In the northeastern corner of the county, Orangeburg soils are mapped separately.

Profile of Orangeburg fine sandy loam.

Ap—0 to 5 inches, dark grayish-brown (10YR 4/2) fine sandy loam; weak, fine, crumb structure; very friable; many fine roots; strongly acid; clear, smooth boundary.
A2—5 to 8 inches, strong-brown (7.5YR 5/6) sandy loam; weak, medium, subangular blocky structure; friable; few fine roots; strongly acid; gradual, smooth boundary.
B1—8 to 12 inches, red (2.5YR 4/8) sandy loam; weak, medium, subangular blocky structure; friable; few fine roots; strongly acid; gradual, smooth boundary.
B21—12 to 31 inches, red (2.5YR 4/6) sandy loam; moderate, medium, subangular blocky structure; friable; few fine roots; strongly acid; gradual, smooth boundary.
B22—31 to 71 inches, dark-red (2.5YR 3/6) sandy clay loam; moderate, medium, subangular blocky structure; firm in place; strongly acid; gradual, smooth boundary.
B3—71 to 78 inches, yellowish-red (5YR 5/8) sandy loam; moderate, medium, subangular blocky structure; friable; strongly acid; gradual, wavy boundary.
C—78 inches +, brownish-yellow (10YR 6/8) sandy clay loam; medium, prominent, dark-red (2.5YR 3/6) and light-gray (2.5Y 7/2) mottles; moderate, medium, subangular blocky structure; very firm in place; strongly acid.

The texture of the surface layer ranges from loam to fine sandy loam. The texture of the B2 horizon ranges from sandy loam to clay loam.

Ruston series.—The Ruston soils in Jackson County are mapped in undifferentiated units with Orangeburg soils. Ruston soils have a reddish-brown or yellowish-red B horizon, and Orangeburg soils have a red B horizon.

Profile of Ruston fine sandy loam.

Ap—0 to 6 inches, dark grayish-brown (10YR 4/2) fine sandy loam; weak, medium, crumb structure; very friable; many fine roots; strongly acid; abrupt, smooth boundary.

B1—6 to 10 inches, strong-brown (7.5YR 5/6) fine sandy loam; weak, fine, subangular blocky structure; worm casts of dark grayish-brown (10YR 4/2); very friable; few fine roots; strongly acid; gradual, smooth boundary.

B21—10 to 15 inches, yellowish-red (5YR 4/8) heavy fine sandy loam; weak, medium, subangular blocky structure; friable; strongly acid; gradual, smooth boundary.

B22—15 to 40 inches, yellowish-red (5YR 4/5) heavy fine sandy loam; moderate, medium, subangular blocky structure; friable; strongly acid; gradual, smooth boundary.

C—40 to 58 inches, strong-brown (7.5YR 5/6) fine sandy loam; weak, medium, subangular blocky structure; common, medium, prominent mottles of light yellowish brown (2.5Y 6/4); friable; strongly acid.

The texture of the surface layer ranges from loam to fine sandy loam. The texture of the B2 horizon is either clay loam or sandy clay loam. Small bits of charcoal are scattered throughout the profile.

Savannah series.—The Savannah series consists of soils that have a fragipan in the lower part of the subsoil. Savannah soils and Bowie soils are much alike. The principal difference is that Bowie soils do not have a fragipan.

Profile of Savannah loam east of the Pascagoula River Swamp, across the road from Salem Camp Ground in the NE¼NW¼ sec. 5, T. 4 S., R. 6 W.

A1—0 to 3 inches, dark grayish-brown (2.5Y 4.2) loam to silt loam; moderate, medium, crumb structure; friable; many roots and earthworm casts; very strongly acid; abrupt, smooth boundary.

A2—3 to 8 inches, yellowish-brown (10YR 5/6) loam; weak, fine, subangular blocky structure; common worm casts; many fine roots; very strongly acid; gradual, smooth boundary.

B21—8 to 13 inches, yellowish-brown (2.5Y 5/6) loam; moderate, medium, subangular blocky structure; friable; few worm casts; few fine roots; very strongly acid; gradual, smooth boundary.

B22—13 to 22 inches, yellowish-brown (10YR 5/6) heavy loam; moderate, medium, subangular blocky structure; friable; few fine roots; very strongly acid; gradual, smooth boundary.

B31—22 to 27 inches, yellowish-brown (10YR 5/6) heavy loam; medium, faint and distinct mottles of strong brown (7.5YR 5/6) and pale yellow (2.5Y 7/4); moderate, medium, subangular blocky structure; friable; very strongly acid; clear, smooth boundary.

B32m—27 to 38 inches, yellowish-brown (10YR 5/6) heavy loam; many, coarse, faint mottles of strong brown (7.5YR 5/6) and olive yellow (2.5Y 6/6); moderate, fine, subangular blocky structure; brittle; very strongly acid; clear, smooth boundary.

C—38 to 50 inches, brownish-yellow (10YR 6/8) heavy loam; many, coarse, prominent mottles of light gray (2.5Y 7/0) and red (2.5YR 4/8); moderate, medium and coarse, angular blocky structure; friable; very strongly acid.

The thickness and hardness of the fragipan vary considerably. In some places a clay layer occurs under a thin fragipan. In most places this soil is moderately well drained, but in some places it is well drained.

Bowie series.—Bowie soils are very closely related to Savannah soils, but Savannah soils have a fragipan in the lower part of the subsoil.

Profile of Bowie fine sandy loam, 2.5 miles west of Big Point on Three Rivers Road in sec. 31, T. 5 S., R. 5 W.

A0—1 inch to 0, decomposed pine needles and wiregrass.

A2—0 to 3 inches, very dark grayish-brown (10YR 3/2) loam; weak, medium, crumb structure; friable; many fine roots; strongly acid; clear, smooth boundary.

A3—3 to 8 inches, mottled, yellowish-brown (10YR 5/6) and dark grayish-brown (10YR 4/2) loam; mottles are many, fine and medium, and distinct; mottling is apparently due to mixing by roots and worm casts; medium, fine, subangular blocky structure; friable; common fine roots; strongly acid; clear, wavy boundary.

B1—8 to 17 inches, yellowish-brown (10YR 5/6) loam; moderate, fine and medium, subangular blocky structure; friable; roots stop in this layer; strongly acid; clear, wavy boundary.

B2—17 to 27 inches, yellowish-brown (10YR 5/8) heavy loam; few, fine, faint mottles of yellowish red (5YR 5/6); moderate, medium, subangular blocky structure; friable; strongly acid; clear, wavy boundary.

B3—27 to 35 inches, yellowish-brown (10YR 5/6) clay loam; many, fine, distinct mottles of light gray (10YR 7/2) and red (10R 5/6); moderate, medium, subangular blocky structure; firm; strongly acid; clear, wavy boundary.

C1—35 to 50 inches, mottled, yellowish-brown (10YR 5/8), gray (10YR 7/1), and red (10R 4/8) clay loam; mottles are many, fine and medium, distinct and prominent; medium, subangular blocky structure; firm; strongly acid; diffuse boundary.

C2—50 to 62 inches, light-gray (10YR 7/1) silty clay; common, fine and medium, prominent mottles of dark red (10YR 3/6) and yellowish brown (10YR 5/6); moderate, medium, angular blocky structure; firm to hard; strongly acid.

The A horizon is somewhat darker colored and thicker on the slopes where this soil is associated with Goldsboro, Lynchburg, and Norfolk soils. The texture of the surface layer ranges from sandy loam to loam. The color of the B horizon varies from 2.5YR to 5Y 5/8. In some areas there are numerous round concretions. The texture ranges from sandy loam to loam in the upper part of the B horizon and from clay loam to clay in the lower part of the B and in the C horizon.

Dunbar series.—Dunbar soils are closely associated with Fairhope soils. They have a yellow B horizon, and Fairhope soils have a red B horizon.

Profile of Dunbar loam on cutoff road, 1 mile north of Escatawpa River in the SW¼SW¼ sec. 6, T. 7 S., R. 5 W.

A1—0 to 5 inches, black (10YR 2/1) loam; weak, medium, crumb structure; very friable; many fine roots; strongly acid; clear, wavy boundary.

A2—5 to 9 inches, dark grayish-brown (2.5Y 4/2) loam; weak, medium, subangular blocky structure; friable; many fine roots; strongly acid; clear, smooth boundary.

B1—9 to 18 inches, light olive-brown (2.5Y 5/4) loam; weak, medium, subangular blocky structure; friable; few fine roots; strongly acid; clear, smooth boundary.

B2—18 to 24 inches, mottled, light brownish-gray (10YR 6/2), red (2.5YR 4/8), and yellow (10YR 7/8) clay loam; mottles are many, fine and medium, and prominent; moderate, medium, subangular blocky structure; friable to firm; strongly acid; gradual, wavy boundary.

Cg—24 to 42 inches, gray (2.5Y 6/0) clay; many, medium and coarse, prominent mottles of yellowish brown (10YR 5/8) and red (2.5YR 4/8); moderate, medium, angular and subangular blocky structure; firm; strongly acid.

The surface layer is loam that has a relatively high silt content.

Fairhope series.—Fairhope soils are closely associated with Dunbar soils. They have a red B horizon, and Dunbar soils have a yellow B horizon. Fairhope soils are better drained than Dunbar soils.

Profile of Fairhope very fine sandy loam, along State highway No. 63, 4 miles northeast of Escatawpa in the SE¼SE¼ sec. 43, T. 6 S., R. 6 W.

Ap—0 to 7 inches, dark grayish-brown (10YR 4/2) very fine sandy loam; weak, medium, crumb structure; friable; common fine roots; strongly acid; clear, smooth boundary.

B1—7 to 15 inches, yellowish-brown (10YR 5/6) loam; weak, medium, subangular blocky structure; friable; few worm casts; few fine roots; very strongly acid; clear, smooth boundary.

B2—15 to 21 inches, yellowish-red (5YR 5/6) heavy clay loam; common, fine and medium, distinct mottles of red (2.5YR 4/8) and light brownish gray (2.5Y 6/2); moderate, medium, subangular blocky structure; firm; few fine roots; red mottles increase in size and number with depth; very strongly acid; gradual, smooth boundary.

B3—21 to 26 inches, mottled, brown (10YR 5/3), red (2.5YR 4/8), and pale-brown (10YR 6/3) clay; mottles are many, fine and medium, faint and prominent; strong, medium, angular and subangular blocky structure; firm; very strongly acid; gradual, wavy boundary.

C—26 to 50 inches, mottled, yellowish-red (5YR 5/6), light brownish-gray (10YR 6/2), and light-gray (10YR 7/2) clay loam; mottles are many, fine and medium, and distinct; strong, medium, angular blocky structure; firm; very strongly acid.

Low-Humic Gley soils

The Low-Humic Gley great soil group is made up of poorly drained soils that have a thin surface horizon, moderately high to low in organic-matter content, over a mottled, gray and brown, gleyed mineral horizon that is little different from the surface horizon in texture. The soil development process is gleization.

The soils of this group have formed in acid marine sediments under a forest cover of loblolly pine and such hardwoods as sweetgum, blackgum, maple, beech, and various kinds of oak. These soils have characteristics that reflect more strongly the influence of nearly level relief, a high water table, and impeded drainage than the effects of climate and vegetation.

The color of the surface layer ranges from light gray to grayish brown. The color of the subsoil ranges from mottled yellow, brown, and gray to dominantly gray. The texture of the subsoil ranges from loamy sand to clay.

The Coxville, Grady, Plummer, and Rains soils are in the Low-Humic Gley great soil group.

Coxville series.—Coxville soils are associated with Grady, Rains, and Plummer soils. They have a finer textured subsoil than Rains and Plummer soils. They are a little better drained than Grady soils and occupy slightly higher and more nearly level positions.

Profile of Coxville silt loam on the cutoff road, 1.5 miles northeast of Escatawpa in the NW¼NE¼ sec. 6, T. 7 S., R. 5 W.

A1—0 to 5 inches, very dark gray (10YR 3/1) silt loam; moderate, fine, crumb structure; friable; many fine roots; strongly acid; clear, smooth boundary.

A2—5 to 7 inches, light olive-brown (2.5Y 5/4) silt loam; many, fine, distinct mottles of yellowish brown (10YR 5/6) and very dark gray (10YR 3/1); moderate, fine, crumb structure; friable; many fine roots; strongly acid; clear, smooth boundary.

Bg—7 to 56 inches, gray (2.5Y 6/0) silty clay; many, fine, distinct, red (2.5YR 4/8) mottles; massive; slightly plastic; strongly acid.

The texture of the Bg horizon is clay or silty clay. The depth to this layer ranges from 5 to 18 inches.

Grady series.—The Grady series consists of moderately coarse textured to medium-textured, poorly drained and very poorly drained soils that are shallow over a clayey subsoil. The subsoil is usually distinctly mottled with shades of gray, brown, and red. These soils occur in depressions. In this county they are commonly called Grady ponds. Many areas have a slight slope from the outer rim to the center, but there are also many areas that are level. In many of these depressions, seepage or runoff water collects. In some, water stands on the surface for long periods.

Grady soils are associated with Coxville, Rains, and Plummer soils. The A horizon of Grady soils is more variable in thickness and color than that of Coxville soils.

Profile of Grady silt loam west of Black Creek near Helena.

A1—0 to 4 inches, black (10YR 2/1) silt loam or loam; weak, fine, crumb structure; friable; strongly acid; gradual, wavy boundary.

A2—4 to 7 inches, very dark gray (10YR 3/1) silt loam or loam; many, medium, faint mottles of yellowish brown (10YR 5/8); weak, medium, crumb structure; friable; strongly acid; gradual, wavy boundary.

B2g—7 to 29 inches, gray (10YR 5/1) clay loam; common, medium, distinct mottles of brownish yellow (10YR 6/6); moderate, medium, crumb structure; slightly plastic; strongly acid; gradual, wavy boundary.

Cg—29 to 50 inches +, gray (10YR 5/1) clay; many, coarse, prominent mottles of red (10Y 4/8) and brownish yellow (10YR 6/6); moderate, medium, subangular blocky structure; plastic; strongly acid.

The texture of the surface layer varies from sandy loam to silt loam. The subsoil ranges from solid gray clay to distinctly mottled clay.

Plummer series.—Plummer soils are associated with Coxville, Grady, and Rains soils. They have a coarser textured subsoil than Coxville soils.

Profile of Plummer loamy sand.

A1—0 to 3 inches, very dark gray (10YR 3/1) loamy sand; many, medium, prominent mottles of light gray (10YR 7/2); moderate, medium, crumb structure; friable; many roots; lot of earthworm activity; various shades of brown stains around the roots; very strongly acid; gradual boundary.

C1—3 to 13 inches, gray (10YR 5/1) loamy sand; common, medium, distinct mottles of very pale brown (10YR 7/3) and yellowish brown (10YR 5/8); structureless but has a tendency to medium, subangular blocky structure; friable; many roots and much earthworn activity; very strongly acid; gradual, wavy boundary.

C2—13 to 34 inches, grayish-brown (10YR 5/2) loamy sand; coarse, prominent mottles of very pale brown (10YR 7/4) and yellowish-brown (10YR 6/8); structureless but has a tendency to medium, subangular blocky structure; very friable; some roots; very strongly acid; gradual, smooth boundary.

D—34 to 42 inches, mottled, light brownish-gray (10YR 6/2), brownish-yellow (10YR 6/8), and yellowish-brown (10YR 5/8) coarse sand; weak, medium, angular and subangular blocky structure; friable; few roots in the upper part of the horizon; very strongly acid.

Profile of Plummer loamy sand, dark surface.

Ap—0 to 5 inches, black (2.5Y 2/0), loose loamy sand; weak, fine, crumb structure; many grass roots and earthworm casts; very strongly acid; clear, smooth boundary.

A3g—5 to 9 inches, mottled, black (2.5Y 2/0) and light brownish-gray (2.5Y 6/2), loose loamy sand; weak, fine and very fine, crumb structure; the two colors are apparently due to earthworm activity; numerous roots and earthworm casts; very strongly acid; abrupt, smooth boundary.

C1—9 to 23 inches, light brownish-gray (2.5Y 6/2) loamy sand; common, medium, prominent mottles of light yellowish brown (2.5Y 6/4), brownish yellow (10YR 6/8), and reddish yellow (5YR 6/8); loose but slightly firm in place; single grain; some roots and earthworm activity; gradual, smooth boundary.

C2—23 to 33 inches, light brownish-gray (2.5Y 6/2) loamy sand; many, prominent mottles of yellowish brown (10YR 5/8), dark gray (2.5Y 4/0), and pale yellow (2.5Y 7/4); single grain but has a tendency toward angular blocky structure; very friable; very strongly acid; diffuse, wavy boundary.

C3g—33 to 48 inches, gray (2.5Y 5/0) with many, coarse, prominent mottles of shades of red, brown, and yellow; the gray matrix is friable, structureless loamy sand, and the red, brown, and yellow mottles are firm, medium and coarse, angular blocky, fine-textured sandy loam and sandy clay loam; very strongly acid.

Rains series.—Rains soils are associated with Coxville, Grady, and Plummer soils. They have a coarser textured subsoil than Coxville soils.

Profile of Rains loam, dark surface, along U.S. Highway No. 90, 1¼ miles west of the Alabama State line in the NW¼ sec. 6, T. 7 S., R. 5 W.

A11—0 to 6 inches, black (10YR 2/1) loam; weak, fine, granular structure; friable; many fine roots; strongly acid; clear, smooth boundary.

A12—6 to 14 inches, very dark gray (10YR 3/1) to dark gray (10YR 4/1) loam; weak, fine and medium, granular structure; friable; few fine roots; strongly acid; clear, wavy boundary.

B1g—14 to 21 inches, dark-gray (10YR 4/1) loam; few, fine, distinct, yellowish-brown (10YR 5/8) mottles; weak, medium, subangular blocky structure; friable; few fine roots; strongly acid; clear, wavy boundary.

B2g—21 to 32 inches, light brownish-gray (10YR 6/2) silt loam; common, medium, distinct, brownish-yellow (10YR 6/8) mottles; weak, medium, subangular blocky structure; friable; strongly acid; clear, wavy boundary.

B22g—32 to 44 inches, light brownish-gray (10YR 6/2) light silty clay loam; common, fine, distinct mottles of brownish yellow (10YR 6/8); weak, medium, subangular blocky structure; slightly plastic; friable; strongly acid; clear, wavy boundary.

Cg—44 to 56 inches, mottled, gray (10YR 6/1) and brownish-yellow (10YR 6/8) clay loam; massive; slightly plastic; friable; strongly acid.

The texture of the A horizon ranges from sandy loam to loam that has a high silt content. The color of the surface layer ranges from 10YR 2/1 to 10YR 4/1.

Humic Gley soils

The Humic Gley great soil group consists of very poorly drained hydromorphic soils. These soils have a moderately thick, dark-colored, organic-mineral horizon underlain by a gleyed mineral horizon. The soil development process has been gleization.

The Humic Gley soils in this county have formed in acid marine sediments in areas where the ground-water level was relatively high but fluctuating and runoff was very slow. The forest cover was chiefly loblolly pine and slash pine but included some oak, sweetgum, red maple, blackgum, and yellow-poplar.

The color of the surface layer is dark gray or black. The subsoil is gray very fine sandy loam to silt loam. The content of organic matter in the A horizon is 5 to 10 percent.

Bayboro soils are the only Humic Gley soils in Jackson County.

Bayboro series.—The following profile of Bayboro silt loam is located 4.5 miles north of Escatawpa in the NW¼SW¼ sec. 13, T. 6 S., R. 6 W.

A1—0 to 3 inches, black (10YR 2/1) silt loam; moderate, medium, crumb structure; friable; numerous fine roots; very strongly acid; gradual, smooth boundary.

A2—3 to 8 inches, very dark gray (10YR 3/1) silt loam; fine, subangular blocky structure; friable; many fine roots; strongly acid; gradual, smooth boundary.

B1—8 to 13 inches, very dark gray (10YR 3/1) loam; many, fine, distinct mottles of dark yellowish brown (10YR 4/4); fine and medium, subangular blocky structure; firm; some fine roots; very strongly acid; clear, smooth boundary.

B2—13 to 24 inches, dark-gray (10YR 4/1) loam; many, prominent mottles of yellowish brown (10YR 5/8); moderate, medium, subangular blocky structure; firm; few fine roots; very strongly acid; clear, smooth boundary.

Cg—24 to 55 inches, gray (10YR 3/1) heavy clay loam to clay; many, medium, prominent mottles of brownish yellow (10YR 6/8) and red (2.5YR 4/8); strong, medium, angular blocky structure; very firm; very strongly acid; the red mottles increase in abundance with depth.

The texture of the subsoil ranges from heavy loam to silty clay loam. The high organic-matter content gives this soil a loamy feel.

Planosols

The Planosol great soil group consists of somewhat poorly drained soils containing one or more horizons that have a high clay content or are compact or cemented and hence are slowly permeable to air, water, and roots. Pheba soils are the only Planosols in Jackson County. In these soils, the compact horizon is part of the B horizon.

Pheba series.—The following profile of Pheba loam is located along State Highway No. 63, 7 miles north of Escatawpa in the NE¼NE¼ sec. 8, T. 6 S., R. 5 W.

A1—0 to 6 inches, very dark gray (10YR 3/1) loam; weak, fine, crumb structure; friable; many fine roots; strongly acid; clear, smooth boundary.

A2—6 to 10 inches, dark grayish-brown (10YR 4/2) very fine sandy loam; weak, medium, subangular blocky structure; friable; common fine roots; mixing due apparently to worm action; very strongly acid; clear, smooth boundary.

B2—10 to 18 inches, light yellowish-brown (10YR 6/4) fine sandy loam to loam; weak, medium, subangular blocky structure; friable; very strongly acid; clear, smooth boundary.

B3m1—18 to 25 inches, mottled, brownish-yellow (10YR 6/6), pale-brown (10YR 6/3), and strong-brown (7.5YR 5/6) loam; mottles are many, fine, and distinct;

moderate, medium, subangular blocky structure; brittle; strongly acid; clear, smooth boundary.

B3m2—25 to 38 inches, light-gray (10YR 7/2) loam; many, fine, distinct mottles of yellowish brown (10YR 6/8); moderate, medium, subangular blocky structure; brittle; few fine vesicles; few, fine, soft, brown concretions; strongly acid; clear, smooth boundary.

C—38 to 50 inches, mottled, light-gray (10YR 7/1), yellow (10YR 7/8), and red (2.5YR 5/8) clay loam; mottles are fine, medium, and prominent; moderate, medium, subangular blocky structure; brittle; strongly acid.

The texture of the surface layer ranges from loamy sand to loam. The texture of the subsoil ranges from sandy loam to sandy clay loam.

Regosols

Regosols are soils in which few or no clearly expressed soil characteristics have developed. They form in deep, unconsolidated, soft mineral deposits.

Eustis, Klej, Lakeland, and Scranton soils are the Regosols in this county.

Eustis series.—The following profile of Eustis loamy sand is located along State Highway No. 63, three-fourths of a mile north of Big Point in sec. 21, T. 5 S., R. 5 W.

A1—0 to 4 inches, very dark gray (10YR 3/1) loamy sand; weak, medium, crumb structure; very friable; many roots and some earthworm casts; very strongly acid; clear, smooth boundary.

A2—4 to 9 inches, dark grayish-brown (10YR 4/2) loamy sand; common, fine, distinct mottles of yellowish brown (10YR 5/4); moderate, medium, crumb structure; very friable; many roots and some earthworm activity; very strongly acid; gradual, smooth boundary.

C1—9 to 13 inches, yellowish-brown (10YR 5/4) loamy sand; fine, distinct mottles of very dark gray (10YR 3/1); weak, fine, subangular blocky structure; very friable; some roots; very strongly acid; gradual, smooth boundary.

C2—13 to 17 inches, yellowish-brown (10YR 5/6) loamy sand; weak, medium, subangular blocky structure; very friable; some roots; very strongly acid; gradual, smooth boundary.

C3—17 to 40 inches, strong-brown (7.5YR 5/6) loamy sand; few, fine, distinct mottles of very pale brown (10YR 7/3); weak, fine to medium, subangular blocky structure; very friable; some roots; very strongly acid; gradual, smooth boundary.

D—40 to 60 inches +, reddish-yellow (7.5YR 6/8) loamy sand; many, medium, prominent mottles of very pale brown (10YR 7/3); single grain; loose; very strongly acid.

The texture of the C horizon ranges from loamy sand to coarse-textured loam. The color varies from strong brown (7YR 5/8) to reddish yellow (7.5YR 7/8).

Eustis series.—The following profile of Eustis sand is located 2.5 miles west of Hurley in the NW¼NE¼ sec. 31, T. 4 S., R. 5 W.

A1—0 to 3 inches, very dark gray (10YR 3/1) sand; weak, medium, crumb structure; very friable; numerous roots and worm casts; very strongly acid; gradual, smooth boundary.

A2—3 to 13 inches, brown (10YR 5/3) sand; many, medium, faint mottles of light gray (10YR 7/2); worm casts of very dark gray (10YR 3/1); weak, medium, crumb structure; very friable; some roots; very strongly acid; gradual, smooth boundary.

C1—13 to 30 inches, yellowish-brown (10YR 5/4) coarse loamy sand; single grain but has a tendency toward medium, subangular blocky structure; very friable; some roots; few worm casts of light brownish gray (10YR 6/2); very strongly acid; gradual, wavy boundary.

C2—30 to 50 inches, strong-brown (7.5YR 5/8) loamy sand; few, distinct mottles of light brown (10YR 6/4); essentially structureless but has a tendency toward medium, subangular blocky structure; very friable; some roots; very strongly acid; gradual, wavy boundary.

D—50 to 72 inches, reddish-yellow (7.5YR 7/8) sand; many, coarse, distinct mottles of very pale brown (10YR 7/3–7/4); structureless; very friable; very strongly acid.

Klej series.—The following profile of Klej loamy sand is located along Singing River Road, 1.5 miles north of U.S. Highway No. 90.

A0—½ inch to 0, sandy material with partially decayed leaves and other forest litter.

A1—0 to 5 inches, very dark grayish-brown (10YR 3/2) loamy sand; fine, crumb structure; very friable; loose; many fine roots; strongly acid; gradual, smooth boundary.

A2—5 to 8 inches, dark grayish-brown (10YR 4/2) loamy sand; weak, medium, crumb structure; very friable; numerous worm casts of dark grayish brown (10YR 3/2); many fine roots; strongly acid; gradual, smooth boundary.

A3—8 to 14 inches, yellowish-brown (10YR 4/6) loamy sand; weak, medium, crumb structure; very friable; worm casts of dark brown (10YR 4/3); many fine roots; strongly acid; gradual, smooth boundary.

C1—14 to 24 inches, brownish-yellow (10YR 6/6) loamy sand; weak, medium, crumb structure intermixed with some subangular blocky structure; friable; strongly acid; clear, smooth boundary.

C2—24 to 35 inches, brownish-yellow (10YR 6/6) loamy sand; many, fine, distinct mottles of yellowish red (5YR 5/8); single grain; loose; strongly acid; clear, smooth boundary.

C3—35 to 40 inches, mottled, very pale brown (10YR 7/4), brownish-yellow (10YR 6/6), and yellowish-red (5YR 5/8) loamy sand; the mottles are many, fine and medium, faint and distinct; single grain (structureless); friable; strongly acid; abrupt boundary.

C4—40 to 47 inches, mottled, gray (10YR 6/1), very pale brown (2.5YR 7/4), yellowish-red (5YR 5/8), and light-gray (2.5Y 7/2) coarse sandy loam; mottles are many, medium, and distinct; structureless; friable; strongly acid; abrupt, smooth boundary.

Dg—47 to 60 inches, light-gray (10YR 7/1) sandy loam; many, medium, prominent mottles of brownish yellow (10YR 6/6), and red (2.5YR 4/8); massive; slightly plastic; strongly acid.

The texture of the subsoil ranges from coarse-textured sandy loam to loamy sand.

Lakeland series.—The following is the profile of Lakeland loamy sand.

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

A2—3 to 6 inches, olive-brown (2.5Y 4/4) loamy sand; streaks of dark grayish brown (10YR 4/2) in root channels and wormholes; single grain; loose; many fine roots; very strongly acid; clear, smooth boundary.

C1—6 to 20 inches, light yellowish-brown (2.5Y 6/4) loamy sand; single grain; loose; common fine roots; very strongly acid; clear, smooth boundary.

C2—20 to 26 inches, brownish-yellow (10YR 6/8) sandy loam; weak, medium, subangular blocky structure; friable; few fine roots; very strongly acid; gradual, smooth boundary.

C3—26 to 36 inches, brownish-yellow (10YR 6/8) loamy sand; single grain; loose; very few roots; very strongly acid; gradual, smooth boundary.

C4—36 to 44 inches, yellow (10YR 7/8) loamy sand; single grain; loose; very strongly acid; abrupt, smooth boundary.

D—44 to 50 inches +, white sand; single grain; loose; very strongly acid.

Scranton series.—This profile of Scranton loamy sand is 1.5 miles south of Kreole along Bayou Cumbest Road in the SE¼SE¼ sec. 27, T. 7 S., R. 5 W.

A1—0 to 6 inches, black (10YR 2/1) loamy sand; weak, fine, crumb structure; very friable; many fine roots; very strongly acid; clear, smooth boundary.

A2—6 to 16 inches, mottled, pale-brown (10YR 6/3) and black (10YR 2/1) loamy sand; mottling due to mixing by worm action; weak, fine, crumb structure; very friable; few, fine, brown root stains, many fine roots; very strongly acid; clear, smooth boundary.

C1—16 to 22 inches, mottled, light brownish-yellow (2.5 Y 6/4), yellowish-brown (10YR 5/8), and light-gray (10YR 7/2) loamy sand; mottles are many, fine, and distinct; weak, medium, subangular blocky structure; very friable; few fine roots; very strongly acid; gradual, smooth boundary.

C2—22 to 32 inches, mottled, light yellowish-brown (2.5Y 6/4) and yellowish-brown (10YR 5/8) loamy sand; mottles are many, fine, and distinct; weak, medium, subangular blocky structure; very friable; few fine roots; few, fine, brown concretions; very strongly acid; clear, smooth boundary.

D—32 to 46 inches, mottled, light-gray (10YR 7/1) and dark-brown (7.5YR 4/4) sandy loam; structureless; friable; few, fine, brown concretions; very strongly acid.

This is a somewhat poorly drained soil. The texture is loamy sand to coarse sandy loam. The surface layer is 5 to 12 inches thick.

Laboratory Data

Table 13 gives data obtained by laboratory analysis of samples of some of the more important soils of Jackson County. Soils of four series are represented: the Coxville, the Eustis, the Goldsboro, and the Orangeburg.

Eustis, Orangeburg, and Goldsboro soils developed in uniform material. Their low silt content does not indicate loess influence. These soils have a low base saturation and a very low cation exchange capacity. Orangeburg soils have a well-developed B horizon.

The Coxville profiles have breaks in particle-size distribution at a depth of about 6 or 7 inches. The particle-size distribution above the breaks is similar to that of some loess deposits. The percentage of base saturation is very low.

Chemical Properties [9]

The high degree of leaching accompanying soil formation in Jackson County is evident from the very low base saturation percentage. Most of the soils have a base saturation of between 5 and 25 percent of the base absorption capacity. Few soils analyzed in this county contain more than 1 milliequivalent of exchangeable calcium or exchangeable magnesium per 100 grams (less than 400 pounds of calcium or 240 pounds of magnesium per acre to a depth of 6 inches). All show concentration of these two elements in the uppermost 3 inches, as a result of recycling by plants. The level of exchangeable sodium is generally less than 90 pounds per acre, and that of exchangeable potassium is less than 160 pounds per acre. Sea spray blown inland seems to have had little influence on the level of these two elements in the soils of this county. The level of exchangeable potassium is affected by the potassium-fixing capacity of vermiculite.

The amount of exchangeable hydrogen is high in the fine-textured soils like Coxville, Susquehanna, and Boswell; it may be equal to 5 to 12 tons of calcium carbonate per acre. The coarser textured soils contain exchangeable hydrogen in amounts equal to 1 to 3 tons of calcium carbonate per acre. The soils that have a high level of exchangeable hydrogen also have a pH value of between 4.0 and 4.5. These soils may resist a rise in pH when lime is applied because their aluminum buffering capacity is high.

The cation exchange capacity of the soils varies considerably because of differences in texture, clay mineralogy, and organic-matter content. Coxville, Susquehanna, and Boswell soils have a fine-textured subsoil that contains montmorillonite clay. Their exchange capacity is between 10 and 30 milliequivalents per 100 grams. Eustis, Lakeland, and Orangeburg soils contain only a small amount of clay, mostly kaolinite. Their exchange capacity is between 2 and 6 milliequivalents per 100 grams. The exchange capacity is high in the uppermost 3 inches of most of the soils of the county, because of the high organic-matter content.

The ratio of exchangeable calcium to magnesium is approximately 1:1 below the uppermost 2 inches of soil. A favorable calcium-magnesium ratio for most crops would be around 7 or 8 to 1. The small amount of calcium compared to the amount of magnesium is due to the absence of calcium-bearing minerals. Magnesium is constantly being supplied through the weathering of the clay.

Mineralogy of the Soils

The silt and sand fractions in the soils of Jackson County are 95 percent or more quartz. The mineral content of the clay particles varies considerably, depending on drainage and the nature of the parent material. Table 14 gives the approximate mineral composition of the clay fraction of soils of 13 series. The Eustis, Klej, Lakeland, and Plummer soils are coarse textured and contain little clay, so these series are not listed in table 14.

The clay fractions of the well-drained, bright-colored Orangeburg, Ruston, and Norfolk soils, which occur in the central and northeastern parts of the county, are dominantly kaolinite, iron oxides, chlorite, and amorphous material. In the Orangeburg soils, the clay fraction may be 5 to 20 percent gibbsite. The high iron-oxide content of the Ruston and Orangeburg soils results partly from glauconite in the parent material.

In the Susquehanna, Bowie, and Boswell soils, which are in the northwestern part of the county, the clay fraction is mostly montmorillonite, but includes smaller amounts of amorphous material, illite, kaolinite, and vermiculite. These soils are extremely acid. Their cation-exchange capacity is high, the shrink-swell potential is moderate to high, and permeability is slow.

In the Bayboro, Coxville, and Dunbar soils, which are in the general area between the Escatawpa River, Kirkwood Lake, and Birds Lake, the clay fraction is mostly montmorillonite and kaolinite but includes also smaller amounts of chlorite, vermiculite, and illite. These soils are extremely acid. Their cation-exchange capacity is

[9] ROLLIN C. GLENN, assistant agronomist, Mississippi State University, prepared this section.

TABLE 13.—*Chemical and mechanical analyses*

[Chemical and mechanical analyses were made at the Soil Survey Laboratory, Soil

Soil name, sample number, and horizons	Depth	Chemical analysis										
		pH (1:1)	Organic matter			Cation exchange capacity	Extractable cations (milliequivalents per 100 grams of soil)					Base saturation
			Organic carbon	Nitrogen	C/N		Ca	Mg	H	Na	K	
Coxville silt loam. Sample No. S55-Miss-30-7-(1-4).	*Inches*		*Percent*	*Percent*								*Percent*
A1	0 to 3	4.5	3.06	0.167	18	14.1	1.3	0.5	12.0	0.1	0.2	15
A2	3 to 5	4.5	1.66	.107	16	12.2	.6	.4	11.0	.1	.1	10
B2	5 to 7	4.5	.95	.079	12	10.7	.4	.2	9.9	.1	.1	7
Dg	7 to 72+	4.5	.21	.035	------	12.2	.5	1.2	10.2	.1	.2	16
Coxville silt loam. Sample No. S55-Miss-30-8-(1-4).												
A1	0 to 2	4.3	4.83	.251	19	24.0	1.3	.7	21.7	.1	.2	10
A2	2 to 6	4.2	2.54	.133	19	17.4	.6	.7	15.9	.1	.1	9
B2	6 to 12	4.5	.72	.076	9	19.1	.5	1.0	17.4	.1	.1	9
D	12 to 72+	4.1	.31	.048	------	25.8	1.5	2.6	21.4	.1	.2	17
Eustis loamy sand. Sample No. S55-Miss-30-1-(1-6).												
A1	0 to 4	5.1	1.12	.047	23	6.2	.7	.1	5.3	<.1	.1	14
A2	4 to 9	5.1	.35	.022	------	3.9	.1	.2	3.5	<.1	.1	10
A3	9 to 13	5.0	.15	.014	------	3.4	.1	.2	2.9	.1	.1	15
B1	13 to 17	5.0	.06	.009	------	2.3	.1	.1	2.0	<.1	.1	13
B2	17 to 40	4.9	.06	.010	------	2.6	.1	.1	2.2	.1	.1	15
C	40 to 72+	5.1	.02	.040	------	1.1	.1	.2	0.8	<.1	<.1	27
Eustis sand. Sample No. S55-Miss-30-2-(1-5).												
A1	0 to 3	4.9	.84	.040	21	4.3	.3	.1	3.9	<.1	<.1	9
A2	3 to 13	5.1	.14	.011	------	2.2	.1	.2	1.8	<.1	.1	18
B1	13 to 30	5.1	.06	.009	------	1.4	.1	.2	1.0	<.1	.1	28
B2	30 to 50	5.0	.04	.008	------	1.5	.2	.1	1.2	<.1	<.1	20
C	50 to 72+	5.1	.02	.004	------	1.1	.1	.2	.8	<.1	<.1	27
Goldsboro loam. Sample No. S55-Miss-30-5-(1-5).												
A1	0 to 4	4.5	3.24	.127	26	13.8	.5	.2	12.9	.1	.1	6
A2	4 to 9	4.6	.38	.031	------	4.5	.1	.3	4.1	<.1	<.1	9
B22	9 to 17	4.7	.10	.019	------	4.5	.2	.1	4.1	<.1	.1	9
B23	17 to 33	4.7	.07	.016	------	5.2	.1	.3	4.7	<.1	.1	10
C1	33 to 72	4.7	.04	.010	------	2.9	.1	.3	2.5	<.1	<.1	14
Goldsboro loam. Sample No. S55-Miss-30-6-(1-8).												
Ap	0 to 5	4.7	1.46	.076	19	6.2	.5	.5	5.1	<.1	.1	18
A3	5 to 8	4.7	.32	.029	------	3.2	.1	.1	2.9	<.1	.1	9
B1	8 to 12	4.7	.24	.024	------	3.4	.1	.3	2.9	<.1	.1	15
B21	12 to 18	4.6	.18	.019	------	3.6	.1	.3	3.1	<.1	.1	14
B22	18 to 28	4.8	.10	.015	------	3.4	.1	.3	2.9	<.1	.1	15
B3	28 to 34	4.8	.06	.012	------	3.6	.1	.1	3.3	<.1	.1	8
C1	34 to 46	4.7	.05	.009	------	5.3	.1	.4	4.7	<.1	.1	11
C2	46 to 72+	4.6	.03	.011	------	3.9	.2	.3	3.3	<.1	.1	15

of selected soils in Jackson County, Miss.

Conservation Service, Beltsville, Md. Dashes indicate values not determined]

Mechanical analysis										
Particle-size distribution										Textural class
Very coarse sand (2 to 1 mm.)	Coarse sand (1 to 0.5 mm.)	Medium sand (0.5 to 0.25 mm.)	Fine sand (0.25 to 0.10 mm.)	Very fine sand (0.10 to 0.05 mm.)	Silt (0.5 to 0.002 mm.)	Clay (less than 0.002 mm.)	International silt (0.2 to 0.02 mm.)	Fine silt (0.02 to 0.002 mm.)	Coarse particles (more than 2 mm.)	
Percent	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	
0.2	0.6	0.4	3.8	14.1	71.2	9.7	52.7	35.2	<1	Silt loam.
.8	1.0	.5	3.2	12.6	67.7	14.2	47.1	35.5	1	Silt loam.
1.0	.8	.4	2.5	11.0	63.8	20.5	30.6	46.0	<1	Silt loam.
0	0	0	.6	4.8	49.7	44.9	21.5	33.4	0	Silty clay.
.1	.5	.5	5.7	11.9	63.4	17.9	35.8	43.9	0	Silt loam.
.7	1.3	.6	6.3	12.2	58.9	20.0	35.9	40.2	<1	Silt loam.
.1	.2	.2	1.8	4.4	46.4	46.9	15.0	37.4	0	Silty clay.
0	.1	.1	1.5	3.5	40.3	54.5	12.5	32.6	0	Silty clay and clay.
.2	4.9	16.0	47.6	12.3	15.8	3.2	45.0	8.7	0	Loamy fine sand.
.1	4.9	16.2	46.3	11.1	16.7	4.7	42.1	9.7	0	Loamy fine sand.
.2	4.5	15.3	45.3	11.9	16.9	5.9	43.2	9.8	<1	Loamy fine sand.
.2	4.1	14.3	44.9	11.9	18.2	6.4	43.1	10.8	0	Fine sandy loam to loamy sand.
.5	4.9	14.8	45.3	10.3	17.8	6.4	39.4	12.2	<1	Fine sandy loam to loamy sand.
.3	4.7	15.2	51.2	13.1	13.0	2.5	46.0	7.7	<1	Loamy fine sand.
.3	9.1	30.7	43.8	4.9	8.7	2.5	25.8	6.1	0	Sand.
.5	13.6	31.2	37.6	3.8	9.7	3.6	21.2	7.3	0	Sand to loamy sand.
.7	11.2	26.3	41.0	4.9	12.0	3.9	26.4	8.4	<1	Loamy sand.
.5	10.2	25.1	43.1	5.3	11.6	4.2	27.7	8.2	<1	Loamy sand.
1.1	11.7	28.1	44.8	4.8	7.0	2.5	26.4	4.5	<1	Loamy sand to sand.
.3	4.0	7.2	19.5	14.7	46.4	7.9	49.5	23.0	<1	Loam to sandy loam.
.2	2.9	7.0	19.1	15.8	45.0	10.0	49.1	23.4	<1	Loam.
.2	3.2	8.0	12.5	19.2	42.1	14.6	40.4	24.6	<1	Loam.
.4	2.9	6.0	16.0	15.6	47.0	12.1	46.6	26.1	1	Loam.
.2	2.5	6.0	17.2	16.3	46.4	11.4	49.1	24.6	<1	Loam.
.2	1.1	2.3	27.6	29.2	34.0	5.6	69.2	14.4	2	Very fine sandy loam.
.1	1.0	1.6	25.2	29.1	35.0	8.0	67.8	15.8	<1	Very fine sandy loam.
.1	.9	1.7	24.3	29.2	35.0	8.8	67.0	16.3	<1	Very fine sandy loam.
.2	1.1	1.5	24.3	27.3	36.0	9.6	66.0	16.4	<1	Very fine sandy loam.
.1	.9	1.6	25.7	28.4	33.0	10.3	67.2	14.6	1	Very fine sandy loam.
.3	.8	1.5	24.8	30.5	29.7	12.4	67.8	12.0	1	Very fine sandy loam.
.1	.6	1.4	24.0	31.7	27.3	14.9	68.3	9.7	<1	Very fine sandy loam.
0	.4	1.7	26.3	32.7	28.4	10.5	72.4	9.5	1	Very fine sandy loam.

TABLE 13.—*Chemical and mechanical analyses*

[Chemical and mechanical analyses were made at the Soil Survey Laboratory, Soil

Soil name, sample number, and horizons	Depth	Chemical analysis										
		pH (1:1)	Organic matter			Cation exchange capacity	Extractable cations (milliequivalents per 100 grams of soil)					Base saturation
			Organic carbon	Nitrogen	C/N		Ca	Mg	H	Na	K	
Orangeburg fine sandy loam. Sample No. S55-Miss-30-3-(1-5).	*Inches*		*Percent*	*Percent*								*Percent*
A1	0 to 3	5.0	1.30	.054	24	6.6	.7	.3	5.5	<.1	.1	17
A2	3 to 9	5.0	.56	.030	19	5.2	.4	.7	4.1	<.1	<.1	21
B1	9 to 17	5.0	.28	.022	------	4.2	.4	.1	3.7	<.1	<.1	12
B2	17 to 43	4.7	.08	.015	------	4.6	.1	.2	4.3	<.1	<.1	6
C	43 to 84+	4.7	.04	.005	------	2.4	.3	.1	2.0	<.1	<.1	17
Orangeburg fine sandy loam. Sample No. S55-Miss-30-4-(1-5).												
A1	0 to 5	5.0	1.14	.055	21	6.4	.6	.6	5.1	<.1	.1	20
A2	5 to 10	4.8	.37	.029	------	5.4	.5	.5	4.3	<.1	.1	20
B1	10 to 17	4.8	.15	.021	------	6.0	.6	.4	4.9	<.1	.1	18
B2	17 to 52	4.7	.06	.013	------	5.5	.1	.4	4.9	<.1	.1	11
C1	52 to 72+	4.6	.02	.006	------	4.1	.1	.3	3.7	<.1	<.1	10

TABLE 14.—*Approximate mineral composition of clay in soils of 13 series*

Soil	Quartz	Illite	Vermiculite	Montmorillonite	Chlorite	Kaolinite	Gibbsite	Iron oxides	Amorphous material
	Percent	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
Bayboro	10	15	5	30	10	20	0	(1)	10
Boswell	5	10	5	40	5	15	0	10	10
Bowie	5	10	5	40	10	10–15	0	5	10
Coxville	10	15	10	30	5	20	0	(1)	10
Dunbar	10	15	10	20–25	5–10	20	0	3–5	10
Fairhope	10	5	5	5–10	15	40	0	5–10	10
Goldsboro	10	5	5–10	(1)	15	45	0	5	10
Norfolk	10	5	5–10	(1)	10	50	0	5	10
Orangeburg	5	2–5	2–5	0	10	40	10	20	10
Pheba	10	15	5	20	5	30	0	3–5	10
Rains	10	15	5	25	10	25	0	(1)	10
Ruston	10	5	5	(1)	10	50	0	10	10
Susquehanna	5	15	5–10	50	5	10	0	2–5	10

[1] Trace (less than 2 percent).

high. They are slightly less subject to volume change than the Susquehanna, Boswell, and Bowie soils.

The occurrence of appreciable amounts of chlorite in the soils of this county is mainly a result of chemical weathering. The acidity of the soils results in high solubility of aluminum. The aluminum becomes sandwiched between layers of montmorillonite and vermiculite, and a chlorite-like structure is formed. This, in turn, reduces the shrink-swell potential and lowers the cation-exchange capacity. Soils that have a large amount of this chlorite-like material may show a considerable resistance to a rise in pH when limed.

General Nature of the County

The territory along the Pascagoula River, a part of what is now Jackson County, was claimed by the French in 1699, the British in 1763, and the Spanish in 1810. It was purchased by the United States in 1812.

The early settlers were people of various nationalities who came to the county to work in the lumber and turpentine industries. Most of the merchantable timber has now been harvested. The turpentine industry is still of some importance in the economy of the county, but the resin is extracted from much smaller trees. These trees

of selected soils in Jackson County, Miss.—Continued
Conservation Service, Beltsville, Md. Dashes indicate values not determined]

Mechanical analysis										
Particle-size distribution										Textural class
Very coarse sand (2 to 1 mm.)	Coarse sand (1 to 0.5 mm.)	Medium sand (0.5 to 0.25 mm.)	Fine sand (0.25 to 0.10 mm.)	Very fine sand (0.10 to 0.05 mm.)	Silt (0.5 to 0.002 mm.)	Clay (less than 0.002 mm.)	International silt (0.2 to 0.02 mm.)	Fine silt (0.02 to 0.002 mm.)	Coarse particles (more than 2 mm.)	
Percent	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	
.6	9.3	18.6	31.4	12.1	20.8	7.2	36.8	11.3	<1	Fine sandy loam.
.4	9.4	18.6	29.4	11.1	21.1	10.0	34.5	11.9	0	Fine sandy loam.
.5	7.1	15.8	28.5	11.2	23.0	13.9	35.2	13.0	0	Fine sandy loam.
.3	6.5	14.6	27.0	11.6	22.3	17.7	34.1	13.3	0	Fine sandy loam.
.4	7.6	16.9	32.4	14.0	18.1	10.6	39.0	9.5	0	Fine sandy loam.
.1	.7	1.8	28.7	26.9	34.6	7.2	66.0	17.8	0	Very fine sandy loam.
0	.4	1.4	25.7	25.1	34.1	13.3	61.6	17.9	0	Very fine sandy loam and loam.
.1	1.3	1.0	24.4	21.5	31.8	19.9	55.4	16.7	0	Loam.
.1	.8	1.2	28.4	19.9	29.0	20.6	57.1	13.8	<1	Loam.
.1	.9	1.2	31.3	23.2	27.3	16.2	62.5	11.8	0	Fine sandy loam.

are cut before they reach maturity and are used chiefly for woodpulp.

The population of the county was 20,601 in 1940, in 1950 it was 31,401, and in 1960 it was 55,522. The population of Pascagoula, the county seat, was 17,155 in 1960.

In the early days, transportation was mainly by water. The waterways are not now the chief means of transportation, but boats transporting pulpwood use the Pascagoula and Escatawpa Rivers. Small freighters and fishing craft navigate some distance up the rivers.

Most of the roads in the county are now hard surfaced. U.S. Highway No. 90, which follows the Old Spanish Trail, is a main thoroughfare along the coast. State Highway No. 63 extends from Pascagoula to Lucedale. State Highway No. 59 is on the west side of the Pascagoula River and runs north and south through Vancleave.

Two railroads serve the county. The Louisville and Nashville Railroad crosses the southern part of the county. The Mississippi Export Railroad runs the entire length of the county, extending north and south from Pascagoula. This line handles local freight and also serves a large paper mill at Moss Point.

There are several consolidated schools in the county, churches of various denominations, and one hospital and a county health unit.

Relief and Drainage

Jackson County is in the southern part of the Gulf Coastal Plain and extends across at least three marine terraces. The Pascagoula and Escatawpa Rivers, the major streams in the county, flow from north to south, unite near Moss Point in the southern part of the county, and empty into the Gulf of Mexico. The elevation ranges from near sea level to about 180 feet. The highest elevation is in the northwestern part of the county.

The southern part of the county is nearly flat, and most of it is near sea level. Scattered, shallow drainageways and swales interrupt the landscape. This area is known locally as the coastal flatwoods. Surface drainage is very slow. During stormy seasons, brackish water often covers the flat areas. The effects of the tides extend 15 to 20 miles inland along the Escatawpa and Pascagoula Rivers.

Toward the north, the elevation increases gradually. It culminates in a series of north-south ridges along a terrace escarpment that runs east and west just south of Big Point and Vancleave. Northwest of this escarpment the landscape is rolling and the drainage pattern is widely branched. In the northern and northeastern parts of the county, the landscape is level to gently undulating and is broken by scattered, poorly drained swales and by low strips along streams. The major streams in this part of the county have distinct valleys, and the soils generally are much better drained than those in the coastal flatwoods.

The Pascagoula and Escatawpa Rivers are bordered by flat, poorly drained strips that are approximately 4 miles wide and consist mostly of tidal marsh and swamp. There are a few steep escarpments along the rivers in the northern part of the county.

Most of the county is in the Pascagoula River watershed. The extreme western part drains into the Tchoutacabouffa River, and the southern part, along the coast, drains into the Mississippi Sound through bayous.

Climate [10]

Jackson County has a humid, subtropical climate. Summer is hot, and winter is alternately hot and cold.

The annual rainfall ranges from 58 inches on the coast to 73 inches in the interior. The difference results from the fact that the interior has heavier and more frequent warm-season showers. Nearly half of the annual rainfall occurs during the period June through September. In spring, summer, and fall, precipitation usually occurs as brief showers, except when it results from tropical storms. In winter, rains may continue for as long as 24 to 36 hours.

Snowfall is infrequent. A measurable amount of snow falls about once in 25 years. The heaviest snowfall recorded at Vancleave was 2 inches and occurred on March 5, 1954.

The average annual temperature is about 68° F. The waters of the Mississippi Sound tend to stabilize the temperature along the coast and to a distance of about 10 miles inland. Daytime temperatures average about 2° higher and nighttime temperatures about 2° lower in the interior of the county than in the coastal areas. Temperatures of 90° or higher occur on an average of 65 days a year in the coastal areas. Temperatures of 90° or higher occur on an average of 90 days in the northern part of the county. Temperatures of 32° or lower occur on an average of 10 days in the coastal areas, and 25 days in the interior, usually in the period between December 3 and February 23.

Table 15 shows monthly averages based on climatic data taken at Biloxi, Harrison County, Miss., and at Vancleave.

Probability of freezing temperatures on or after given dates in spring and on or before given dates in fall are given in table 16. On a clear, calm night, frost can form on vegetation when the temperature registers 32° in a sheltered area about 5 feet above the ground. Because frost and low, though above freezing, temperatures adversely affect seed and vegetation, the dates for threshold temperatures of 32° and 36° are included in table 16.

The relative humidity is 60 percent or more for 78 percent of the time and less than 40 percent for only 4 percent of the time. In summer, the relative humidity is 50 to 79 percent during 54 percent of the hours in which the temperature is 90° or higher, but it never exceeds 80 percent. In winter, the relative humidity is 50 to 79 percent during 53 percent of the hours in which the temperature is below 50°.

Hurricane winds (more than 74 miles per hour) occur about once in 8 years in the coastal areas and about once in 10 years near the northern border of the county. Gales

[10] Prepared by Ralph Sanders, State climatologist, U.S. Weather Bureau, New Orleans, La.

TABLE 15.—*Temperature at Biloxi, Harrison County, Miss., and precipitation at Vancleave, Jackson County, Miss.*

Month	Temperature [1]			Precipitation [2]			
	Average	Absolute maximum	Absolute minimum	Average	Driest year (1954) [3]	Wettest year (1947) [3]	Average snowfall
	°F.	°F.	°F.	Inches	Inches	Inches	Inches
January	53. 7	82	14	4. 44	1. 84	9. 71	([4])
February	55. 7	81	1	4. 21	1. 44	1. 85	([4])
March	60. 0	89	24	7. 96	3. 33	17. 50	0. 1
April	67. 4	91	34	6. 00	. 99	10. 48	0
May	74. 8	98	40	4. 89	. 75	5. 43	0
June	80. 1	102	55	7. 46	4. 48	7. 39	0
July	81. 9	101	61	9. 51	7. 44	2. 15	0
August	81. 8	104	62	7. 44	1. 25	7. 08	0
September	78. 2	101	44	8. 30	4. 12	10. 96	0
October	69. 9	98	32	2. 40	1. 86	1. 97	0
November	59. 6	88	24	4. 44	3. 38	10. 73	0
December	54. 5	80	15	5. 50	5. 22	7. 44	0
Year	68. 1	104	1	72. 55	36. 10	92. 69	. 1

[1] The temperature data were taken at Biloxi, Harrison County, Miss. The average temperatures are for the period 1930–59, inclusive. The absolute maximum and absolute minimum temperatures are for the period 1896-1959, inclusive. Because of the ameliorating effect on temperature along the immediate coast of the waters of Mississippi Sound, maximum temperatures average about 2 degrees higher and minimum temperatures about 2 degrees lower in the interior part of Jackson County than at Biloxi.

[2] The precipitation data were taken at Vancleave. The average precipitation data are for the period June 1940–May 1960, inclusive. The annual precipitation at Vancleave averages about 14 inches more than at Biloxi.

[3] The data for the driest and wettest years are for Vancleave.

[4] Trace.

TABLE 16.—*Probabilities of last freezing temperatures in spring and first in fall*

[Adjusted to account for years without freeze and to represent the interior of Jackson County]

Probability	Dates for given probability at temperature levels shown				
	24° or lower	28° or lower	32° or lower	36° or lower	40° or lower
Spring:					
5 years in 10, later than	January 22	February 14	February 23	March 21	April 4
2 years in 10, later than	February 11	March 1	March 10	April 3	April 18
1 year in 10, later than	February 23	March 9	March 18	April 11	April 25
Fall:					
1 year in 10, earlier than	December 1	November 23	November 11	October 25	October 18
2 years in 10, earlier than	December 10	November 30	November 19	October 31	October 23
5 years in 10, earlier than	([1])	December 16	December 3	November 11	November 3

[1] Occurs 4 years in 10.

(39 to 74 miles per hour) or tropical storm winds occur once in 3 or 4 years.

Tornadoes are nearly unknown in the county, but sometimes, particularly in spring and fall, thunderstorms are accompanied by winds strong enough to cause damage.

Agriculture

Agriculture developed slowly in Jackson County. Very little planting was done by the colonists until 1721. In 1763 cotton was grown on a plantation near the mouth of the Pascagoula River. About 1845, Irish, Scotch, and American immigrants built homes and cleared some land.

Jackson County, like other coastal counties, was once known as cattle country. Cattle, hogs, and sheep roamed the open woods until 1927. Pecans and citrus fruits were grown in the county prior to 1920.

At the present time agriculture is of secondary importance in the economy of the county. In 1959 there were 677 farms in the county. They occupied a total of 65,378 acres. Only 55 had full-time operators. Most of the part-time farm operators are employed in local industries. Corporations and persons living outside the county own large tracts of timberland.

Timber and forest products are the most important crops. Small scattered tracts of timber, mostly second-growth pine, are cut for boards and piling. Second-growth pine is used for pulpwood.

Crops were harvested from 10,092 acres in 1924. Corn occupied 3,212 acres. Crops were harvested from 9,826 acres in 1959. More than 23,000 acres were in pasture in 1959.

Glossary

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

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.

Concretions. Hard grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrations of compounds that cement the soil grains 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; will not hold together in a mass.
Friable. When moist, crushes easily under gentle to moderate 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; tends to stretch somewhat and pull apart, rather than 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.

Fragipan. A dense brittle subsurface horizon, very low in organic matter and clay but rich in silt or very fine sand. This layer seems to be cemented when it is dry, 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.

Hardpan. A hardened or cemented soil horizon, or layer. The soil material may be sandy or clayey, and it may be cemented by iron oxide, silica, calcium carbonate, or other substance.

Horizon, soil. A layer of soil, approximately parallel to the surface, that has distinct characteristics produced by soil-forming processes. Terms used in this report to indicate the relative position of the several soil horizons in the soil profile are as follows:

A Horizon. The surface horizon of a mineral soil having maximum biological activity, or eluviation (removal of materials dissolved or suspended in water), or both.
B Horizon. A soil horizon, usually beneath the A horizon, in which (1) clay, iron, or aluminum, with accessory organic matter, have accumulated; (2) the structure is blocky or prismatic; or (3) the soil has some combination of these features. In soils that have distinct profiles, the B horizon is roughly equivalent to the general term "subsoil."
C Horizon. The unconsolidated rock material in the lower part of the soil profile, like that from which the upper horizons (or at least a part of the B horizon) have developed.
D Horizon. Any stratum underlying the C horizon, or the B if no C is present, which is unlike the C, or unlike the material from which the solum has been formed.

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

Intake rate. The rate, generally expressed in inches per hour, at which rain or irrigation water enters the soil. This rate is controlled partly by surface conditions (infiltration), and partly by subsurface conditions (permeability). It also varies with the method of applying water. The same kind of soil has different intake rates under sprinkler irrigation, border irrigation, and furrow irrigation.

Internal drainage. The downward movement of water through the soil profile. The rate of movement is affected by the texture of the surface layer and subsoil and by the height of the ground water table, either permanent or perched. Relative terms for expressing internal drainage are *very slow, slow, medium, rapid,* and *very rapid.*

Mottled. Irregularly marked with spots of different colors that vary in number and size. Mottling in soils usually indicates poor aeration 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,* 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.

Natural drainage. Refers to moisture conditions 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. The following terms are used to describe natural drainage: *excessively drained, somewhat excessively drained, well drained, moderately well drained, imperfectly or somewhat poorly drained, poorly drained,* and *very poorly drained.*

Nutrients, plant. The elements taken in by plants that are essential to their growth and are used by them in the production of food and tissue. Nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, zinc, and perhaps other elements obtained from the soil, and carbon, hydrogen, and oxygen obtained largely from the air and water, are plant nutrients.

Organic soil. A general term applied to a soil or to a soil horizon that consists primarily of organic matter, such as peat soils, muck soils, and peaty soil layers. In chemistry, organic refers to the compounds of carbon.

Parent material, soil. The weathered rock or partly weathered soil material from which a soil has formed; the C horizon.

Permeability, soil. The quality of a soil that enables water or air to move through it. Terms used to describe permeability are *very slow, slow, moderately slow, moderate, moderately rapid, rapid,* and *very rapid.*

Profile, soil. A vertical section of the soil through all its horizons and extending into the parent material. See also Horizon, soil.

Reaction, soil. The degree of acidity or alkalinity of a soil, expressed in pH values or in words, as follows:

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

Relief. Elevations or inequalities of the land surface, considered collectively.

Sand. As a soil separate, individual rock or mineral fragments 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz, but they may be of any mineral composition. As a soil textural class, soil that is 85 percent or more sand and not more than 10 percent clay.

Silt. As a soil separate, individual mineral particles 0.002 millimeter to 0.05 millimeter in diameter. As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

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. Structure is classified by grade, class, and type.

Grade. Distinctness of aggregation. It expresses the differential between cohesion within aggregates and adhesion between aggregates. Terms: *structureless* (*single grain* or *massive*), *weak, moderate,* and *strong.*

Class. Size of aggregates. Terms: *very fine* or *very thin, fine* or *thin, medium, coarse* or *thick,* and *very coarse* or *very thick.*

Type. Shape and arrangement of individual natural soil aggregates. Terms: *platy, prismatic, columnar, blocky, subangular blocky, granular,* and *crumb.* (Example of soil-structure grade, class, and type: Moderate, coarse, subangular blocky.)

Subsoil. Technically, the B horizon of a soil with a distinct profile; commonly, that part of the profile below plow depth.

Substratum. Any layer lying beneath the solum, or true soil; the C or D horizon.

Surface runoff. The removal of water by flow over the surface of the soil. The amount and rapidity of surface runoff are affected by the texture, structure, and porosity of the surface layer; by the vegetative covering; by the prevailing climate; and by the slopes. The rate of surface runoff is expressed as follows: *very rapid, rapid, medium, slow, very slow,* and *ponded.*

Surface soil. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, about 5 to 8 inches in thickness; the plowed layer.

Terrace (geological). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea. Stream terraces are frequently called *second bottoms,* as contrasted to *first bottoms* (or 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. (See Clay, Sand, and Silt.) The basic textural classes, in order of increasing proportions of fine particles, are as follows: 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."

Topsoil. Presumably fertile soil or soil material, rich in organic matter, that is used to topdress roadbanks, parks, gardens, and lawns.

Upland (geologic). Land consisting of material unworked by water in recent geologic time and ordinarily lying at a higher elevation than flood plains or stream terraces. Land above the lowlands along rivers.

V-type ditch. A drainage ditch that is V-shaped and has smooth side slopes.

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.

W-type ditch. Two parallel drainage ditches, each having a V-cross section, and the excavated material from the ditches placed between them.

GUIDE TO MAPPING UNITS

Map	Soil name	Page	Capability units		Woodland groups		Forage sites	
			Symbol	Page	Number	Page	Symbol	Page
Ad	Alluvial land	33	Vw-3	11	1	17	E	15
Ba	Bayboro silt loam	38	IIIw-4	9	5	20	A	14
BoA	Bowie loam, 0 to 2 percent slopes	39	IIw-1	7	3	18	B	15
BoB	Bowie loam, 2 to 5 percent slopes	39	IIe-1	6	3	18	B	15
BoC	Bowie loam, 5 to 8 percent slopes	39	IIIe-2	8	3	18	B	15
BoD	Bowie loam, 8 to 12 percent slopes	39	IVe-1	9	3	18	B	15
Cb	Coastal beach	39	VIIIs-1	11				
Cx	Coxville silt loam	39	IIIw-3	8	5	20	A	14
DbA	Dunbar loam, 0 to 2 percent slopes	40	IIw-2	7	3	18	A	14
DbB	Dunbar loam, 2 to 5 percent slopes	40	IIe-2	7	3	18	A	14
Du	Dune land	40	VIIIs-1	11				
EsB	Eustis loamy sand, 0 to 5 percent slopes	40	IIIs-1	9	7	20	C	15
EsC	Eustis loamy sand, 5 to 8 percent slopes	40	IVs-1	10	7	20	C	15
EsE	Eustis loamy sand, 8 to 17 percent slopes	40	VIs-1	11	7	20	C	15
EuC	Eustis and Lakeland sands, 0 to 8 percent slopes	41	IVs-2	10	6	20	C	15
EuD	Eustis and Lakeland sands, 8 to 12 percent slopes	41	VIs-1	11	6	20	C	15
FaA	Fairhope very fine sandy loam, 0 to 2 percent slopes	41	IIw-3	8	9	21	A	14
FaB	Fairhope very fine sandy loam, 2 to 5 percent slopes	41	IIe-3	7	9	21	A	14
FaC	Fairhope very fine sandy loam, 5 to 8 percent slopes	41	IIIe-2	8	9	21	A	14
GoA	Goldsboro loam, 0 to 2 percent slopes	41	IIw-1	7	3	18	A	14
GoB	Goldsboro loam, 2 to 5 percent slopes	42	IIe-1	6	3	18	A	14
GoC	Goldsboro loam, 5 to 8 percent slopes	42	IIIe-1	8	3	18	A	14
Gr	Grady soils	42	Vw-2	11	11	21	A	14
KsB	Klej loamy sand, 0 to 5 percent slopes	42	IIIs-2	9	4	19	A	14
KsD	Klej loamy sand, 5 to 12 percent slopes	42	IVs-1	10	4	19	A	14
LaB	Lakeland loamy sand, 0 to 5 percent slopes	43	IIIs-1	9	7	20	C	15
LaC	Lakeland loamy sand, 5 to 8 percent slopes	43	IVs-1	10	7	20	C	15
LaE	Lakeland loamy sand, 8 to 17 percent slopes	43	VIs-1	11	7	20	C	15
LyA	Lynchburg very fine sandy loam, 0 to 2 percent slopes	43	IIw-2	7	3	18	A	14
LyB	Lynchburg very fine sandy loam, 2 to 5 percent slopes	43	IIe-2	7	3	18	A	14
Ma	Made land	43						
NoA	Norfolk fine sandy loam, 0 to 2 percent slopes	44	I-1	6	2	17	B	15
NoB	Norfolk fine sandy loam, 2 to 5 percent slopes	44	IIe-1	6	2	17	B	15
NoC	Norfolk fine sandy loam, 5 to 8 percent slopes	44	IIIe-1	8	2	17	B	15
NoD	Norfolk fine sandy loam, 8 to 12 percent slopes	44	IVe-1	9	2	17	B	15
OrA	Orangeburg fine sandy loam, 0 to 2 percent slopes	44	I-1	6	2	17	B	15
PhA	Pheba loam, 0 to 2 percent slopes	44	IIIw-2	8	10	21	B	15
PhB	Pheba loam, 2 to 5 percent slopes	45	IIIw-2	8	10	21	B	15
Pm	Plummer loamy sand	45	Vw-1	10	8	20	A	14
Pn	Plummer loamy sand, dark surface	45	Vw-1	10	8	20	A	14
Ra	Rains loam, dark surface	45	IVw-1	10	8	20	A	14
RoA	Ruston and Orangeburg fine sandy loams, 0 to 2 percent slopes	46	I-1	6	2	17	B	15
RoB	Ruston and Orangeburg fine sandy loams, 2 to 5 percent slopes	46	IIe-1	6	2	17	B	15
RoC	Ruston and Orangeburg fine sandy loams, 5 to 8 percent slopes	46	IIIe-1	8	2	17	B	15
RoD	Ruston and Orangeburg fine sandy loams, 8 to 12 percent slopes	46	IVe-1	9	2	17	B	15
RoE	Ruston and Orangeburg fine sandy loams, 12 to 17 percent slopes	46	VIe-1	11	2	17	B	15
Sa	Sandy and clayey land	46	VIs-1	11	7	20		
SbA	Savannah loam, 0 to 2 percent slopes	47	IIw-1	7	10	21	B	15
SbB	Savannah loam, 2 to 5 percent slopes	46	IIe-1	6	10	21	B	15
ScA	Scranton loamy sand, 0 to 2 percent slopes	47	IVw-2	10	8	20	A	14
ScB	Scranton loamy sand, 2 to 5 percent slopes	47	IVw-2	10	8	20	A	14
SuB	Susquehanna, Bowie, and Boswell soils, 2 to 5 percent slopes	47	IVe-2	9	9	21	B	15
SuC	Susquehanna, Bowie, and Boswell soils, 5 to 8 percent slopes	47	VIe-2	11	9	21	B	15
SuD	Susquehanna, Bowie, and Boswell soils, 8 to 12 percent slopes	48	VIe-2	11	9	21	B	15
Sw	Swamp	48	VIIw-1	11	11	21	E	15
Tm	Tidal marsh	48	VIIw-2	11			D	15

Accessibility Statement

This document is not accessible by screen-reader software. The Natural Resources Conservation Service (NRCS) is committed to making its information accessible to all of its customers and employees. If you are experiencing accessibility issues and need assistance, please contact our Helpdesk by phone at (800) 457-3642 or by e-mail at ServiceDesk-FTC@ftc.usda.gov. For assistance with publications that include maps, graphs, or similar forms of information, you may also wish to contact our State or local office. You can locate the correct office and phone number at http://offices.sc.egov.usda.gov/locator/app.

Nondiscrimination Statement

Nondiscrimination Policy

The U.S. Department of Agriculture (USDA) prohibits discrimination against its customers, employees, and applicants for employment on the basis of race, color, national origin, age, disability, sex, gender identity, religion, reprisal, and where applicable, political beliefs, marital status, familial or parental status, sexual orientation, whether all or part of an individual's income is derived from any public assistance program, or protected genetic information. The Department prohibits discrimination in employment or in any program or activity conducted or funded by the Department. (Not all prohibited bases apply to all programs and/or employment activities.)

To File an Employment Complaint

If you wish to file an employment complaint, you must contact your agency's EEO Counselor (http://directives.sc.egov.usda.gov/33081.wba) within 45 days of the date of the alleged discriminatory act, event, or personnel action. Additional information can be found online at http://www.ascr.usda.gov/complaint_filing_file.html.

To File a Program Complaint

If you wish to file a Civil Rights program complaint of discrimination, complete the USDA Program Discrimination Complaint Form, found online at http://www.ascr.usda.gov/complaint_filing_cust.html or at any USDA office, or call (866) 632-9992 to request the form. You may also write a letter containing all of the information requested in the form. Send your completed complaint form or letter by mail to U.S. Department of Agriculture; Director, Office of Adjudication; 1400 Independence Avenue, S.W.; Washington, D.C. 20250-9419; by fax to (202) 690-7442; or by email to program.intake@usda.gov.

Persons with Disabilities

If you are deaf, are hard of hearing, or have speech disabilities and you wish to file either an EEO or program complaint, please contact USDA through the Federal Relay Service at (800) 877-8339 or (800) 845-6136 (in Spanish).

If you have other disabilities and wish to file a program complaint, please see the contact information above. If you require alternative means of communication for

program information (e.g., Braille, large print, audiotape, etc.), please contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).

Supplemental Nutrition Assistance Program

For additional information dealing with Supplemental Nutrition Assistance Program (SNAP) issues, call either the USDA SNAP Hotline Number at (800) 221-5689, which is also in Spanish, or the State Information/Hotline Numbers (http://directives.sc.egov.usda.gov/33085.wba).

All Other Inquiries

For information not pertaining to civil rights, please refer to the listing of the USDA Agencies and Offices (http://directives.sc.egov.usda.gov/33086.wba).