Issued January 1968

SOIL SURVEY

Dougherty County Georgia

UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
In cooperation with
UNIVERSITY OF GEORGIA, COLLEGE OF AGRICULTURE
AGRICULTURAL EXPERIMENT STATIONS

Major fieldwork for this soil survey was done in the period 1960–63. Soil names and descriptions were approved in 1965. Unless otherwise indicated statements in the publication refer to conditions in the county in 1964. This suvey was made cooperatively by the Soil Conservation Service and the University of Georgia, College of Agriculture, Agricultural Experiment Stations; it is part of the technical assistance furnished to the Flint River Soil and Water Conservation District.

HOW TO USE THE SOIL SURVEY

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

Locating Soils

All the soils of Dougherty County are shown on the detailed map at the back of this survey. This map consists of many sheets that are made from aerial photographs. Each sheet is numbered to correspond with a number shown on the Index to Map Sheets.

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

Finding and Using Information

The "Guide to Mapping Units" can be used to find information in the survey. This guide lists all of the soils of the county in alphabetic order by map symbol. It shows the page where each kind of soil is described and also the page for the capability unit, woodland suitability group, and wildlife group.

Individual colored maps showing the relative suitability or limitations of soils for many specific purposes other than for cultivated crops, woodland, and wildlife can be developed by using the soil map and information in the text. These interpretations can be developed by grouping the soils according to their suitability or limitation for a particular use. Translucent material can be used as an overlay over the soil map and colored to show soils that have the same limitation or suitability. For example, soils that have a slight limitation for a given use can be colored green, those with a moderate limitation can be colored yellow, and those with a severe limitation can be colored red.

Farmers and those who work with farmers can learn about use and management of the soils from the soil descriptions and from the discussions of the interpretative groupings.

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

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

Community planners and others concerned with nonfarm development can read about the soil properties that affect the choice of homesites, industrial sites, schools, and parks in the section "Soil Interpretations for Nonfarm Uses."

Engineers and builders will find under "Use of Soils for Engineering" tables that give engineering descriptions of the soils in the county and that name soil features that affect engineering practices and structures.

Scientists and others can read about how the soils were formed and how they are classified in the section "Formation, Morphology, and Classification of the Soils."

Students, teachers, and others will find information about soils and their management in various parts of the text.

Newcomers in Dougherty County may be especially interested in the section "General Soil Map," where broad patterns of soils are described. They may also be interested in the section "Additional Facts About the County."

Cover pictures.—At the top is a peanut crop in a terraced, contour-cultivated field on Orangeburg loamy sand, 2 to 5 percent slopes; in the center is a natural stand of longleaf pine on Orangeburg loamy sand, 2 to 5 percent slopes; at the bottom is a pasture of small grain and crimson clover in a pecan grove on Orangeburg loamy sand, 0 to 2 percent slopes.

U.S. GOVERNMENT PRINTING OFFICE: 1967

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Washington, D.C. 20402

Contents

NOTICE TO LIBRARIANS

Series year and series number are no longer shown on soil surveys. See explanation on the next page.

Issued January 1968

EXPLANATION

Series Year and Series Number

Series year and number were dropped from all soil surveys sent to the printer after December 31, 1965. Many surveys, however, were then at such advanced stage of printing that it was not feasible to remove series year and number. Consequently, the last issues bearing series year and number will be as follows:

Series 1957, No. 23, Las Vegas and Eldorado Valleys Area, Nev.
Series 1958, No. 34, Grand Traverse County, Mich.
Series 1959, No. 42, Judith Basin Area, Mont.
Series 1960, No. 31, Elbert County, Colo. (Eastern Part)
Series 1961, No. 42, Camden County, N.J.
Series 1962, No. 13, Chicot County, Ark.
Series 1963, No. 1, Tippah County, Miss.

Series numbers will be consecutive in each series year, up to and including the numbers shown in the foregoing list. The soil survey for Tippah County, Miss., will be the last to have a series year and series number.

SOIL SURVEY OF DOUGHERTY COUNTY, GEORGIA

BY ROYCE G. MIDDLETON, SOIL CONSERVATION SERVICE

SOILS SURVEYED BY ROYCE G. MIDDLETON, MARION M. BLEVINS, ERNEST H. SMITH, RUSSELL O. NEAL, AND W. S. CARSON, SOIL CONSERVATION SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE, IN COOPERATION WITH THE UNIVERSITY OF GEORGIA, COLLEGE OF AGRICULTURE, AGRICULTURAL EXPERIMENT STATIONS

DOUGHERTY COUNTY is in the southwestern part of Georgia (fig. 1) and is entirely within the Southern Coastal Plain Major Land Resource Area. Albany, the county seat and largest city, is on the Flint River near the northern boundary of the county. It is the trade center of southwestern Georgia and provides a ready market for the agricultural products of the county. According to the U.S. Census, about 74 percent of the population of the county lived in Albany in 1960.

The total land area of the county is 208,640 acres. More than 70 percent of the acreage is made up of soils that have a surface layer of sandy loam or of a sandier texture. Many of the soils have a moderately permeable subsoil, but the range is from slowly permeable to rapidly permeable. About half the acreage consists of soils that have only slight limitations for use as residential sites and industrial sites and for such recreational uses as campsites, intensive play areas, and picnic grounds. Most of the soils are productive of the locally grown crops if enough fertilizer is applied.

Most of Dougherty County is level to gently sloping; only 5 percent has slopes of more than 5 percent. Most of the area west of the Flint River slopes gently to the south, and most of that east of the Flint River has slightly steeper slopes to the west and northwest. Elevations are generally higher along the northern boundary of the county than in other parts, but the highest elevation, 330 feet, is in the southeastern corner (*12*).[1]

How This Survey Was Made

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

They went into the county knowing they would likely 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 rock; and many facts about the soils. They dug many holes to expose soil profiles. A profile is the sequence of natural layers, or horizons, in a soil; it extends from the surface down into the parent material that has not been changed much by leaching or by 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 nationwide, uniform procedures. To use this survey efficiently, it is necessary to know the kinds of groupings most used in a local soil classification.

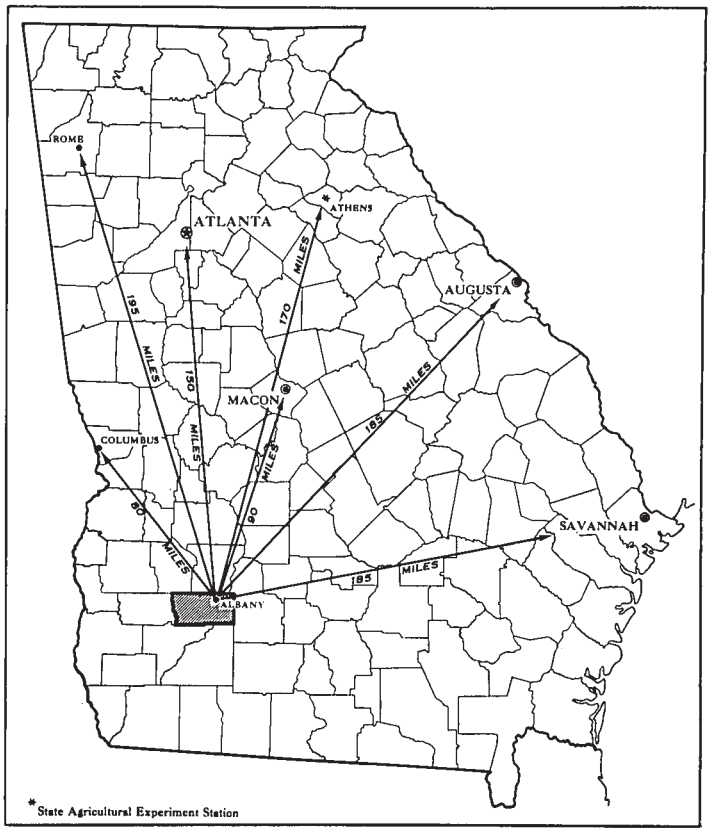

Figure 1.—Location of Dougherty County in Georgia.

[1] Italic numbers in parentheses refer to Literature Cited, p. 63.

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. Greenville and Tifton, for example, are the names of two soil series. All the soils in the United States having the same series name are essentially alike in those characteristics that affect their behavior in the natural, undisturbed landscape. Soils of one series can differ somewhat in texture of the surface soil and in slope, stoniness, or some other characteristic that affects use of the soils by man.

Many soil series contain soils that differ in the texture of their surface layer. According to such 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. Greenville sandy loam and Greenville sandy clay loam are two soil types in the Greenville series. The difference in texture of the surface layers is apparent from their names.

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 phases. The name of a soil phase indicates a feature that affects management. For example, Greenville sandy loam, 2 to 5 percent slopes, eroded, is one of four phases of Greenville sandy loam, a soil type that has a slope range of 0 to 8 percent.

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

In preparing some detailed maps, the soil scientists have a problem of delineating areas where different kinds of soils are so intricately mixed or occur in individual areas of such small size that it is not practical to show them separately on the map. They show such a mixture of soils as one mapping unit and call it a soil complex. Ordinarily, a complex is named for the major kinds of soils in it, for example, Cuthbert-Orangeburg complex. Another kind of mapping unit is the undifferentiated group, which consists of two or more soils that may occur together without regularity in pattern or relative proportion. The individual tracts of the component soils could be shown separately on the map, but the differences between the soils are so slight that the separation is not important for the objectives of the soil survey. An example of an undifferentiated group is Dunbar, Izagora, and Bladen soils.

Also, most surveys include areas in which the soil material is so rocky, so shallow, or so frequently worked by wind and water that it scarcely can be called soil. These areas are shown on the soil map like other mapping units, but they are given descriptive names, such as Swamp or Alluvial land, wet, and are called land types rather than soils.

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

But only part of a soil survey is done when the soils have been named, described, and delineated on the map, and the laboratory data and yield data have been assembled. The mass of detailed information then needs to be organized in such a way that it is readily useful to different groups of readers, among them farmers, managers of woodland, engineers, and homeowners. Grouping soils that are similar in suitability for each specified use is the method of organization commonly used in the soil surveys. On the basis of the yield and practice tables and other data, the soil scientists set up trial groups. They test these groups by further study and by consultation with farmers, agronomists, engineers, and others, and then adjust the groups according to the results of their studies and consultation. Thus, the groups that are finally evolved reflect up-to-date knowledge of the soils and their behavior under present methods of use and management.

General Soil Map

This general soil map at the back of this survey shows, in color, the soil associations in Dougherty County. A soil association is a landscape that has a distinctive proportional pattern of soils. It normally consists of one or more major soils and at least one minor soil, and it is named for the major soils. The soils in one association may occur in another, but in a different pattern.

A map showing soil associations is useful to people who want a general idea of the soils in a county, who want to compare different parts of a county, or who want to know the location of large tracts that are suitable for a certain kind of farming or other land use. Such a map is not suitable for planning the management of a farm or field, because the soils in any one association ordinarily differ in slope, depth, stoniness, drainage, and other characteristics that affect management.

The eight associations in Dougherty County are described in this section. More detailed information about the individual soils in each association can be obtained by studying the detailed map and by reading the section "Descriptions of the Soils."

1. Orangeburg-Red Bay-Grady association

Deep, well-drained soils that have a subsoil of yellowish-red to dark-red sandy clay loam and are on broad undulating uplands; and poorly drained, grayish soils in depressions

This association consists chiefly of broad, undulating upland areas that have slopes of less than 5 percent. There are few streams, and the excess surface water from a large part of the acreage drains into depressions that have no natural outlets. This association makes up about 36 percent of the county.

The dominant soils of the upland areas are the Orangeburg and Red Bay soils, which are deep, are well drained, and have a surface layer of loamy sand and a subsoil of sandy clay loam or sandy loam. The Orangeburg soils have a yellowish-brown to dark grayish-brown surface layer and a yellowish-red or red subsoil. The Red Bay soils have a dark reddish-brown or dark-brown surface layer and a red or dark-red subsoil. The Grady soils are in the depressions. They are poorly drained and have a very dark gray surface layer and a gray clayey subsoil mottled with red and brown.

The minor soils of the upland areas are the well-drained Wagram soils and the sandy, somewhat excessively drained Eustis soils. On the larger flats are the somewhat poorly drained Lynchburg soils.

The Orangeburg soils make up about 50 percent of association 1; the Red Bay soils, 20 percent; the Grady soils, 12 percent; and the Wagram, Eustis, Lynchburg, and other minor soils, about 18 percent.

Most of this association has been cleared, and 60 percent of it is cultivated. Of the remaining acreage, about a third is pasture, a third is woodland, and a third has been built up for nonfarm uses. West of the Flint River are mostly large plantations that are managed for wildlife production; east of the river are general farms that range from a few acres to several hundred acres in size. Pecans, corn, peanuts, and cotton are the principal crops. A large acreage is used for raising beef cattle.

The well-drained soils of this association are suited to many uses. They are well suited to many crops grown in the area, and they are also suitable for residential development, industrial development, trafficways, and such recreational uses as campsites, picnic areas, intensive play areas, and golf fairways.

2. Greenville-Grady association

Deep, well-drained soils that have a subsoil of dark-red sandy clay and are on broad undulating uplands; and poorly drained, grayish soils in depressions

This association consists chiefly of broad, undulating upland areas that have slopes of less than 5 percent. There are few streams, and the excess surface water from a large part of the acreage drains into depressions that have no natural outlets. This association makes up about 32 percent of the county.

The dominant soils of the upland areas are the Greenville soils, which are well drained. In most areas these soils have a surface layer of dark reddish-brown sandy loam, but in some of the more eroded areas the surface layer is sandy clay loam. The subsoil is dark-red sandy clay. The Grady soils are in the depressions. They are poorly drained and have a very dark gray surface layer and a gray clayey subsoil mottled with red and brown.

The minor soils of the upland areas are the well-drained Tifton soils, which have a considerable number of iron concretions on the surface and throughout the profile, and the Orangeburg soils, which do not have so red a surface layer or so clayey a subsoil as the Greenville soils. On some of the larger flats are the somewhat poorly drained Lynchburg soils.

The Greenville soils make up about 70 percent of association 2; the Grady soils, 19 percent; and the Tifton, Orangeburg, Lynchburg, and other soils together, about 11 percent.

Most of the acreage is in large plantations that are managed as hunting preserves and for general farming. Smaller farms are used for raising beef cattle, for growing cultivated crops, or for a combination of the two. The principal crops are corn, cotton, peanuts, oats, and pecans. A large acreage in the southwestern corner of the county is owned by a paper company and has been planted to pine trees.

The well-drained soils of this association are suited to many uses. They are well suited to many crops grown in the area, and they are also suitable for residential development, industrial development, and trafficways, and for such recreational uses as campsites, picnic areas, intensive play areas, and golf fairways.

3. Swamp-Alluvial land association

Very poorly drained or poorly drained loamy and sandy alluvium covered with water or wet most of the year

This association is in the western half of the county and consists of nearly level areas on flood plains, mostly along Chickasawhatchee Creek, Kiokee Creek, and Cooleewahee Creek. Most areas are flooded frequently for long periods in winter and in spring. In places the creeks have no definite channel but consist of several small, meandering streams. This association makes up about 10 percent of the county.

Swamp, Alluvial land, and the Dunbar soils are dominant in this association. The surface layer varies greatly in color, texture, and consistence, and the subsoil is gray to yellowish-brown, sticky clay in most places.

The minor soils of this association are the moderately well drained Izagora soils and the poorly drained Bladen soils.

Swamp makes about 60 percent of association 3; Alluvial land, 12 percent; the Dunbar soils, 10 percent; and the Izagora, Bladen, and other minor soils about 18 percent.

Most of this association is woodland consisting of cutover hardwoods and an understory of water-tolerant vines, ferns, shrubs, and other water-tolerant plants.

The soils of this association are suited to woodland and wildlife. They have severe limitations for cultivation and for use as homesites, industrial sites, trafficways, campsites, picnic areas, and intensive play areas.

4. Tifton-Carnegie association

Well-drained, pebbly soils that have a subsoil of yellowish-brown to red sandy clay loam or sandy clay and are on gently rolling uplands

This association is in the eastern part of the county and consists chiefly of gently rolling upland areas that have slopes of less than 5 percent. It makes up about 6 percent of the county.

The dominant soils are the Tifton and Carnegie soils, which are well drained, contain pebbles, and have a surface layer of sandy loam and a subsoil of sandy clay loam to sandy clay. The Tifton soils have a grayish-brown or dark grayish-brown surface layer and a yellowish-brown to red subsoil. The Carnegie soils have a brown surface layer and a yellowish-red or red subsoil and are mottled at a depth of 18 to 26 inches.

The minor soils of this association are the somewhat poorly drained Lynchburg soils, the moderately well drained Sawyer soils, the well drained Norfolk soils, the poorly drained Grady soils, and the somewhat poorly drained Susquehanna soils. The Sawyer and Susquehanna soils have a sticky, plastic, clayey subsoil.

The Tifton soils make up about 45 percent of association 4; the Carnegie soils, 17 percent; and the Lynchburg, Sawyer, Norfolk, Grady, Susquehanna, and other minor soils, about 38 percent.

Most of this association has been cleared, and about 70 percent is cultivated. Of the remaining acreage, about half is used for pasture and half for woodland. Most of the acreage is in owner-operated general farms that range from a few acres to several hundred acres in size. Corn, peanuts, and cotton are the principal crops. Beef cattle are raised, and pecans are grown on most farms.

The well-drained soils of this association are suited to many uses. They are well suited to many crops grown in the area and are highly productive. Much of the acreage has no more than moderate limitations for use as residential sites, industrial sites, and trafficways, and for such recreational uses as campsites and picnic areas.

5. Izagora-Dunbar-Flint association

Nearly level, moderately well drained or somewhat poorly drained soils that have a clayey or loamy subsoil and are on stream terraces

This association consists chiefly of nearly level soils on terraces along the Flint River, Piney Woods Creek, and Dry Creek. It makes up about 6 percent of the county. Some areas are subject to flooding.

The dominant soils are the Izagora, Dunbar, and Flint. The Izagora soils, which are moderately well drained, have a pale-brown to very dark grayish-brown surface layer and a subsoil of yellow or yellowish-brown sandy clay loam that is mottled with red, brown, and gray in the lower part. The Dunbar soils, which are somewhat poorly drained, have a dark grayish-brown surface layer and a subsoil of light yellowish-brown or yellowish-brown sandy clay or silty clay mottled with red, brown, yellow, and gray. The Flint soils, which are moderately well drained, have a surface layer of dark grayish-brown, brown, or dark-brown fine sandy loam and a yellowish-brown to yellowish-red clayey subsoil that is mottled in the lower half.

The minor soils consist of the poorly drained Bladen soils, which have a dark-gray surface layer and a subsoil of gray clay or sandy clay; the well-drained, sandy Wagram soils; and areas of Alluvial land, which are wet and consist of recent alluvium that varies greatly in color, texture, and consistence.

The Izagora soils make up about 42 percent of association 5; the Dunbar soils, 30 percent; the Flint soils, 16 percent; and the Bladen, Wagram, and other minor soils and Alluvial land, about 12 percent.

About 40 percent of the acreage has been cleared. About a third of this is used for cultivated crops, a third is used as pasture, and a third has been built up for nonfarm uses. The remaining acreage is in cutover timber, mostly pine.

The soils of this association are suitable for woodland, pasture, and wildlife; they are suited to only a few crops. Much of the acreage has severe limitations for use as homesites, industrial sites, trafficways, campsites, picnic areas, and intensive play areas.

6. Lakeland-Eustis association

Deep, somewhat excessively drained or excessively drained sandy soils in broad undulating areas

This association consists chiefly of sandy soils that have slopes of less than 5 percent. There are few streams, and the excess surface water from a large part of the acreage drains into depressions that have no natural outlets. This association makes up about 5 percent of the county.

The dominant soils are the Lakeland and Eustis soils. The Lakeland soils, which are excessively drained, have a surface layer of dark grayish-brown to very dark grayish-brown sand over very pale brown to yellowish-brown sandy material. The Eustis soils, which are somewhat excessively drained, have a dark grayish-brown to dark grayish-brown sandy surface layer over brown to yellowish-red loamy sand.

The minor soils are the well-drained Orangeburg and Norfolk soils, the somewhat poorly drained Lynchburg soils, and the Wagram soils, which are less sandy than the Lakeland soils.

The Lakeland soils make up about 45 percent of association 6; the Eustis soils, about 30 percent; and the Orangeburg, Norfolk, Lynchburg, and other minor soils, about 25 percent.

Most of this association has been cleared and is cultivated. All of the acreage in the southwestern part of the county is owned by a paper company and has been planted to pine trees. Of the acreage in the north-central part of the county, some is cultivated and some has been developed as subdivisions. On the east side of the river and on the outskirts of Albany there is about 400 acres of deep sand that supports little vegetation.

If the sandy soils of this association are used for cultivated crops or pasture, only fair to poor yields of crops can be expected. Much of the acreage has moderate limitations for use as homesites, industrial sites, trafficways, campsites, picnic areas, and intensive play areas.

7. *Lynchburg-Irvington-Goldsboro association*

Nearly level, somewhat poorly drained or moderately well drained loamy soils on uplands

This association consists chiefly of upland areas that have slopes of less than 2 percent. It makes up about 4 percent of the county.

The dominant soils are the Lynchburg soils, which are somewhat poorly drained, and the Irvington and Goldsboro soils, which are moderately well drained. The Lynchburg soils have a surface layer of gray to dark grayish-brown sandy loam and a subsoil of yellow or pale-yellow sandy loam or sandy clay loam mottled with light gray and yellowish brown. The Irvington soils have a surface layer of dark-brown or very dark grayish-brown sandy loam and a subsoil of yellowish-brown or strong-brown sandy clay loam mottled with yellow and brown in the lower part. These soils have many small concretions of iron and manganese on the surface and throughout the profile. The concretions in the lower part of the subsoil are cemented together. The Goldsboro soils have a surface layer of dark grayish-brown or very dark grayish-brown sandy loam and a subsoil of yellowish-brown sandy clay loam mottled with strong brown and pale yellow in the lower part.

The minor soils are the poorly drained Grady soils, the well-drained Norfolk soils, and the well-drained, pebbly Tifton soils.

The Lynchburg soils make up about 35 percent of association 7; the Irvington soils, 30 percent; the Goldsboro soils, 22 percent; and the Grady, Norfolk, Tifton, and other minor soils, about 13 percent.

Most of this association in the western part of the county is used for pine timber, but there are hardwood trees in some areas. About half the acreage in the eastern part of the county is in timber, and the other half is used for pasture and cultivated crops.

The soils of this association, if adequately drained, are highly productive. They are suited to pasture, woodland, and wildlife. Because of their seasonal high water table, they have moderate or severe limitations for use as residential or industrial sites, trafficways, campsites, picnic areas, and intensive play areas.

8. *Dunbar-Izagora-Bladen association*

Moderately well drained to poorly drained, frequently flooded soils along the Flint River

This association consists of level to gently sloping areas on the flood plains of the Flint River. It is frequently flooded, but usually only for a few days at a time. This association makes up about 1 percent of the county.

The dominant soils are the Dunbar, Izagora, and Bladen. The Dunbar soils, which are somewhat poorly drained, have a surface layer of dark grayish-brown loamy sand to loam and a subsoil of light yellowish-brown or yellowish-brown sandy clay or silty clay mottled with gray, brown, yellow, and red. The Izagora soils, which are moderately well drained, have a surface layer of pale-brown to very dark grayish-brown loamy fine sand or sandy loam and a subsoil of yellow or yellowish-brown sandy clay loam. The Bladen soils, which are poorly drained, have a dark gray to very dark grayish-brown surface layer and a predominantly gray clayey subsoil mottled with red and brown.

The minor components of this association are the moderately well drained Flint soils and poorly drained Alluvial land, which is along the smaller drainageways.

The Dunbar soils make up about 40 percent of association 8; the Izagora soils, 23 percent; the Bladen soils, 23 percent; and the Flint soils and other minor soils and Alluvial land, about 14 percent.

Because of the flood hazard, a high water table, and a clayey subsoil, the soils of this association are mostly in native vegetation, which consists of hardwoods. They have severe limitations for cultivation and for use as homesites, industrial sites, trafficways, campsites, picnic areas, and intensive play areas. They are suitable for woodland and wildlife.

Descriptions of the Soils

In this section the soils of Dougherty County are described in detail. The procedure is to describe first each soil series and then the mapping units in that series. Thus, to get full information on any one mapping unit, it is necessary to read the description of that unit and also the description of the soil series to which it belongs.

The description of the soil series includes a description of a profile that is considered representative of all the soils of the series. If the profile of a given mapping unit differs from this typical profile, the differences are stated in the description of the mapping unit, unless they are apparent from the name of the mapping unit. Many of the more common terms used in describing the soil series and mapping units are defined in the Glossary, and some are defined in the section "How This Survey Was Made."

The approximate acreage and proportionate extent of the soils are shown in table 1. At the back of this survey is the "Guide to Mapping Units," which lists the mapping units in the county and shows the capability unit, the woodland suitability group, and the wildlife group each mapping unit is in and the page where each of these groups is described.

Albany Series

The Albany series consists of somewhat poorly drained, sandy soils on level or slightly depressed uplands. These soils have a surface layer of sand that is dark gray or very dark gray in the upper part and light brownish gray in the lower part. Beneath the surface layer is pale-brown or light yellowish-brown sand or loamy sand. This extends to a depth of 40 to 60 inches and is underlain by sandy clay loam.

These soils are low in natural fertility, contain little organic matter, and are strongly acid. Permeability is rapid, and the available water capacity of the uppermost 3 feet is low.

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

Soil	Area	Extent	Soil	Area	Extent
	Acres	*Percent*		*Acres*	*Percent*
Albany sand, 0 to 2 percent slopes	550	0. 3	Lucy loamy sand, 0 to 2 percent slopes	1, 245	0. 6
Alluvial land, wet	3, 365	1. 6	Lucy loamy sand, 2 to 5 percent slopes	2, 840	1. 4
Americus loamy sand, 0 to 5 percent slopes	645	. 3	Lucy loamy sand, 5 to 8 percent slopes	240	. 1
Bladen loam	2, 290	1. 1	Lynchburg sandy loam, 0 to 2 percent slopes	4, 340	2. 1
Carnegie sandy loam, 2 to 5 percent slopes, eroded	1, 295	. 6	Marlboro sandy loam, 2 to 5 percent slopes	430	. 2
Carnegie sandy loam, 5 to 8 percent slopes, eroded	780	. 4	Norfolk loamy sand, 0 to 2 percent slopes	945	. 5
Cuthbert-Orangeburg complex, 5 to 8 percent slopes, eroded	110	(1)	Norfolk loamy sand, 2 to 5 percent slopes	1, 540	. 7
Cuthbert-Orangeburg complex, 12 to 17 percent slopes	290	. 1	Ocilla loamy sands, 0 to 2 percent slopes	980	. 5
Dunbar, Izagora, and Bladen soils	5, 775	2. 8	Orangeburg loamy sand, 0 to 2 percent slopes	11, 890	5. 7
Dunbar-Izagora-Bladen complex	2, 600	1. 2	Orangeburg loamy sand, 2 to 5 percent slopes	19, 235	9. 2
Dune land	445	. 2	Orangeburg loamy sand, 2 to 5 percent slopes, eroded	7, 020	3. 4
Eustis loamy sand, 0 to 5 percent slopes	5, 420	2. 6	Orangeburg loamy sand, 5 to 8 percent slopes, eroded	960	. 5
Eustis loamy sand, 5 to 8 percent slopes	240	. 1	Pelham loamy sand, 0 to 2 percent slopes	425	. 2
Flint fine sandy loam, 0 to 2 percent slopes	1, 850	. 9	Red Bay loamy sand, 0 to 2 percent slopes	6, 135	2. 9
Flint fine sandy loam, 2 to 5 percent slopes	335	. 2	Red Bay loamy sand, 2 to 5 percent slopes, eroded	8, 605	4. 1
Goldsboro sandy loam, 0 to 2 percent slopes	3, 150	1. 5	Red Bay loamy sand, 5 to 8 percent slopes, eroded	255	. 1
Grady clay loam	11, 350	5. 4	Sawyer-Susquehanna cobbly loamy sands, 0 to 5 percent slopes	525	. 3
Grady soils	8, 100	3. 9	Sawyer-Susquehanna cobbly loamy sands, 2 to 8 percent slopes, eroded	370	. 2
Greenville sandy clay loam, 2 to 5 percent slopes, severely eroded	4, 875	2. 3	Sawyer-Susquehanna loamy sands, 2 to 5 percent slopes, eroded	735	. 4
Greenville sandy clay loam, 5 to 8 percent slopes, severely eroded	5, 120	2. 4	Swamp	12, 870	6. 2
Greenville sandy loam, 0 to 2 percent slopes	8, 920	4. 3	Tifton sandy loam, 0 to 2 percent slopes	600	. 3
Greenville sandy loam, 2 to 5 percent slopes	12, 910	6. 2	Tifton sandy loam, 2 to 5 percent slopes	3, 040	1. 4
Greenville sandy loam, 2 to 5 percent slopes, eroded	16, 300	7. 8	Tifton sandy loam, 2 to 5 percent slopes, eroded	3, 525	1. 7
Greenville sandy loam, 5 to 8 percent slopes, eroded	1, 925	. 9	Tifton sandy loam, 5 to 8 percent slopes, eroded	690	. 3
Irvington sandy loam, 0 to 2 percent slopes	3, 530	1. 7	Wagram loamy sand, 0 to 2 percent slopes	2, 905	1. 4
Izagora-Dunbar loamy fine sands	5, 380	2. 6	Wagram loamy sand, 2 to 5 percent slopes	1, 280	. 6
Lakeland sand, 0 to 5 percent slopes	5, 565	2. 7	Total	208, 640	100. 0
Local alluvial land	1, 900	. 9			

[1] Less than 0.1 percent.

The Albany soils occur with the Wagram, Eustis, and Pelham soils. They are lighter colored than the Wagram soils and are less well drained. The Albany soils are lighter colored and are less well drained than the Eustis soils. They are less wet than the Grady soils, which also occur in depressions, and they have a less clayey subsoil.

Representative profile, located 1¾ miles east of the Hardup Road and 2¾ miles north of the Baker County line on Blue Springs Plantation:

A11—0 to 4 inches, very dark gray (10YR 3/1) sand; weak, fine, granular structure; very friable; many grass roots; strongly acid; clear, smooth boundary. 3 to 6 inches thick.

A12g—4 to 10 inches, light brownish-gray (2.5Y 6/2) sand; single grain; loose; common grass roots; strongly acid; clear, wavy boundary. 4 to 8 inches thick.

A21g—10 to 21 inches, pale-brown (10YR 6/3) sand; few, fine, distinct, gray mottles; single grain to weak, fine, granular structure; loose; few grass roots; strongly acid; common, clean, medium sand grains; gradual, wavy boundary. 10 to 14 inches thick.

A22g—21 to 33 inches, pale-brown (10YR 6/3) sand; few, fine, distinct, gray mottles, and few, fine, faint, yellowish-brown mottles; weak, fine, granular structure; loose; strongly acid; common, clean, medium sand grains; clear, smooth boundary. 10 to 14 inches thick.

A&B—33 to 46 inches light yellowish-brown (10YR 6/4) sand; common, fine, distinct, light brownish-gray mottles; single grain; about 15 percent small balls, ½ to 1 inch in diameter, of very pale brown (10YR 7/3) sandy loam; sand is loose, and sandy loam is friable; strongly acid; some coating and bridging of sand grains; gradual, wavy boundary. 8 to 20 inches thick.

B21tg—46 to 58 inches, light-gray (2.5Y 7/2) sandy clay loam; moderate, medium, subangular blocky structure; friable; pockets of sandy loam and few, fine, faint, yellowish-brown mottles; some clay films in pores; sand grains coated and bridged; very strongly acid; gradual, wavy boundary. 6 to 18 inches thick.

B22tg—58 to 86 inches, light brownish-gray (10YR 6/2) sandy clay loam; moderate, medium, subangular blocky structure; friable; pockets of massive sandy clay and few, fine, faint, yellowish-red mottles; very strongly acid; gradual, wavy boundary. 12 to 36 inches thick.

B23tg—86 to 92 inches +, light brownish-gray (10YR 6/2) sandy loam; weak, medium, subangular blocky structure that breaks readily to fine granular; very friable; contains balls of sandy clay loam; very strongly acid.

The Albany soils occur as small areas, mostly in the south-central part of the county. They are not well suited to cultivated crops or pasture plants, because of their sandy texture. Only a small acreage has been cleared. The natural vegetation consists of pine and hardwoods.

Albany sand, 0 to 2 percent slopes (AdA).—This soil occurs as small areas, mostly in the south-central part of the county. It has a surface layer of dark-gray or very dark gray sand. Sandy clay loam is at a depth of about 40 to 60 inches.

Although this soil has a thick root zone, it is not well suited to cultivated crops or pasture, because it is sandy. Only a little of it is cultivated. The vegetation consists mostly of scattered pines and oaks.

Included in mapping were areas where the sandy clay loam is at a depth of only 30 inches and areas where the subsurface layers are gray or light brownish gray. These inclusions make up as much as 30 percent of the mapped areas of this soil.

Alluvial Land

Alluvial land, wet (Avp), occurs as narrow strips along small streams. The slope range is 0 to 2 percent.

This land type is made up of soil material washed from upland areas. It is wet most of the time because it is frequently flooded and poorly drained. At the surface is a 10- to 45-inch layer of very dark gray to dark-brown fine sandy loam or loamy sand that contains a large amount of organic matter. This is underlain in places by 10 to 30 inches of light-gray or light yellowish-brown sand or loamy sand. These layers of alluvium are changed by each new flood. Beneath the recent alluvium is sandy clay or sandy clay loam that is gray or mottled gray, brown, and yellow.

This land type is not well suited to cultivated crops because it is wet. It is better suited to timber than to pasture, but if drained it can be used for pasture.

Included in mapping were some areas where gray or mottled gray, brown, and yellow sandy clay or sandy clay loam is at a depth of less than 18 inches.

Americus Series

The Americus series consists of deep, somewhat excessively drained, sandy soils on level to very gently sloping uplands. These soils have a surface layer of dark reddish-brown or dark-brown loamy sand 8 to 16 inches thick. Beneath this, to a depth of several feet, is dark-red or red loamy sand. Sand occurs at a depth of 6 or 7 feet in most places.

These soils are low in natural fertility, contain little organic matter, and are strongly acid. Permeability is moderately rapid, and the available water capacity is low.

The Americus soils occur with the Red Bay, Orangeburg, and Eustis soils. They are sandy to a greater depth than the Red Bay and Orangeburg soils. The Americus soils are much like the Eustis soils in texture, but they are much redder thoughout the profile.

Representative profile, located 300 yards south of the Lee County line and 550 yards east of the railroad tracks:

Ap—0 to 8 inches, dark reddish-brown (5YR 3/2) loamy sand; weak, fine, granular structure; very friable; strongly acid; clear, smooth boundary. 6 to 10 inches thick.

A2—8 to 11 inches, dark reddish-brown (5YR 3/4) loamy sand; weak, fine, granular structure; very friable; very strongly acid; clear, smooth boundary. 2 to 6 inches thick.

B21t—11 to 40 inches, dark-red (2.5YR 3/6) loamy sand; moderate, fine, granular structure; very friable; very strongly acid; clear, smooth boundary. 10 to 40 inches thick.

B22t—40 to 70 inches, red (2.5YR 4/8) loamy sand; moderate, fine, granular structure; very friable; very strongly acid; clear, smooth boundary. 10 to 40 inches thick.

IIC—70 to 96 inches, red (2.5YR 5/8) sand; weak, fine, granular structure; very friable; very strongly acid.

The Americus soils occur mostly in a strip through the center of the county, generally within 3 miles of the Flint River. About 65 percent of the acreage that once was cleared and cultivated is now idle or is used for pasture or has reverted to natural vegetation. The natural vegetation consists of hardwoods and pine.

Americus loamy sand, 0 to 5 percent slopes (ArB).—The surface layer of this soil is dark reddish-brown loamy sand, and the subsurface layers, to a depth of 70 inches, are dark-red or red loamy sand. Commonly, below a depth of about 70 inches is red sand.

This soil has a thick root zone and can be cultivated throughout a wide range of moisture content. Although it is droughty, it is suited to many crops. Runoff is slow, and consequently the hazard of erosion is only slight.

Bladen Series

The Bladen series consists of poorly drained soils that developed in fine sediments on nearly level terraces along the larger streams. These soils are flooded occasionally. They have a surface layer of dark-gray to very dark grayish-brown loam that commonly has fine, dark yellowish-brown mottles and a subsoil of very firm, gray clay or heavy sandy clay mottled with yellowish red, strong brown, yellowish brown, and light reddish brown.

These soils are low or moderate in natural fertility. Permeability is very slow, and the available water capacity is medium.

The Bladen soils occur with the Dunbar and Izagora soils. They are more poorly drained than the Dunbar soils, which have either a pale-yellow or a mottled subsoil. The Bladen soils are finer textured throughout than the Izagora soils, and they are more poorly drained and have less distinct horizons.

Representative profile, located in a wooded area 700 yards east of the junction of Slappey Drive and Georgia Highway 91:

O1—1 inch to 0, partly decomposed leaves and twigs.

A—0 to 8 inches, dark-gray (10YR 4/1) loam; common, fine, distinct, dark yellowish-brown mottles; moderate, medium, subangular blocky structure; friable when moist, slightly sticky when wet; very strongly acid; clear, wavy boundary. 4 to 8 inches thick.

B21tg—8 to 65 inches, gray (10YR 5/1) clay; many, medium, prominent, yellowish-brown mottles; strong, medium, subangular blocky structure; very firm when moist, very sticky when wet; strongly acid; diffuse, broken boundary. 15 to 60 inches thick.

B22tg—65 to 96 inches, grayish-brown (10YR 5/2) clay; many, medium, prominent, strong-brown mottles; strong, medium, angular blocky structure; very firm when moist, sticky when wet; strongly acid. 15 to 40 inches thick.

245-890—67——2

The Bladen soils occur as rather large areas along the Flint River, Cooleewahee Creek, and Chickasawhatchee Creek. They are not well suited to cultivated crops because they are wet and are difficult to drain. Most of the acreage has reverted to natural vegetation, which consists of hardwoods.

Bladen loam (0 to 2 percent slopes) (BiA).—The surface layer of this soil is dark-gray, mottled, friable loam, and the subsoil, to a depth of 65 inches, is gray, mottled, very firm clay. Below a depth of 65 inches, the clay is grayish brown.

This soil is not well suited to cultivated crops, because it is excessively wet. A small acreage has been cleared and is used for pasture, but it is only fair for this use. Most of the acreage remains in native vegetation.

Included in the areas mapped are some areas of soils that have a surface layer of clay loam, silty clay loam, or sandy loam, underlain by gray clay or heavy sandy clay mottled with red, brown, and yellow. In some places there is sand below the clay, at a depth of 4 feet or more. Also included are some areas of soils that are mildly alkaline in the lower part of the B horizon.

Carnegie Series

The Carnegie series consists of well-drained, pebbly soils on uplands. If not eroded, these soils have a surface layer of brown sandy loam and a subsoil of yellowish-brown to red sandy clay loam or clay loam mottled at a depth of 18 to 26 inches. Iron concretions are numerous throughout the profile. Slopes of 2 to 5 percent predominate.

These soils are low or moderate in natural fertility, contain little organic matter, and are strongly acid. Permeability is moderately slow, and the available water capacity is medium.

The Carnegie soils occur with the Greenville, Orangeburg, and Tifton soils, but they contain more iron concretions than the Greenville and Orangeburg soils. They have a less red surface layer than the Greenville soils. The Carnegie soils have finer textured materials in the B horizon than the Orangeburg soils. The subsoil of the Carnegie soils is less well developed than that of the Tifton soils.

Representative profile, located 7/8 mile west of the Worth County line and 2 1/8 miles south of the U.S. Marine Corps Supply Center (north side of Johnson Road):

Apcn—0 to 4 inches, brown (10YR 4/3) sandy loam; weak, fine, granular structure; very friable when moist; many small iron concretions; strongly acid; abrupt, smooth boundary. 2 to 5 inches thick.

B21tcn—4 to 22 inches, yellowish-red (5YR 4/8) sandy clay loam; moderate, medium, subangular blocky structure; friable when moist, slightly hard when dry, slightly sticky when wet; many small iron concretions; few clay films on the surfaces of peds and around the pebbles; very strongly acid; gradual, smooth boundary. 10 to 22 inches thick.

B22t—22 to 32 inches, yellowish-red (5YR 4/8) sandy clay loam; common, medium, distinct, red (2.5YR 4/8) and light-gray mottles; moderate, medium, subangular blocky structure; firm in place but crushes to a friable mass; slightly hard when dry, slightly sticky when wet; soft plinthite and few soft iron concretions; very strongly acid; gradual, smooth boundary. 8 to 14 inches thick.

B23t—32 to 50 inches, mottled yellowish-brown (10YR 5/8), red (2.5YR 4/8), and light-gray (2.5Y 7/2) sandy clay loam; weak, fine, subangular blocky structure; firm in place but crushes to a friable mass; slightly sticky when wet; soft plinthite and few small, soft iron concretions; very strongly acid.

The Carnegie soils occur as small areas in the eastern part of the county. Most of the acreage has been cultivated, but a considerable acreage is now used for pasture. The natural vegetation consists of pine and hardwoods.

Carnegie sandy loam, 2 to 5 percent slopes, eroded (CoB2).—This soil has a moderately thick root zone and is suited to many crops. The response to management is only fair. Runoff is rapid, and consequently the erosion hazard is severe.

Included in mapping were many small areas where mottles are less than 18 inches from the surface and some areas where mottles are not less than 26 inches from the surface. In places a few siliceous rock fragments 4 to 12 inches in diameter are on the surface and scattered throughout the profile. Also included are some cultivated areas where the plow layer is generally a mixture of the original A horizon and the upper part of the B horizon and some where the plow layer is entirely in the B horizon. Other inclusions are areas where the subsoil is sandy clay and areas where there are shallow gullies and a few deeper gullies.

Carnegie sandy loam, 5 to 8 percent slopes, eroded (CoC2).—This soil has a surface layer of brown sandy loam 2 to 4 inches thick and a subsoil of yellowish-brown to red sandy clay loam that is mottle free in the uppermost 10 to 22 inches. Runoff is rapid, and consequently the erosion hazard is severe.

Although it has a moderately thick root zone, this soil is not well suited to cultivated crops. Part of it is idle, and part is used for pasture.

Included in mapping were many small areas where mottles are less than 18 inches from the surface and some areas where they are not less than 26 inches from the surface. In places a few siliceous rock fragments 4 to 12 inches in diameter are scattered over the surface and throughout the profile. Also included are cultivated areas in which the plow layer is a mixture of the original A horizon and part of the upper B horizon. Other inclusions are areas that have a subsoil of sandy clay and areas where there are shallow gullies and a few deeper gullies.

Cuthbert Series

The Cuthbert series consists of moderately well drained soils on uplands. These soils have a surface layer of brown to very dark grayish-brown sandy loam or loamy sand underlain in places by a thin layer of light yellowish-brown or brownish-yellow sandy loam. Beneath this is strong-brown to red sandy clay to clay mottled with yellow, brown, red, and gray.

These soils are low or moderate in natural fertility, contain little organic matter, and are strongly acid. The root zone is shallow. Permeability is slow.

The Cuthbert soils occur with the Orangeburg, Sawyer, and Eustis soils. They have a thinner, more clayey B horizon than the Orangeburg soils. The Cuthbert soils have a less sticky and less plastic subsoil than the

Sawyer soils and a finer textured subsoil than the Eustis soils.

Representative profile, located 50 feet south of the natural gasoline and half a mile west of the Flint River:

A1—0 to 5 inches, very dark grayish-brown (10YR 3/2) sandy loam; weak, fine, granular structure; very friable when moist; strongly acid; clear, smooth boundary. 3 to 7 inches thick.

A2—5 to 9 inches, yellowish-brown (10YR 5/4) sandy loam; weak, fine, granular structure; very friable when moist; strongly acid; abrupt, smooth boundary. 1 inch to 8 inches thick.

B2t—9 to 18 inches, yellowish-red (5YR 5/8) sandy clay; moderate, medium, subangular blocky structure; slightly hard when dry, firm when moist, slightly sticky when wet; few clay films on surfaces of peds; very strongly acid; clear, smooth boundary. 4 to 12 inches thick.

C1—18 to 24 inches, yellowish-red (5YR 4/8) silty clay with common, medium, distinct, very pale brown and red mottles; massive; slightly hard when dry, firm when moist, slightly sticky when wet; very strongly acid; clear, smooth boundary. 8 to 16 inches thick.

C2—24 to 35 inches, mottled yellowish-red (5YR 5/8), yellowish-brown (10YR 5/8), and red (2.5YR 4/8) silty clay with lenses of sand; massive; slightly hard when dry, firm when moist, slightly sticky when wet; very strongly acid; clear, smooth boundary. 10 to 30 inches thick.

C3—35 to 52 inches, very pale brown (10YR 7/3) sandy clay with lenses of sand; common, medium, distinct, yellowish-red and red mottles; structureless; slightly hard when dry, firm when moist, slightly sticky when wet; very strongly acid.

These soils are not well suited to cultivated crops. About a quarter of the acreage has been used for crops, but most of this is now idle or has reverted to the natural vegetation, which consists of pine and a few scattered oaks.

The Cuthbert soils in Dougherty County are mapped only in complexes with the Orangeburg soils. They occur as rather small areas scattered throughout the county.

Cuthbert-Orangeburg complex, 5 to 8 percent slopes, eroded (COC2).—The soils in this complex occur chiefly on small knobs a few acres in size. Each area is about half Cuthbert soil and about half Orangeburg soil. Generally, the middle part of the area consists of Cuthbert soil and the outer part of Orangeburg soil. Because of the intricate pattern of occurrence and because of the dense forest cover, it was not practical to map these soils separately.

The Cuthbert soil in this complex is similar to the one described as typical of the Cuthbert series, but it is eroded. The Orangeburg soil is similar to that described under the heading "Orangeburg Series." The Cuthbert soil has a firm clayey subsoil, and the Orangeburg soil has a subsoil of friable sandy clay loam. The soil profiles vary greatly within short distances. Short slopes predominate.

These soils are not well suited to cultivation, because of the severe erosion hazard, but most of the acreage has been cultivated in the past. A small acreage is now used for pasture, and the rest is idle or has reverted to its natural vegetation.

Cuthbert-Orangeburg complex, 12 to 17 percent slopes (COE).—This complex is on the uplands next to the flood plains of the Flint River. The slopes are short and abrupt. In a few areas the slopes are steep and spots on the surface are scoured or eroded.

The Cuthbert soil makes up 65 percent of the acreage. Its surface layer is chiefly sandy loam, but in eroded areas it is sandy clay loam and in some places it is loamy sand. The subsoil is firm sandy clay or clay and commonly has lenses of sand or loamy sand in the upper part. The Orangeburg soil makes up 20 to 25 percent of the acreage. Generally, it is on the upper part of the slope and is less eroded than the Cuthbert soil. It has a subsoil of friable sandy clay loam.

The erosion hazard is severe if these soils are cultivated. Most of the acreage is in cutover timber consisting of hardwoods and a few pines. Only a very small part has been cleared.

Dunbar Series

The Dunbar series consists of somewhat poorly drained soils on upland flats and on nearly level terraces along the larger streams. These soils have a surface layer of dark grayish-brown to dark-gray loamy sand to loam and a subsoil of light yellowish-brown or yellowish-brown sandy clay or silty clay mottled with red, brown, yellow, and gray. The gray color increases with depth.

These soils are low in natural fertility. The root zone is thin to moderately thick. The available water capacity is medium, and permeability is slow in the lower part of the subsoil.

The Dunbar soils occur with the Bladen, Izagora, and Flint soils. They are better drained than the Bladen soils and have a yellowish rather than a grayish subsoil. The Dunbar soils are more poorly drained than the Izagora soils, and their subsoil is less yellow or brown. They are wetter than the Flint soils, and their subsoil is less brown or red.

Representative profile, located south of Georgia Highway 62, seven-eighths of a mile east of Pretoria:

Ap—0 to 8 inches, dark grayish-brown (2.5Y 4/2) loamy fine sand; weak, fine, granular structure; loose when dry, very friable when moist; strongly acid; clear, wavy boundary. 5 to 9 inches thick.

B1t—8 to 10 inches, yellowish-brown (10YR 5/6) sandy clay loam; moderate, medium, subangular blocky structure; slightly hard when dry, firm when moist, slightly sticky when wet; few clay films on surfaces of peds; very strongly acid; clear, smooth boundary. 1 inch to 4 inches thick.

B2t—10 to 22 inches, yellowish-brown (10YR 5/6) sandy clay; common, medium, distinct, yellowish-red mottles and few, fine, faint, pale-brown and light-gray mottles; moderate, medium, subangular blocky structure; hard when dry, firm when moist, sticky when wet; few clay films on surfaces of peds; very strongly acid; gradual, smooth boundary. 6 to 15 inches thick.

B31t—22 to 40 inches, yellowish-brown (10YR 5/8) sandy clay; many, coarse, distinct, very pale brown (10YR 7/3) mottles and common, medium, distinct, yellowish-red and light-gray mottles; moderate, medium, subangular blocky structure; hard when dry, firm when moist, sticky when wet; few clay films on surfaces of peds; few, small, soft iron concretions; very strongly acid; gradual, smooth boundary. 15 to 25 inches thick.

B32t—40 to 52 inches, mottled yellowish-brown (10YR 5/8) and light-gray (10YR 7/2) clay; strong, medium, subangular blocky structure; very hard when dry, very firm when moist, very sticky when wet; slightly acid.

The Dunbar soils occur mostly along the Flint River, Cooleewahee Creek, and Chickasawhatchee Creek. Some areas are flooded occasionally, but those near the Flint River are flooded more frequently. These soils are not well suited to cultivated crops because of slow permeability, very slow surface runoff, and the difficulty of removing the excess water. Only a small acreage has been cleared. Most of the acreage is used for timber. The natural vegetation consists of hardwoods and pine.

In this county the Dunbar soils were mapped only as parts of complexes and undifferentiated groups with the Izagora and Bladen soils.

Dunbar, Izagora, and Bladen soils (0 to 2 percent slopes) (Dib).—The soils of this undifferentiated group are on terraces along the Flint River, Cooleewahee Creek, and Chickasawhatchee Creek. The Dunbar soil is in smooth, flat areas; the Izagora soil, which is better drained, is in higher areas; the Bladen soil, which is poorly drained and subject to shallow flooding, is in swales and drainageways.

The soils of this group are well suited to forest. The natural vegetation consists of pine or pine and oak and considerable underbrush. Hardwoods predominate in the areas along Cooleewahee Creek and Chickasawhatchee Creek, and pine in the areas along the Flint River.

Without water control, these soils are suited to only a few crops, because they are flooded for long periods in winter, in spring, and early in summer. Only about 15 percent of the acreage has been cleared, and it is about equally divided as cropland, pasture, and idle land.

The Dunbar soil makes up 50 to 55 percent of the acreage, the Izagora soil as much as 25 percent, and the Bladen soil about 20 percent. All three soils, or at least two of them, occur in most areas mapped, but a few areas consist entirely of the Dunbar soil.

Dunbar-Izagora-Bladen complex (0 to 5 percent slopes) (Dob).—This complex occurs along the Flint River, on rather long and narrow flood plains characterized by wet sloughs a few yards wide and small ridges that have short slopes. It is frequently flooded for periods of a few days late in winter and in spring.

The Dunbar soil is on the lower part of the small ridges and in other areas that are slightly wet; the Izagora soil, which is better drained, occurs on narrow ridges parallel to the sloughs; the Bladen soil, which is poorly drained, occurs mostly in old sloughs and narrow drainageways.

The soils of this complex are not well suited to cultivated crops or pasture plants. All of the acreage is in native vegetation, which consists of hardwoods, chiefly oak and hickory, sweetgum, pine, and a rather thick undergrowth that includes numerous vines.

The Dunbar soil makes up as much as 45 percent of the acreage, the Bladen soil as much as 25 percent, and the Izagora soil about 25 percent. Included in mapping were narrow bands of a sandy soil on natural levees. This inclusion makes up as much as 5 percent of the acreage.

Dune Land

Dune land (Dsl) consists of deep, loose, excessively drained sandy material. The slope range is 5 to 12 percent. At the surface is a 6- to 10-inch layer of dark grayish-brown sand over 6 to 12 inches of yellowish-brown coarse sand. Beneath this and extending to a depth of 6 to 20 feet is brownish-yellow coarse sand.

The natural fertility is low, permeability is very rapid, and the available water capacity is low.

Dune land is gently rolling or billowy and stands conspicuously higher than the surrounding areas. Most of it is just east of the Flint River and south of U.S. Highway 82, but several small areas occur along the Flint River, Piney Woods Creek, and Dry Creek.

This land type is not suited to cultivated crops or to pasture. It supports a sparse growth of grass and in some places a scattered growth of scrub oak and a few pines. Pine is difficult to establish.

Eustis Series

The Eustis series consists of deep, somewhat excessively drained, sandy soils that are level to gently sloping. These soils have a 5- to 9-inch surface layer of very dark grayish-brown or dark grayish-brown loamy sand over 4 to 8 inches of dark yellowish-brown to reddish-brown loamy sand. Beneath this is brown to yellowish-red loamy sand.

These soils are low in natural fertility, contain little organic matter, and are strongly acid. They have moderately rapid permeability and low available water capacity. They can be cultivated throughout a wide range of moisture content. The root zone is thick.

The Eustis soils occur with the Orangeburg, Americus, and Lakeland soils. Their subsoil is coarser textured than that of the Orangeburg soils. The Eustis soils are less red throughout than the Americus soils. Their subsoil is redder than that of the Lakeland soils.

Representative profile, located 1¼ miles north of the Baker County line and 1,200 feet east of the Hardup Road:

Ap—0 to 7 inches, very dark grayish-brown (10YR 3/2) loamy sand; weak, fine, granular structure; loose; strongly acid; clear, smooth boundary. 5 to 9 inches thick.

A12—7 to 13 inches, dark yellowish-brown (10YR 3/4) loamy sand; weak, fine, granular structure; loose; very strongly acid; gradual, smooth boundary. 4 to 8 inches thick.

B21t—13 to 41 inches, yellowish-red (5YR 4/8) loamy sand; weak, fine, granular structure; loose; very strongly acid; gradual, smooth boundary. 20 to 35 inches thick.

B22t—41 to 66 inches, yellowish-red (5YR 5/8) loamy sand; weak, fine, granular structure; loose; very strongly acid.

These soils occur mostly in a strip through the center of the county along the Flint River and Cooleewahee Creek. About 60 percent of the acreage has been cultivated, but only a small acreage is now cultivated. Most of the acreage is idle or has been planted to pine. The natural vegetation consists of hardwoods and pine.

Eustis loamy sand, 0 to 5 percent slopes (EqB).—The surface layer of this soil is very dark grayish-brown loamy sand, 5 to 9 inches thick. Below it is a 4- to 8-inch

layer of dark yellowish-brown loamy sand, and below that, yellowish-red loamy sand that extends to a depth of more than 5 feet. Runoff is slow, and consequently the erosion hazard is only slight.

Although it is droughty, this soil is suited to many crops. About 65 percent of the acreage has been cultivated, but only a little is now cultivated. Most of the acreage is idle or has been planted to pine.

Eustis loamy sand, 5 to 8 percent slopes (EqC).—This soil has a 5- to 8-inch surface layer of dark grayish-brown or very dark grayish-brown loamy sand over a 4- to 6-inch layer of brown to dark yellowish-brown loamy sand. Beneath this is yellowish-red to reddish-brown loamy sand that extends to a depth of more than 60 inches. Surface runoff is medium, and consequently the erosion hazard is moderate.

Because of its low available water capacity, this soil is not well suited to cultivated crops or pasture. About half the acreage has been cultivated, but only a little of this is now cultivated. Most has been planted to pine or has reverted to natural vegetation.

Included in mapping were a few small areas of soils that have a dark reddish-brown surface layer and slopes of as much as 12 percent.

Flint Series

The Flint series consists of moderately well drained soils on nearly level or gently sloping terraces along the larger streams. These soils are flooded occasionally. They have a surface layer of dark grayish-brown to dark-brown fine sandy loam and a subsoil of yellowish-brown, strong-brown, or yellowish-red clay or silty clay mottled at a depth of 14 to 21 inches.

These soils contain little organic matter and are strongly acid. They have poor tilth and can be cultivated only within a narrow range of moisture content. Permeability is slow, and the available water capacity is medium. The root zone is moderately thick.

The Flint soils occur with the Bladen, Dunbar, Norfolk, and Izagora soils. They are better drained than the Bladen and Dunbar soils, and they have a yellowish-brown, strong-brown, or yellowish-red subsoil instead of a gray, pale-yellow, or highly mottled subsoil. The Flint soils are less well drained than the Norfolk soils and have a less friable subsoil. They have a less yellow and less friable subsoil than the Izagora soils.

Representative profile, located on the west side of the Flint River, 2½ miles south of Albany city limits, east of the River Road:

Ap—0 to 6 inches, dark-brown (10YR 4/3) fine sandy loam; weak, fine, granular structure; friable; very strongly acid; clear, wavy boundary. 2 to 8 inches thick.

A3—6 to 9 inches, dark yellowish-brown (10YR 4/4) silt loam; weak, medium and coarse, subangular blocky structure; friable; very strongly acid; abrupt, wavy boundary. 1 inch to 4 inches thick.

B21t—9 to 18 inches, yellowish-red (5YR 4/6) clay; strong, medium and coarse, subangular blocky structure; hard when dry, firm when moist, sticky when wet; very strongly acid; few patchy clay films on some ped surfaces and along the root channels; gradual, wavy boundary. 6 to 12 inches thick.

B22t—18 to 24 inches, yellowish-red (5YR 4/6) clay; few, fine, faint, strong-brown mottles; weak, coarse, subangular blocky structure; hard when dry, firm when moist, sticky when wet; very strongly acid; patchy clay films on some ped surfaces; clear, irregular boundary. 4 to 12 inches thick.

B3t—24 to 30 inches, mottled red (2.5YR 4/6), yellowish-red (5YR 4/6), strong-brown (7.5YR 4/6) and light brownish-gray (10YR 6/2) silty clay; weak, coarse, subangular blocky structure; hard when dry; firm when moist, sticky when wet; very strongly acid; thin, patchy clay films on some ped surfaces; ped surfaces are dark brown (7.5YR 4/4); gradual, wavy boundary. 4 to 12 inches thick.

C1—30 to 48 inches, mottled yellowish-red (5YR 4/8), brownish-yellow (10YR 6/8), pale-brown (10YR 6/3), weak-red (10R 5/3), and yellowish-brown (10YR 5/8) sandy clay loam that contains a few pockets of sandy clay; massive; slightly hard when dry, friable when moist, slightly sticky when wet; very strongly acid; gradual, irregular boundary.

IIC2—48 to 58 inches, yellowish-red (5YR 4/8) sandy loam; few, distinct, medium, strong-brown mottles; massive; friable; gradual, irregular boundary.

IIC3—58 to 72 inches +, yellowish-brown (10YR 5/6) sandy loam; many, medium, yellowish-red mottles; the sandy loam grades to coarse sand at about 70 inches.

The Flint soils occur as rather large areas, mostly along the Flint River, Piney Woods Creek, and Dry Creek. Although these soils are not well suited to cultivation, a large acreage was cultivated in the past. Most of it is now used for pasture, but it is only fair for this use. Only a little is now cultivated. Some of the acreage is idle or has reverted to natural vegetation. The natural vegetation consists of hardwoods and a few scattered pines.

Flint fine sandy loam, 0 to 2 percent slopes (FrA).—The surface layer of this soil is dark-brown fine sandy loam. It is 2 to 8 inches thick, but most commonly about 6 inches. The subsoil is yellowish-red clay and extends to a depth of about 30 inches. Some areas are flooded occasionally. Runoff is slow.

This soil is suited to only a few crops. Most of the acreage is idle or is used for pasture. The acreage in woodland has a sparse stand of pine and hardwoods.

Included in mapping were a few small areas of loamy sand, a few small areas of somewhat poorly drained soil, some areas where sand is at a depth of 4 or 5 feet, and a few small areas where sand is at a depth of 18 or 20 inches.

Flint fine sandy loam, 2 to 5 percent slopes (FrB).—The surface layer of this soil is dark grayish-brown to brown fine sandy loam. It ranges from 2 to 6 inches in thickness. The subsoil is yellowish-red to yellowish-brown clay mottled at a depth of 14 to 21 inches. Sand is at a depth of 4 or 5 feet in many places. Runoff is medium, and consequently erosion is a moderate hazard.

This soil is suited to only a few crops. Most of the acreage is idle or is used for pasture. The acreage remaining in woodland has a sparse stand of pine and hardwoods.

Included in mapping were a few small areas where sand is at a depth of 18 to 20 inches and some small areas of somewhat poorly drained soil.

Goldsboro Series

The Goldsboro series consists of moderately well drained soils on level or nearly level uplands. These

soils have a surface layer of dark grayish-brown or very dark grayish-brown sandy loam about 9 inches thick over a thin layer of yellowish-brown sandy loam. Beneath this is yellowish-brown sandy clay loam that is mottled with strong brown and pale yellow at a depth of 20 to 30 inches.

These soils are low or moderate in natural fertility, contain little organic matter, and are strongly acid. They have a thick root zone. Permeability is moderate, and the available water capacity is medium. Tilth is good.

The Goldsboro soils occur with the Irvington, Norfolk, and Lynchburg soils. They lack both the concretions and the fragipan that are characteristic of Irvington soils. The Goldsboro soils are similar to but less well drained than the Norfolk soils. They are better drained than the Lynchburg soils, and their subsoil is yellower.

Representative profile located 1⅝ miles south of the U.S. Marine Corps Supply Center and 55 yards west of the Worth County line:

Ap—0 to 7 inches, dark grayish-brown (2.5Y 4/2) sandy loam; weak, fine, granular structure; very friable; many small roots; strongly acid; gradual, smooth boundary. 5 to 9 inches thick.

A3—7 to 11 inches, yellowish-brown (10YR 5/4) sandy loam; weak, fine, subangular blocky structure; friable; few organic stains in root channels; very strongly acid; clear, smooth boundary. 3 to 10 inches thick.

B21t—11 to 27 inches, yellowish-brown (10YR 5/8) sandy clay loam; moderate, medium, subangular blocky structure; friable when moist, slightly hard when dry; very strongly acid; clear, smooth boundary. 10 to 20 inches thick.

B22t—27 to 31 inches, yellowish-brown (10YR 5/8) sandy clay loam with common, fine, faint, strong-brown and pale-yellow mottles; moderate, medium, subangular blocky structure; friable when moist, slightly hard when dry; very strongly acid; gradual, smooth boundary. 3 to 7 inches thick.

B23t—31 to 54 inches, yellowish-brown (10YR 5/8) sandy clay loam; common, medium, distinct, strong-brown and light-gray mottles; moderate, medium, subangular blocky structure; friable; very strongly acid.

The Goldsboro soils are scattered throughout the county but are most extensive in the eastern part. They are well suited to cultivated crops, pasture plants, and pine trees. About 50 percent of the acreage has been cultivated, but a considerable acreage is now used for pasture. The natural vegetation is mostly pine, but it includes some scattered hardwoods.

Goldsboro sandy loam, 0 to 2 percent slopes (GmA).—The surface layer of this soil is dark grayish brown or very dark grayish brown and is about 7 inches thick. The subsoil is yellowish-brown, friable sandy clay loam mottled with strong brown, pale yellow, and light gray below a depth of about 27 inches. The subsoil extends to a depth of more than 54 inches.

This soil is well suited to many crops, to pasture, and to timber. During extremely wet years it is a little too wet for some crops. Yields are usually moderate or high.

Included in mapping were a few small areas of soil in which a few small iron concretions are scattered throughout the profile and some small areas of somewhat poorly drained soils.

Grady Series

The Grady series consists of poorly drained or very poorly drained soils in ponded upland depressions. In some areas water stands for long periods of time. Most areas do not have surface outlets and are drained only through underground channels.

In areas that are ponded for long periods, these soils have a surface layer of black muck, 3 or 4 inches thick. In other areas, the surface layer is grayish-brown through very dark gray soil material of various textures. The surface layer is commonly sandy around the edge of the depressions and finer textured in the center. The subsoil is predominantly gray clay or sandy clay mottled with red and brown.

These soils are very strongly acid. Runoff and permeability are very slow.

The Grady soils occur with the Greenville, Lynchburg, Irvington, and Pelham soils. They are lower lying and wetter than the Greenville, Lynchburg, and Irvington soils. Their subsoil contains more clay than that of the Lynchburg, Irvington, and Pelham soils. The Grady soils lack the iron concretions that are characteristic of the Irvington soils.

Representative profile, located three-fourths of a mile southwest of Pecan City:

A1—0 to 3 inches, very dark gray (10YR 3/1) clay loam; weak, fine, subangular blocky structure; friable when moist, slightly sticky when wet; very strongly acid; clear, wavy boundary. 3 to 10 inches thick.

B1tg—3 to 6 inches, light olive-gray (5Y 6/2) clay loam; common, fine, distinct, yellowish-brown mottles; moderate, medium, subangular blocky structure; firm when moist, hard when dry, sticky when wet; organic stains in wormholes and root channels; very strongly acid; gradual, smooth boundary. 1 inch to 4 inches thick.

B2tg—6 to 29 inches, gray or light-gray (5Y 6/1) clay; common, fine, distinct, strong-brown mottles; strong, medium, subangular blocky structure; very firm when moist, hard when dry, sticky when wet; very strongly acid; gradual, smooth boundary. 20 to 30 inches thick.

B31tg—29 to 43 inches, light-gray (5Y 7/2) sandy clay; common, medium, distinct, strong-brown mottles; moderate, medium, subangular blocky structure; very firm when moist, hard when dry, sticky when wet; extremely acid; gradual, smooth boundary. 10 to 20 inches thick.

B32tg—43 to 58 inches, mottled light-gray (5Y 6/1), yellowish-red (5YR 4/8), and strong-brown (7.5YR 5/8) clay; moderate, medium, subangular blocky structure; very firm when moist, hard when dry, sticky when wet; extremely acid.

The Grady soils occur as rather small areas scattered over most of the county. Even if drained, they are generally too wet for cultivation. Only a small acreage has been cleared, and most of this is idle or is used as pasture. Very little is cultivated. The natural vegetation consists mostly of blackgum, cypress, oak, and other water-tolerant plants. Pine grows in some of the better drained areas.

Grady clay loam (0 to 2 percent slopes) (Gcl).—In its natural state, this soil is too wet for cultivated crops or pasture. A small acreage has been drained and is used for pasture, but for many of the areas, drainage is impractical. Most of this soil is in native vegetation, which consists of cypress, blackgum, oak, and other water-tolerant plants.

Around the edges of many areas are thin rims of sandy loam underlain by clay or heavy sandy clay that becomes coarser textured at a depth of 4 to 6 feet. These areas were included with Grady clay loam in mapping.

Grady soils (Grd).—The surface layer of this unit is variable. It is clay loam in the center of some areas and loamy sand around the edges, and it ranges from dark grayish brown through dark gray in color and from 3 to 14 inches in thickness. Beneath the surface layer is heavy sandy clay or clay that is predominantly gray and is mottled with red, brown, and yellow. Sandier material is at a depth of 4 or 5 feet in most places. Some areas are ponded for short periods late in winter and in spring.

In their natural state, these soils are too wet to be well suited to cultivated crops, and they are difficult to drain. The acreage that has been cleared is mostly either idle or used for pasture. Most of the acreage remains in hardwoods. There is some pine in the better drained areas.

Greenville Series

The Greenville series consists of deep, well-drained soils on uplands. Where not eroded, these soils have a surface layer of dark reddish-brown sandy loam or sandy clay loam about 6 inches thick. The subsoil is chiefly dark-red sandy clay and extends to a depth of more than 64 inches. In most areas there are a few small iron concretions on the surface and throughout the profile. Slopes of less than 8 percent predominate.

These soils are low or moderate in natural fertility, contain little organic matter, and are strongly acid. They can be cultivated only within a moderate range of moisture content. The root zone is thick. Permeability is moderate, and the available water capacity is medium.

The Greenville soils occur with the Tifton, Marlboro, Grady, and Red Bay soils. They have a redder surface layer than the Tifton and Marlboro soils and a redder subsoil than the Marlboro soils. The Greenville soils contain more clay throughout than the Red Bay soils. They are better drained than the Grady soils, which are poorly drained and have a gray subsoil.

Representative profile, located half a mile north of Pretoria on the Eight Mile Road:

Ap—0 to 6 inches, dark reddish-brown (5YR 3/2) sandy loam; weak, fine, granular structure; very friable when moist; strongly acid; abrupt, smooth boundary. 5 to 9 inches thick.

B1t—6 to 9 inches, dark reddish-brown (2.5YR 3/4) sandy clay loam; moderate, medium, subangular blocky structure; friable when moist, slightly sticky when wet, hard when dry; very strongly acid; clear, smooth boundary. 1 inch to 6 inches thick.

B21t—9 to 52 inches, dark-red (2.5YR 3/6) sandy clay; moderate, medium, subangular blocky structure; firm when moist, very hard when dry, sticky when wet; few thin clay films on surfaces of peds; very strongly acid; gradual, smooth boundary. 10 to 50 inches thick.

B22t—52 to 64 inches, red (2.5YR 4/8) heavy sandy clay loam; weak, medium, subangular blocky structure; friable when moist, slightly hard when dry, sticky when wet; very strongly acid. 10 to 30 inches thick.

The Greenville soils occur as large areas, mostly in the western part of the county. Most of the acreage has been cultivated, but a considerable acreage is now pasture or has been planted to pine trees. The natural vegetation consists of pine and hardwoods.

Greenville sandy clay loam, 2 to 5 percent slopes, severely eroded (GqB3).—This soil has a surface layer of dark reddish-brown or dark-red sandy clay loam 1 inch to 3 inches thick. Beneath this, to a depth of 3 or 4 feet, is dark-red sandy clay. In most places, all of the original A horizon has been removed by erosion, and in some places part of the B horizon has been removed also. Shallow gullies are common, and there are a few deep gullies. Runoff is rapid, and consequently the erosion hazard is severe.

Most of the acreage has been cultivated, but a large part of it is now idle or used for pasture.

Greenville sandy clay loam, 5 to 8 percent slopes, severely eroded (GqC3).—This soil occurs as small areas, mostly in the western part of the county. It has a surface layer of dark reddish-brown or dark-red sandy clay loam 1 inch to 3 inches thick. Beneath the surface layer is dark-red sandy clay that extends to a depth of 3 or 4 feet. In most places all of the original A horizon has been removed by erosion, and in some places a large part of the B horizon has been removed also. Shallow gullies are common, and there are a few deep gullies. Runoff is rapid, and consequently the erosion hazard is severe.

This soil is not suited to cultivated crops, and only a small acreage is cultivated. Most of the acreage is idle or used for pasture.

Greenville sandy loam, 0 to 2 percent slopes (GoA).—This soil has a surface layer of dark reddish-brown, friable sandy loam about 6 inches thick and a subsoil of dark-red, firm sandy clay that extends to a depth of about 50 inches. Beneath this, to a depth of 64 inches, is red, friable sandy clay loam. Runoff is slow, and consequently the erosion hazard is only slight.

This soil is suited to many crops. The response to management, especially to fertilization, is good. Most of the acreage in the southwestern part of the county has been planted to pine, and a large acreage in the northwestern part is used for pasture.

Greenville sandy loam, 2 to 5 percent slopes (GoB).—This soil has a surface layer of dark reddish-brown sandy loam 4 to 7 inches thick. Beneath the surface layer is dark-red sandy clay that extends to a depth of several feet. In most cultivated areas the plow layer is within the original A horizon. Runoff is medium, and consequently the erosion hazard is moderate.

This soil is suited to many crops. The response to management, especially to fertilization, is good. Most of the acreage in the southwestern part of the county has been planted to pine, and a large acreage in the northwestern part is used for pasture.

Included in mapping were some small areas where the plow layer extends into the B horizon.

Greenville sandy loam, 2 to 5 percent slopes, eroded (GoB2).—Most of this soil has a 3- to 6-inch surface layer of dark reddish-brown sandy loam. Beneath this, to a depth of several feet, is dark-red sandy clay. In most cultivated areas the plow layer is a mixture of the original A horizon and the upper part of the B horizon. In some places there are shallow gullies and a few deeper gullies. Runoff is medium, and consequently erosion is a moderate hazard.

This soil is suited to many crops. The response to management, especially to fertilization, is good. A considerable acreage, mostly in the southwestern part of the county, is now planted to pine, and a large acreage in the northwestern part of the county is used for pasture.

Included in mapping were a few small areas of severely eroded soil where the surface texture is now sandy clay loam.

Greenville sandy loam, 5 to 8 percent slopes, eroded (GoC2).—Most of this soil has a 3- to 5-inch surface layer of dark reddish-brown sandy loam. Beneath the surface layer is dark-red sandy clay that extends to a depth of 3 or 4 feet. There are shallow gullies and a few deep gullies that have cut into the B horizon. In these places the surface layer is sandy clay loam. In cultivated areas the plow layer is a mixture of the original A horizon and part of the B horizon. Runoff is rapid, and consequently the erosion hazard is severe.

This soil is suited to many crops. The response to management, especially to fertilization, is good. Most of the acreage has been cultivated, but it is now idle or planted to pine. Only a very small acreage is now cultivated.

Irvington Series

The Irvington series consists of moderately well drained, level or nearly level soils that are on uplands and have a fragipan or cemented layer. These soils have a surface layer of dark-brown or very dark grayish-brown sandy loam that contains few to many small iron and manganese concretions. Beneath the surface layer is yellowish-brown or strong-brown sandy clay loam that contains many small iron and manganese concretions. At a depth of 18 to 30 inches, strong mottling with yellow or brown occurs, and there are many small, soft iron and manganese concretions that are weakly cemented together.

These soils are strongly acid. Permeability is moderately slow, and the available water capacity is medium.

The Irvington soils occur with the Tifton, Carnegie, Lynchburg, and Goldsboro soils. They have a fragipan, which is lacking in the associated soils. They are very closely related to the Tifton and Carnegie soils, but they are less well drained and have a fragipan. The Irvington soils are better drained than the Lynchburg soils. They contain iron and manganese concretions, which the Lynchburg and Goldsboro soils lack.

Representative profile, located 1⅜ miles west of the Worth County line and 1$^{9}/_{16}$ miles south of the U.S. Marine Corps Supply Center (220 yards north of Johnson Road):

Ap—0 to 5 inches, very dark grayish-brown (10YR 3/2) sandy loam; weak, fine, granular structure; very friable; many small iron concretions; very strongly acid; clear, smooth boundary. 4 to 8 inches thick.

B1tcn—5 to 8 inches, brown (10YR 4/3) light sandy clay loam; weak, fine, subangular blocky structure; friable when moist, slightly hard when dry; many small iron and manganese concretions; organic stains in root channels; very strongly acid; clear, smooth boundary. 1 inch to 5 inches thick.

B2tcn—8 to 23 inches, yellowish-brown (10YR 5/6) sandy clay loam; moderate, medium, subangular blocky structure; friable when moist, slightly hard when dry, slightly sticky when wet; many small iron and manganese concretions; very strongly acid; clear, smooth boundary. 10 to 20 inches thick.

B31xcn—23 to 27 inches, yellowish-brown (10YR 5/8) light sandy clay loam; common, medium, distinct, brownish-yellow and strong-brown mottles; moderate, medium, subangular blocky structure; firm when moist, hard when dry, slightly sticky when wet; many, small, soft iron and manganese concretions weakly cemented together; very strongly acid; clear, smooth boundary. 1 inch to 6 inches thick.

B32x—27 to 54 inches, mottled strong-brown (7.5YR 5/8), yellowish-brown (10YR 5/6), and light-gray (2.5Y 7/2) light sandy clay loam; weak, medium, subangular blocky structure; firm when moist, hard when dry, slightly sticky when wet; few, small, soft iron and manganese concretions weakly cemented together; very strongly acid.

The Irvington soils are scattered throughout the county. They are well suited to cultivated crops, to pasture, and to pine trees. About half the acreage has been cultivated, but a considerable acreage is now used for pasture. The natural vegetation consists mostly of pine, but it includes some scattered hardwoods.

Irvington sandy loam, 0 to 2 percent slopes (IgA).—This soil has a surface layer of very dark grayish-brown sandy loam 4 to 8 inches thick and a subsoil of yellowish-brown sandy clay loam. A fragipan, or cemented layer, occurs at a depth of about 23 inches and extends to a depth of about 54 inches. It consists of yellowish-brown sandy clay loam mottled with brownish yellow, strong brown, and gray.

This soil has good tilth. The root zone is thick.

This soil is well suited to many crops, to pasture, and to timber. About half the acreage has been cleared and is used for crops and pasture. The rest remains in natural vegetation, which consists of scattered pines and some hardwoods.

Izagora Series

The Izagora series consists of moderately well drained soils on nearly level terraces along the larger streams. These soils have a surface layer of pale-brown to very dark grayish-brown loamy fine sand or sandy loam underlain in some places by pale-yellow or yellowish-brown loamy fine sand or sandy loam. Beneath this is yellow or yellowish-brown sandy clay loam mottled with red, brown, and gray at a depth of 24 to 28 inches.

These soils are low or moderate in natural fertility and are strongly acid. Runoff is slow. Permeability is moderate to slow, and the available water capacity is medium.

The Izagora soils occur with the Bladen, Dunbar, and Flint soils. They are less wet and less gray than the Bladen and Dunbar soils. They have a more friable and less red subsoil than the Flint soils.

Representative profile, located 2 miles north of the Baker County line and three-fourths of a mile west of the Flint River:

A—0 to 5 inches, very dark grayish-brown (10YR 3/2) sandy loam; moderate, medium, granular structure; friable when moist; strongly acid; clear, smooth boundary. 4 to 8 inches thick.

B1t—5 to 9 inches, light yellowish-brown (10YR 6/4) sandy clay loam; weak, medium, subangular blocky structure; friable when moist; strongly acid; clear, smooth boundary. 2 to 9 inches thick.

Figure 2.—**Well-managed slash pine on Izagora-Dunbar loamy fine sands. The trees are 27 years old.**

B21t—9 to 19 inches, yellowish-brown (10YR 5/8) sandy clay loam; moderate, medium, subangular blocky structure; slightly hard when dry, firm when moist, slightly sticky when wet; clay films on surfaces of peds; very strongly acid; gradual, smooth boundary. 6 to 14 inches thick.

B22t—19 to 24 inches, yellowish-brown (10YR 5/8) sandy clay loam; common, fine, distinct, yellowish-red mottles; moderate, medium, subangular blocky structure; slightly hard when dry, firm when moist, slightly sticky when wet; clay films on surfaces of peds; very strongly acid; gradual, smooth boundary. 3 to 8 inches thick.

B23t—24 to 31 inches, yellowish-brown (10YR 5/8) sandy clay loam; common, fine, distinct, yellowish-red mottles and common, medium, distinct, light-gray mottles; moderate, medium, subangular blocky structure; slightly hard when dry, firm when moist, slightly sticky when wet; clay films on surfaces of peds; very strongly acid; gradual, smooth boundary. 5 to 9 inches thick.

B31t—31 to 41 inches, mottled red (2.5YR 4/8), light-gray (10YR 7/2), and yellowish-brown (10YR 5/6) sandy clay loam; moderate, medium, subangular blocky structure; slightly hard when dry, firm when moist, slightly sticky when wet; clay films on surfaces of peds; very strongly acid; gradual, smooth boundary. 8 to 12 inches thick.

B32tg—41 to 45 inches, light-gray (10YR 7/2) sandy clay; common, medium, distinct, red and yellowish-brown mottles; moderate, medium, subangular blocky structure; slightly hard when dry, firm when moist, slightly sticky when wet; very strongly acid; clear, smooth boundary. 3 to 8 inches thick.

Cg—45 to 58 inches, light-gray (10YR 7/2) sandy clay; common, medium, distinct, yellowish-red and red mottles; moderate, medium, subangular blocky structure; slightly hard when dry, firm when moist, slightly sticky when wet; very strongly acid.

The Izagora soils occur mostly along the Flint River, Cooleewahee Creek, and Chickasawhatchee Creek. Some areas occur along the smaller streams. About 20 percent of the acreage has been cleared and is about equally divided as cropland and idle land. The rest is in cutover timber consisting of pine and some scattered hardwoods. The natural vegetation consists of pine and some hardwoods.

The Izagora soils in Dougherty County are mapped only in complexes and in an undifferentiated group with the Bladen and Dunbar soils.

Izagora-Dunbar loamy fine sands (0 to 2 percent slopes) (Izo).—The Izagora soil in this complex is similar to the one described as typical of the Izagora series. The Dunbar soil is similar to that described under the heading "Dunbar Series." The Izagora soils make up about 70 percent of each area mapped as this complex, and the Dunbar soils 30 percent. Both soils occur in most areas. Because of the intricate pattern of occurrence, the similarity of the two soils, and the dense forest cover, it was not practical to map these soils separately.

Because these soils remain wet for long periods of time, they are suited to only a few crops. They are well suited to timber (fig. 2) and to pasture. A small acreage has been cleared, and is divided about equally as cultivated land, pasture, and idle land. The rest is in pine and hardwoods. Pine predominates along the Flint River, and hardwoods along Cooleewahee Creek and Chickasawhatchee Creek.

Lakeland Series

The Lakeland series consists of deep, excessively drained sandy soils that are level to gently sloping. These soils have a 5- to 10-inch surface layer of dark grayish-brown to dark reddish-brown sand over 3 to 12

inches of dark-brown to yellowish-brown sand. Beneath this is very pale brown to reddish-brown sand.

These soils are low in natural fertility, contain little organic matter, and are strongly acid. Permeability is rapid, and the available water capacity is low.

The Lakeland soils occur with the Eustis, Albany, and Norfolk soils. They are similar to the Eustis and Albany soils in texture, but they are less brown or red throughout than the Eustis soils and are darker colored than the Albany soils. Their subsoil is coarser textured than that of the Norfolk soils.

Representative profile, located 450 yards north of the Baker County line and 2 miles east of Georgia Highway 91:

A1—0 to 6 inches, very dark grayish-brown (10YR 3/2) sand; single grain (structureless); loose; strongly acid; gradual, smooth boundary. 4 to 8 inches thick.

A2—6 to 18 inches, brown or dark-brown (10YR 4/3) sand; single grain (structureless); loose; strongly acid; gradual, smooth boundary. 8 to 15 inches thick.

C1—18 to 62 inches, yellowish-brown (10YR 5/8) sand; single grain (structureless); loose; very strongly acid.

The Lakeland soils are mostly in the central and eastern parts of the county. Most of the acreage is idle or planted to pine; a very small acreage is cultivated. The natural vegetation consists of hardwoods and pine.

Lakeland sand, 0 to 5 percent slopes (LpB).—The surface layer of this soil is dark grayish-brown to dark reddish-brown, loose sand underlain with brown or dark-brown, loose sand at a depth of 6 inches. Below a depth of 18 inches is very pale brown to reddish-brown, loose sand.

This soil is not well suited to cultivated crops or pasture, because it is droughty. About half the acreage has been cultivated, but only a little is now cultivated. A little is used for pasture, and the rest is idle or planted to pine.

Included in mapping were small areas of a soil that has slopes of 5 to 8 percent.

Local Alluvial Land

Local alluvial land (Lcm) occurs mostly in small depressions that have slightly concave sides. The slope range is 0 to 2 percent.

This land type is made up of deep deposits of soil material washed from the nearby slopes. At the surface is an 18- to 45-inch layer of dark reddish-brown to dark-gray soil material, ranging from silt loam to sandy loam in texture. This layer contains a moderate amount of organic matter. Beneath this, in most places, is sandy loam or sandy clay loam.

This land type is strongly acid and is moderate in natural fertility. It is moderately well drained and stays wet longer after rain than the surrounding soils do. The available water capacity is medium. Tilth is good.

This land type is suited to most crops grown locally and is generally put to the same use as the surrounding soils.

Included in mapping were some areas around the outer edges of the depressions where the alluvium is less than 18 inches thick.

Lucy Series

The Lucy series consists of deep, well-drained, sandy soils that are level or gently sloping. These soils have a surface layer of brown to dark grayish-brown loamy sand. Beneath the surface layer is yellowish-brown to yellowish-red loamy sand underlain at a depth of 20 to 40 inches by yellowish-red to red sandy clay loam or sandy loam.

These soils contain little organic matter and are strongly acid. They have a thick root zone. Permeability is moderately rapid in the uppermost 24 inches and moderate in the lower subsoil. The available water capacity is low or medium. Tilth is good.

The Lucy soils occur with the Americus, Eustis, Orangeburg, and Red Bay soils. Their subsoil is less sandy than that of the Americus and Eustis soils. The Lucy soils have a yellowish-red surface layer, rather than a dark reddish-brown or dark-brown surface layer like that of the Americus and Red Bay soils. They have a thicker surface layer than the Orangeburg and Red Bay soils.

Representative profile, five-eighths of a mile east of Georgia Highway 91 and 100 yards north of the Baker County line:

Ap—0 to 6 inches, dark grayish-brown (10YR 4/2) loamy sand; weak, fine, granular structure; very friable; strongly acid; abrupt, smooth boundary. 4 to 8 inches thick.

A2—6 to 17 inches, yellowish-brown (10YR 5/4) loamy sand; weak, fine, granular structure; very friable; very strongly acid; gradual, smooth boundary. 10 to 32 inches thick.

A3—17 to 24 inches, yellowish-red (5YR 5/8) loamy sand; weak, fine, granular structure; very friable; very strongly acid; gradual, smooth boundary. 6 to 8 inches thick.

B1t—24 to 30 inches, yellowish-red (5YR 4/8) sandy loam; weak, fine, subangular blocky structure; very friable; very strongly acid; gradual, smooth boundary. 2 to 12 inches thick.

B2t—30 to 60 inches, yellowish-red (5YR 4/8) sandy clay loam; moderate, medium, subangular blocky structure; friable; very strongly acid.

The Lucy soils occur mostly in a strip through the center of the county, between the Flint River and Cooleewahee Creek. Most of the acreage is cultivated. The natural vegetation consists of hardwoods and pine.

Lucy loamy sand, 0 to 2 percent slopes (LMA).—This soil has a surface layer of dark grayish-brown loamy sand about 6 inches thick over yellowish-brown loamy sand that extends to a depth of 24 inches. Beneath this is yellowish-red sandy loam to sandy clay loam that extends to a depth of more than 60 inches. Runoff is slow, and consequently the erosion hazard is only slight.

This soil is suited to many crops. The response to management is fair. A considerable acreage is now idle, is used for pasture, or has reverted to natural vegetation.

Included in mapping were small areas of the Wagram and Orangeburg soils and some areas of a soil that has sandy loam at a depth of less than 20 inches.

Lucy loamy sand, 2 to 5 percent slopes (LMB).—This soil is undulating or gently sloping. It has a 4- to 6-inch surface layer of grayish-brown loamy sand over yellowish-brown to yellowish-red loamy sand that extends to a depth of 23 to 26 inches. Beneath this is yellowish-red sandy clay loam that extends to a depth of more than

65 inches. Runoff is slow, and consequently the erosion hazard is only slight.

This soil is suited to many crops. The response to management is fair. A considerable acreage is now idle, is used for pasture, or has reverted to natural vegetation.

Included in mapping were some areas of the Orangeburg and Wagram soils.

Lucy loamy sand, 5 to 8 percent slopes (LMC).—This soil occurs as small areas on gentle, generally short side slopes. It has a 4- to 8-inch surface layer of dark grayish-brown loamy sand over yellowish-brown to yellowish-red loamy sand about 16 to 36 inches thick. Beneath this is yellowish-red sandy clay loam, which extends to a depth of more than 60 inches. There are a few shallow gullies in some places.

This soil is suited to many crops, but most of the acreage is now idle or wooded.

Included in mapping were some areas of the Orangeburg and Wagram soils.

Lynchburg Series

The Lynchburg series consists of somewhat poorly drained soils on level or nearly level uplands. These soils have a 4- to 7-inch surface layer of dark grayish-brown to gray sandy loam over 3 to 12 inches of pale-yellow sandy loam. Beneath this is yellow or pale-yellow sandy clay loam mottled with light gray and yellowish brown. The amount of gray increases with depth.

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

The Lynchburg soils occur with the Grady, Lakeland, Norfolk, and Irvington soils. They are less wet than the Grady soils and have a coarser textured subsoil. The Lynchburg soils are less well drained than the Lakeland soils and have a finer textured subsoil. They are less well drained than the Norfolk and Irvington soils, and they lack the iron concretions that are characteristic of the Irvington soils.

Representative profile, located 1 9/16 miles south of the U.S. Marine Corps Supply Center and 55 yards west of the Worth County line:

Ap—0 to 5 inches, dark grayish-brown (10YR 4/2) sandy loam; weak, medium, granular structure; very friable; very strongly acid; clear, smooth boundary. 4 to 7 inches thick.

B1—5 to 9 inches, pale-yellow (2.5Y 7/4) sandy loam; few, fine, distinct, yellowish-brown mottles; weak, medium, subangular blocky structure; friable; few organic stains in root channels and wormholes; very strongly acid; clear, smooth boundary. 3 to 12 inches thick.

B2t—9 to 25 inches, yellow (2.5Y 7/6) sandy clay loam; common, medium, distinct, light-gray and yellowish-brown mottles; weak, medium, subangular blocky structure; friable; very strongly acid; gradual, smooth boundary. 12 to 20 inches thick.

B31t—25 to 37 inches, light-gray (2.5Y 7/2) sandy clay loam; many, medium, distinct, yellowish-brown and common, fine, distinct, red mottles; moderate, medium, subangular blocky structure; friable; very strongly acid; gradual, smooth boundary. 10 to 14 inches thick.

B32t—37 to 48 inches, strong-brown (7.5YR 5/8) sandy clay loam; many, coarse, distinct, light-gray (2.5Y 7/2) mottles; moderate, medium, subangular blocky structure; friable; very strongly acid.

Because they are wet, the Lynchburg soils are suited to only a few crops, but they are well suited to pasture and to timber. About half the acreage has been cultivated, but a considerable acreage is now idle or used for pasture. The natural vegetation consists mostly of pine, but it includes some scattered hardwoods.

Lynchburg sandy loam, 0 to 2 percent slopes (LtA).—The surface layer of this soil is dark grayish-brown, very friable sandy loam about 5 inches thick. The subsoil is chiefly yellow, friable sandy clay loam that is mottled with light gray and yellowish brown. Beneath a depth of about 25 inches is light-gray, friable sandy clay loam that is mottled with yellowish brown and red.

Because it is wet, this soil is suited to only a few kinds of crops, and in wet years it produces only moderate yields. It is well suited to pasture and to pine. The natural vegetation consists of scattered pine and some hardwoods.

Included in mapping were some areas of Irvington soil and some areas of a soil that has a subsoil of sandy clay.

Marlboro Series

The Marlboro series consists of well-drained soils on uplands. These soils have a surface layer of dark-brown to dark yellowish-brown sandy loam. Beneath the surface layer is strong-brown to red sandy clay loam or sandy clay. Slopes of less than 3 percent predominate.

These soils are low or moderate in natural fertility, contain little organic matter, and are strongly acid. They have good tilth. Permeability is moderate, and the available water capacity is medium. The root zone is thick.

The Marlboro soils occur with the Carnegie, Tifton, Greenville, and Orangeburg soils. They contain fewer iron concretions than the Carnegie and Tifton soils. The Marlboro soils are less red than the Greenville soils. They have a finer textured subsoil than the Orangeburg soils.

Representative profile, in a cultivated field 2.1 miles east of the Calhoun County line and 100 yards south of the railroad tracks:

Ap—0 to 6 inches, dark yellowish-brown (10YR 4/4) sandy loam; weak, fine, granular structure; very friable when moist; few small iron concretions; strongly acid; abrupt, smooth boundary. 4 to 7 inches thick.

B1t—6 to 11 inches, strong-brown (7.5YR 5/6) sandy clay loam; weak, fine, subangular blocky structure; friable when moist; few small iron concretions; very strongly acid; clear, smooth boundary. 0 to 7 inches thick.

B21t—11 to 25 inches, strong-brown (7.5YR 5/6) sandy clay; moderate, medium, subangular blocky structure; firm when moist, slightly sticky when wet; few small iron concretions; very strongly acid; clear, smooth boundary. 12 to 20 inches thick.

B22t—25 to 37 inches, strong-brown (7.5YR 5/8) sandy clay; common, fine, distinct, pale-yellow mottles and common, fine, faint, yellowish-red mottles; moderate, medium, subangular blocky structure; firm when moist, slightly sticky when wet; many small, soft iron concretions; very strongly acid; gradual, smooth boundary. 8 to 16 inches thick.

B23t—37 to 58 inches, yellowish-brown (10YR 5/6) sandy clay; common, medium, distinct, yellowish-red mottles and common, fine, distinct, pale-yellow mottles; weak, medium, subangular blocky structure; firm when moist, slightly sticky when wet; few, small, soft iron concretions; very strongly acid.

The Marlboro soils occur in somewhat small areas, mostly in the western part of the county. Most of the acreage is cultivated. The natural vegetation consists of pine and hardwoods.

Marlboro sandy loam, 2 to 5 percent slopes (MzB).—This soil is undulating and very gently sloping. It has a surface layer of dark yellowish-brown, very friable sandy loam. The subsoil is chiefly strong-brown, firm sandy clay. Beneath a depth of about 25 inches, it is mottled with pale yellow and yellowish red. Below a depth of 37 inches is yellowish-brown, firm sandy clay that is mottled with yellowish red and pale yellow. The subsoil is yellowish red in some places. In most cultivated areas the plow layer is within the surface layer. Runoff is medium, and consequently the erosion hazard is moderate.

Most of the acreage is cultivated. The response to management is good.

Included are some areas of a soil that has slopes of less than 2 percent and some areas of Tifton soils, which have many small iron concretions on the surface and throughout the profile.

Norfolk Series

The Norfolk series consists of deep, well-drained soils on uplands. Where not eroded these soils have a surface layer of grayish-brown or dark grayish-brown loamy sand over a thin layer of yellow to yellowish-brown loamy sand or sandy loam. Beneath this is yellowish-brown or strong-brown sandy clay loam. Slopes of less than 4 percent predominate.

These soils are low or moderate in natural fertility, contain little organic matter, and are strongly acid. They have good tilth. Permeability is moderate, and the available water capacity is medium. The root zone is thick.

The Norfolk soils occur with the Orangeburg, Lakeland, and Tifton soils. Their subsoil is less red than that of the Orangeburg soils. The Norfolk soils are yellower and are finer textured than the Lakeland soils. They have a yellower, less clayey subsoil than the Tifton soils, and they do not contain iron concretions.

Representative profile, located on the Mitchell County Line Road a fourth of a mile west of the Worth County line:

Ap—0 to 7 inches, dark grayish-brown (10YR 4/2) loamy sand; weak, fine, granular structure; very friable; strongly acid; clear, wavy boundary. 5 to 8 inches thick.

A2—7 to 14 inches, yellowish-brown (10YR 5/4) sandy loam; weak, fine, subangular blocky structure; very friable; strongly acid; clear, wavy boundary. 4 to 13 inches thick.

B21t—14 to 38 inches, yellowish-brown (10YR 5/6) sandy clay loam; weak, medium, subangular blocky structure; friable; strongly acid; gradual, smooth boundary. 14 to 30 inches thick.

B22t—38 to 54 inches, yellowish-brown (10YR 5/8) sandy clay loam; weak, medium, subangular blocky structure; friable; strongly acid; gradual, smooth boundary. 10 to 20 inches thick.

B23t—54 to 62 inches, brownish-yellow (10YR 6/6) sandy clay loam; few, fine, faint, strong-brown mottles; weak, fine, subangular blocky structure; friable; strongly acid.

The Norfolk soils occur mostly in the eastern part of the county. Most of the acreage is cultivated or used for pasture. The natural vegetation consists of hardwoods and pine.

Norfolk loamy sand, 0 to 2 percent slopes (NhA).—This soil has a 6- to 8-inch surface layer of grayish-brown or dark grayish-brown loamy sand over a thin layer of yellowish-brown loamy sand or sandy loam. Beneath this is yellowish-brown or strong-brown sandy clay loam. In most cultivated areas the plow layer is within the original A horizon. Runoff is slow, and consequently erosion is only a slight hazard.

This soil is suited to many crops. The response to management is good. About half the acreage is used for cultivated crops and half for pasture.

Included in mapping were some areas of Marlboro soils.

Norfolk loamy sand, 2 to 5 percent slopes (NhB).—The surface layer of this soil is dark grayish-brown, very friable loamy sand over yellowish-brown, very friable sandy loam. At a depth of 14 inches is a thick layer of yellowish-brown, friable sandy clay loam. Below a depth of 54 inches is brownish-yellow, friable sandy clay loam that has a few, faint, strong-brown mottles. Runoff is medium, and consequently the erosion hazard is moderate.

This soil is suited to many crops. Most of the acreage has been cleared. About half of this cleared land is cultivated, and half is used for pasture.

Included are some small areas of a soil that has slopes of as much as 7 percent.

Ocilla Series

The Ocilla series consists of deep, somewhat poorly drained, sandy, nearly level or slightly depressional soils on uplands. These soils have a surface layer of dark grayish-brown to very dark grayish-brown loamy sand. Beneath this is pale-olive or pale-yellow loamy sand, underlain by sandy loam or sandy clay loam at a depth of 20 to 40 inches.

These soils are low in natural fertility, contain little organic matter, and are very strongly acid. The available water capacity is low, and permeability is rapid in the uppermost 28 inches of the profile.

The Ocilla soils occur with the Lakeland, Eustis, Lynchburg, and Albany soils. They are less well drained than the Lakeland and Eustis soils, and they do not have the dark yellowish-brown or reddish-brown color that is typical of the Eustis soils. Their subsoil is coarser textured than that of the Lynchburg soils. They are less sandy than the Albany soils and are shallower over finer textured material.

Representative profile, located 1.7 miles east of the Calhoun County line, and 100 yards south of Georgia Highway 62:

A1—0 to 5 inches, dark grayish-brown (10YR 4/2) loamy sand; weak, fine, granular structure; very friable; strongly acid; gradual, smooth boundary. 3 to 7 inches thick.

A21—5 to 25 inches, pale-olive (5Y 6/3) loamy sand; weak, fine, granular structure; very friable; very strongly acid; gradual, smooth boundary. 6 to 25 inches thick.

A22—25 to 28 inches, pale-yellow (2.5Y 7/4) loamy sand; weak, fine, granular structure; very friable; very strongly acid; clear, smooth boundary. 2 to 6 inches thick.

B2t—28 to 33 inches, yellow (10YR 7/6) sandy clay loam; few, common, distinct, yellowish-brown mottles; moderate, medium, subangular blocky structure; friable; very strongly acid; gradual, smooth boundary. 4 to 15 inches thick.

B3t—33 to 60 inches, mottled strong-brown (7.5YR 5/8), light-gray (10YR 7/2), and red (2.5YR 4/8) sandy clay loam; moderate, medium, subangular blocky structure; friable; very strongly acid.

The Ocilla soils occur as small areas scattered over most of the county. Much of the acreage has been cleared, but only a small acreage is now cultivated. The natural vegetation consists of pine and some hardwoods.

Ocilla loamy sands, 0 to 2 percent slopes (OhA).—These soils have a surface layer of dark grayish-brown loamy sand. At a depth of 5 inches is pale-olive or pale-yellow loamy sand. Beneath this, at a depth of 28 inches, is yellow to strong-brown sandy clay loam mottled with yellowish brown, red, and gray.

Although these soils have a thick root zone, they are only fair for cultivated crops and for pasture because they are sandy. They are well suited to timber. A little more than a third of the acreage has been cleared, but most of it is now idle. The rest is in cutover pine and hardwoods.

Orangeburg Series

The Orangeburg series consists of deep, well-drained soils on uplands. Where not eroded, these soils have a surface layer of yellowish-brown to dark grayish-brown loamy sand over strong-brown sandy loam. Beneath this is yellowish-red or red sandy clay loam that extends to a depth of several feet. Slopes of less than 5 percent predominate.

These soils are low or moderate in natural fertility, contain little organic matter, and are strongly acid. The root zone is thick. Permeability is moderate, and the available water capacity is medium. Tilth is good.

The Orangeburg soils occur with the Red Bay, Norfolk, Lakeland, and Eustis soils. Their surface layer is lighter colored than that of the Red Bay soils. The Orangeburg soils have a redder subsoil than the Norfolk soils. They are redder than the Lakeland soils, and their subsoil is finer textured than that of the Lakeland and Eustis soils.

Representative profile, located 2 5/16 miles south of Georgia Highway 113 and 2½ miles east of U.S. Highway 19 (⅜ mile north of paved Antioch Road):

Ap—0 to 7 inches, dark grayish-brown (10YR 4/2) loamy sand; very friable; many, medium, fine and very fine roots; strongly acid; clear, smooth boundary. 6 to 8 inches thick.

B1t—7 to 12 inches, strong-brown (7.5YR 5/6) sandy loam; weak, fine, subangular blocky structure; very friable; many fine roots; very strongly acid; clear, smooth boundary. 0 to 14 inches thick.

B21t—12 to 54 inches, yellowish-red (5YR 4/6) sandy clay loam; moderate, medium, subangular blocky structure; friable; clay bridging between sand grains; numerous fine pores; very strongly acid; gradual, smooth boundary. 20 to 50 inches thick.

B22t—54 to 64 inches +, yellowish-red (5YR 4/8) sandy clay loam with few, fine, faint, yellowish-brown mottles; moderate, medium, subangular blocky structure; friable; very strongly acid. 6 to 20 inches or more thick.

The Orangeburg soils occur as large areas, mostly in a strip through the center of the county, along the Flint River and Cooleewahee Creek. They are coarser textured and a little more droughty in the areas between these two streams than they are in other areas. Most of the acreage has been cultivated, but a considerable acreage is now used for pasture or planted to pine. The natural vegetation consists of hardwoods and pine.

Orangeburg loamy sand, 0 to 2 percent slopes (OeA).—The surface layer of this soil is dark grayish-brown, very friable loamy sand. It overlies strong-brown, very friable sandy loam. Below a depth of 12 inches is a thick layer of yellowish-red, friable sandy clay loam that has a few, faint, yellowish-brown mottles in the lower part. Runoff is slow, and consequently the erosion hazard is only slight.

This soil is suited to many crops. The response to management is good. Most of the acreage has been cultivated, but a considerable acreage is now used for pasture or planted to pine.

Included in mapping were a few areas of a soil that has a subsoil of light sandy clay. These inclusions are in the eastern part of the county.

Orangeburg loamy sand, 2 to 5 percent slopes (OeB).—The surface layer of this soil is yellowish-brown through dark-brown loamy sand 5 to 8 inches thick. It is underlain in some places by 3 to 10 inches of strong-brown sandy loam. The finer textured part of the B horizon is yellowish-red or red sandy clay loam.

This soil is suited to many crops. The response to management is good. Most of the acreage has been cultivated, but a considerable acreage is now used for pasture or planted to pine.

Included in mapping were a few areas of a soil that has a subsoil of light sandy clay. These areas are in the eastern part of the county. Also included was a small acreage of a soil that has a surface layer about 16 inches thick.

Orangeburg loamy sand, 2 to 5 percent slopes, eroded (OeB2).—This soil has a surface layer of yellowish-brown to reddish-brown loamy sand 3 to 7 inches thick. Beneath this is yellowish-red or red sandy clay loam that extends to a depth of 30 to 50 inches. In a large part of the cultivated acreage, the plow layer is a mixture of the original A horizon and the upper part of the B horizon. In some places there are shallow gullies and a few deeper gullies that cut into the B horizon. Runoff is medium, and consequently the erosion hazard is moderate.

This soil is suited to many crops. The response to management is good. Most of the acreage has been cultivated, but a considerable acreage is now used for pasture or planted to pine.

Included in mapping were a few areas of a soil that has a subsoil of light sandy clay. These inclusions are in the eastern part of the county.

Orangeburg loamy sand, 5 to 8 percent slopes, eroded (OeC2).—This soil has a surface layer of yellowish-brown to reddish-brown loamy sand 3 to 7 inches thick. Beneath this is yellowish-red or red sandy clay loam that extends to a depth of 28 to 40 inches. In a large part of the cultivated acreage, the plow layer is a mixture of the original A horizon and the upper part of the B horizon. In some places there are shallow gullies and a few deeper gullies that cut into the B horizon. Runoff is rapid, and consequently the erosion hazard is severe.

This soil is suited to many crops. Most of it has been cultivated, but very little is now cultivated, because of the erosion hazard. Most of the acreage is idle or has reverted to pine, but some is used for pasture.

Included in mapping were a few areas of a soil that has a subsoil of light sandy clay. These inclusions are in the eastern part of the county. Also included are some small areas of a soil from which all the original A horizon has been removed by erosion and a few small areas of a soil that has slopes of as much as 12 percent.

Pelham Series

The Pelham series consists of poorly drained, sandy soils in depressions or in poorly defined drainageways of the uplands. These soils have a 27-inch surface layer of very dark grayish-brown to very dark gray loamy sand. Below this is light-gray sandy clay loam mottled with brownish yellow, red, and yellow.

These soils are low in natural fertility, contain a moderate amount of organic matter, and are very strongly acid.

The Pelham soils occur with the Grady, Albany, and Lynchburg soils. They have a coarser textured, less sticky subsoil than the Grady soils. The Pelham soils are wetter than the Albany soils, and their subsoil is finer textured. They are also wetter than the Lynchburg soils, which have a yellow rather than a gray subsoil.

Representative profile, located on the Nilo Plantation half a mile southeast of the plantation headquarters and half a mile west of Georgia Highway 91:

A1—0 to 8 inches, very dark gray (10YR 3/1) loamy sand; weak, fine, granular structure; very friable; many small grass roots; very strongly acid; clear, smooth boundary. 2 to 8 inches thick.

A21—8 to 19 inches, very dark grayish-brown (10YR 3/2) loamy sand; weak, fine, granular structure; very friable; few small grass roots; very strongly acid; gradual, smooth boundary. 10 to 17 inches thick.

A22g—19 to 27 inches, light brownish-gray (2.5Y 6/2) loamy sand; weak, fine, granular structure; very friable; very strongly acid; clear, smooth boundary. 8 to 15 inches thick.

B21tg—27 to 34 inches, light-gray (2.5Y 7/2) sandy clay loam; few, fine, faint, pale-yellow mottles; weak, fine, subangular blocky structure; slightly hard when dry, friable when moist; very strongly acid; clear, smooth boundary. 6 to 12 inches thick.

B22tg—34 to 56 inches, light-gray (2.5Y 7/2) sandy clay loam; many, medium, distinct, yellow mottles and few, fine, distinct, red mottles; weak, fine, subangular blocky structure; slightly hard when dry, friable when moist; very strongly acid; clear, smooth boundary. 10 to 25 inches thick.

B23tg—56 to 68 inches, light-gray (2.5Y 7/2) sandy clay loam; weak, fine, subangular blocky structure; slightly hard when dry, friable when moist; very strongly acid.

The Pelham soils occur as rather small areas in the central and eastern parts of the county. If not drained, they are too wet for cultivation, but if they are drained, they are suited to only a few crops. Only a very small part of the acreage has been cleared.

Pelham loamy sand, 0 to 2 percent slopes (PlA).—The surface layer of this soil is very dark gray, very friable loamy sand. At a depth of 8 to 19 inches, it overlies very dark grayish-brown, very friable loamy sand. Beneath this is light brownish-gray, very friable loamy sand, which is underlain at a depth of about 27 inches by light-gray, friable sandy clay loam mottled with pale yellow. Water may stand on the surface for several weeks late in winter and in spring, because many of the depressions do not have outlets and are drained through underground channels.

Unless drained, this soil is too wet for cultivated crops or pasture. A small acreage has been cleared and is used for pasture. The rest is in natural vegetation, which consists of cypress, blackgum, oak, other water-tolerant trees, and water-tolerant grasses.

Included in mapping were some small areas of sandy loam and some areas that have sandy clay loam less than 18 inches below the surface.

Red Bay Series

The Red Bay series consists of deep, well-drained soils on uplands. These soils have a surface layer of dark reddish-brown or dark-brown loamy sand 6 to 10 inches thick. Beneath this, to a depth of several feet, is dark-red or red sandy clay loam or sandy loam. Slopes of less than 4 percent predominate.

These soils are low or moderate in natural fertility, contain little organic matter, and are strongly acid. The root zone is thick. Permeability is moderate, and the available water capacity is medium. Tilth is good.

The Red Bay soils occur with the Greenville, Americus, and Orangeburg soils. They are coarser textured throughout than the Greenville soils. The Red Bay soils have a finer textured subsoil than the Americus soils. Their surface layer and subsoil are redder than those of the Orangeburg soils.

Representative profile, located 1 mile south of the junction of Slappey Drive and U.S. Highway 19 and 220 yards east of Slappey Drive:

Ap—0 to 7 inches, dark reddish-brown (5YR 3/3) loamy sand; weak, medium, granular structure; very friable; strongly acid; clear, smooth boundary. 6 to 10 inches thick.

B1t—7 to 9 inches, dark reddish-brown (5YR 3/3) sandy loam; moderate, medium, granular structure; slightly hard when dry, friable when moist; very strongly acid; clear, smooth boundary. 1 to 9 inches thick.

B21t—9 to 32 inches, dark-red (2.5YR 3/6) sandy clay loam; moderate, medium, subangular blocky structure; slightly hard when dry, friable when moist; very strongly acid; gradual, smooth boundary. 15 to 28 inches thick.

B22t—32 to 56 inches, red (10R 4/6) sandy clay loam; weak, medium, subangular blocky structure; friable; very strongly acid; gradual, smooth boundary. 20 to 30 inches thick.

B23t—56 to 68 inches, red (2.5YR 4/6) light sandy clay loam; moderate, medium, granular structure; friable; very strongly acid.

The Red Bay soils occur as large areas, mostly in a strip through the center of the county. Most of the acreage has been cleared. The natural vegetation consists of hardwoods and pine.

Red Bay loamy sand, 0 to 2 percent slopes (RgA).—This soil has a surface layer of dark reddish-brown loamy sand 6 to 10 inches thick. Beneath this is red and dark-red sandy loam and sandy clay loam that extends to a depth of more than 68 inches. Runoff is slow, and consequently erosion is only a slight hazard.

This soil is suited to many crops. Most of it has been cultivated. A small acreage is planted to pine, and some is used for pasture. Response to management is good.

Red Bay loamy sand, 2 to 5 percent slopes, eroded (RgB2).—This soil is undulating and very gently sloping. It has a surface layer of dark-brown or dark reddish-brown loamy sand 5 to 8 inches thick. Beneath this is red and dark-red sandy loam and sandy clay loam. In cultivated areas the plow layer is a mixture of the original A horizon and the upper part of the B horizon. In some places there are shallow gullies and a few deeper gullies that cut into the B horizon. Runoff is medium, and consequently the erosion hazard is moderate.

This soil is suited to many crops. The response to management is good. Most of the acreage has been cultivated, but only about a fourth is now used for row crops. Of the rest, about half is used for pasture and half for timber.

Included in mapping were small areas of slightly eroded soil.

Red Bay loamy sand, 5 to 8 percent slopes, eroded (RgC2).—This soil is on short, gentle side slopes and on the rims of depressions. It has a surface layer of dark-brown or dark reddish-brown loamy sand 5 to 8 inches thick. Beneath this is red or dark-red sandy loam or sandy clay loam. Where this soil has been cultivated, the plow layer is a mixture of the original A horizon and the upper part of the B horizon. In some places there are shallow gullies and a few deeper gullies that cut into the B horizon. Runoff is rapid, and consequently erosion is a severe hazard.

This soil generally occurs as somewhat small areas. Most of it has been cultivated, but very little is now cultivated. Most of the acreage is idle or has reverted to natural vegetation.

Sawyer Series

The Sawyer series consists of moderately well drained soils on uplands. These soils have a surface layer of grayish-brown to dark-brown loamy sand or cobbly loamy sand over yellowish-brown heavy sandy clay. Beneath this is mottled brownish-yellow, light-gray, and red, plastic clay. In places fragments of siliceous rock are scattered on the surface and throughout the profile.

These soils are low or moderate in natural fertility, contain little organic matter, and are strongly acid. Permeability is slow in the subsoil.

The Sawyer soils are closely associated with the Susquehanna soils and broadly associated with the Tifton and Carnegie soils. Their subsoil is yellowish brown rather than mottled with gray throughout as is that of the Susquehanna soils. The Sawyer soils have a finer textured subsoil than the Tifton and Carnegie soils and a yellower subsoil than the Carnegie soils. They lack the small iron concretions that are characteristic of the Tifton and Carnegie soils.

Representative profile, located 1¼ miles north of the Mitchell County line and 1 mile east of the Pebble Hill Road:

Ap—0 to 5 inches, brown (10YR 4/3) loamy sand; weak, fine, granular structure; very friable when moist; very strongly acid; clear, smooth boundary. 3 to 8 inches thick.

B2t—5 to 18 inches, yellowish-brown (10YR 5/8) sandy clay; few, fine, prominent, red mottles; moderate, medium, subangular blocky structure; firm when moist, slightly hard when dry, sticky when wet; few clay films on surfaces of peds; very strongly acid; gradual, smooth boundary. 8 to 18 inches thick.

B31t—18 to 26 inches, light yellowish-brown (10YR 6/4) sandy clay; many, medium, prominent, red mottles and common, medium, faint, light yellowish-brown mottles; moderate, medium, angular blocky structure; slightly hard when dry, very firm when moist, sticky when wet; many clay films on surfaces of peds; very strongly acid; gradual, smooth boundary. 6 to 20 inches thick.

B32t—26 to 42 inches, mottled red (2.5YR 4/8), light-gray (2.5Y 7/2), and brownish-yellow (10YR 6/6) clay; strong, angular blocky structure; firm when moist, sticky and plastic when wet, hard when dry; many clay films on surface of peds; very strongly acid.

The Sawyer soils occur as rather small areas, chiefly in the southeastern part of the county. They are not well suited to cultivation. Much of the acreage has been cultivated, but now most of it is either idle or has reverted to its natural vegetation, which consists of pine and scattered oaks.

The Sawyer soils in Dougherty County are mapped only in complexes with the Susquehanna soils.

Sawyer-Susquehanna cobbly loamy sands, 0 to 5 percent slopes (SSB).—This complex is on rather broad ridges, chiefly in the eastern part of the county. Most mapped areas are between 5 and 15 acres in size and are scattered among areas of the Sawyer and Susquehanna soils that occur on the smoother part of the ridges and that generally are free of cobblestones.

The Sawyer soil makes up as much as 60 percent of the acreage, the Susquehanna soil about 25 percent, and other soils as much as 15 percent. Because of the intricate pattern of occurrence and the similarity of the soils, it was not practical to map them separately.

The Sawyer and Susquehanna soils in this complex have similar surface layers, but in the Sawyer soil the upper part of the subsoil is yellowish brown, and in the Susquehanna soil the subsoil is mottled. Rock fragments 1 inch to about 12 inches in diameter make up about 5 to 15 percent of the volume of both soils.

Most of this unit is covered with a sparse stand of pine and oak. Only a small acreage is open land; part of this acreage is used for crops and part for pasture.

Sawyer-Susquehanna cobbly loamy sands, 2 to 8 percent slopes, eroded (SSC2).—The soils in this complex are on the side slopes of ridges, chiefly in the eastern part of the county. The Sawyer soil makes up about 50 percent of the acreage, the Susquehanna soil about 40 percent,

and other soils 10 percent. Runoff is medium, and consequently the erosion hazard is moderate.

These soils are not well suited to cultivation because rock fragments on the surface and throughout the profile make cultivation difficult. More than half the acreage has been cultivated, but only a little is now cultivated or used for pasture. Most is idle or in cutover hardwoods and scattered pines.

Sawyer-Susquehanna loamy sands, 2 to 5 percent slopes, eroded (SUB2).—The soils in this complex occur on broad, gently sloping ridges in the eastern part of the county. The Sawyer soil makes up about half the acreage, the Susquehanna soil most of the remaining acreage, and included minor soils 10 to 15 percent.

The soils in this complex have similar surface layers. In the Sawyer soil, the upper part of the subsoil is firm and the lower part plastic, and in the Susquehanna soil the subsoil is plastic throughout. Both soils have poor tilth. In both, the root zone is restricted by the heavy, plastic subsoil. Rock fragments are not numerous enough to impede tillage seriously. Permeability is very slow.

Most of the acreage either is idle or has reverted to natural vegetation. Very little is now cultivated.

Included in mapping were some small areas of a soil that has a yellowish-red rather than a yellowish-brown subsoil.

Susquehanna Series

The Susquehanna series consists of somewhat poorly drained soils on uplands. These soils have a surface layer of brown or dark-brown loamy sand or cobbly loamy sand and a subsoil of plastic, mottled clay. In places fragments of siliceous rock are scattered on the surface and throughout the profile.

These soils are low or moderate in natural fertility, contain little organic matter, and are strongly acid. Permeability is slow in the subsoil.

The Susquehanna soils are closely associated with the Sawyer soils and broadly associated with the Carnegie and Tifton soils. They differ from the associated soils in being mottled in the upper part of the profile. They lack the numerous iron concretions that are characteristic of the Carnegie and Tifton soils, and they have a firm rather than a friable subsoil.

Representative profile, located on the County line road, five-eighths of a mile north of Georgia Highway 133:

Ap—0 to 5 inches, dark-brown (7.5YR 4/4) loamy sand; weak, fine, granular structure; very friable when moist; few small iron concretions; very strongly acid; clear, smooth boundary. 3 to 7 inches thick.

B2t—5 to 20 inches, mottled reddish-yellow (7.5YR 6/6), red (2.5YR 4/8), and light yellowish-brown (10YR 6/4) clay; moderate, fine to medium, subangular blocky structure; firm when moist, very plastic wet, very hard when dry; clay films on many peds; very strongly acid; gradual, smooth boundary. 10 to 35 inches thick.

B3t—20 to 60 inches, light brownish-gray (2.5Y 6/2) clay; moderate, fine to medium, subangular blocky structure; firm when moist, very plastic when wet, very hard when dry; clay films on many peds; very strongly acid.

The Susquehanna soils occur as rather small areas in the southeastern part of the county. They are not well suited to cultivation, because of their plastic, clayey subsoil. Most of the acreage is idle or has reverted to its natural vegetation, which consists of scattered pines and oaks.

The Susquehanna soils in Dougherty County are mapped only in complexes with the Sawyer soils. These complexes are described under the heading "Sawyer Series."

Swamp

Swamp (Swa) is mostly in the western part of the county along Cooleewahee Creek, Chickasawhatchee Creek, and Kiokee Creek. The slope range is 0 to 2 percent.

This land type occurs in strips that range up to a mile in width. It is flooded frequently and is covered with water for long periods in winter and in spring. In places there are no definite stream channels but several small, meandering streams.

This land type is made up of mixed alluvium washed from uplands. This alluvium varies greatly in color, texture, and consistence. At the surface, in most places, is a 4- to 15-inch layer of very dark-gray or black material that contains a large amount of organic matter. Beneath this in many places is gray, plastic clay.

This land type is not suited to cultivated crops or to pasture, because of the frequent flooding. It remains in its natural vegetation, which consists of mixed hardwoods and an understory of vines, ferns, shrubs, and other water-tolerant plants.

Tifton Series

The Tifton series consists of well-drained, pebbly soils on uplands. Where not eroded, these soils have a surface layer of dark-brown to dark grayish-brown sandy loam. The subsoil is yellowish-brown to red sandy clay loam or sandy clay. There are iron concretions throughout the profile. Slopes of 1 to 5 percent predominate.

These soils are low or moderate in natural fertility, contain little organic matter, and are strongly acid. They have a thick root zone. Permeability is moderate in the upper part of the subsoil but slow in the lower part. The available water capacity is medium. Tilth is good.

The Tifton soils occur with the Carnegie, Norfolk, Lynchburg, and Irvington soils. They have a thicker subsoil above the plinthite layer than the Carnegie soils. The Tifton soils are distinguished from the Norfolk and Lynchburg soils by the iron concretions, and from the Norfolk soils by a subsoil that is firm and mottled in the lower part. They are better drained than the Lynchburg and Irvington soils.

Representative profile, located 5/8 mile south of Georgia Highway 133 and 3 3/16 miles east of U.S. Highway 19 (west side of Gravel Hill Road):

Apcn—0 to 7 inches, dark-brown (10YR 3/3) sandy loam; weak, fine, granular structure; very friable when moist; many small iron concretions; strongly acid; clear, smooth boundary. 4 to 7 inches thick.

B1tcn—7 to 13 inches, dark-brown (7.5YR 4/4) sandy clay loam; weak, fine, subangular blocky structure; friable when moist, slightly sticky when wet; many small iron concretions; very strongly acid; clear, smooth boundary. 3 to 9 inches thick.

B2tcn—13 to 34 inches, red (2.5YR 4/8) sandy clay loam; moderate, medium, subangular blocky structure; fri-

able when moist, slightly sticky when wet; many small iron concretions; few thin clay films on surfaces of peds and around the iron concretions; very strongly acid; gradual, smooth boundary. 14 to 25 inches thick.

B31tcn—34 to 47 inches, red (2.5YR 4/8) sandy clay loam with common, medium, distinct, strong-brown mottles; moderate, medium, subangular blocky structure; friable when moist, slightly sticky when wet; many small iron concretions; few thin clay films on surfaces of peds and around the iron concretions; very strongly acid; gradual, smooth boundary. 10 to 18 inches thick.

B32t—47 to 64 inches, mottled brownish-yellow (10YR 6/8), light-gray (10YR 7/2), yellowish-red (5YR 5/8), and red (2.5YR 4/8) sandy clay loam; moderate, medium, subangular blocky structure; firm in place though crushing to a friable mass; soft plinthite and few soft iron concretions; few thin clay films on surfaces of peds; very strongly acid.

The Tifton soils occur as rather large areas, mostly in the eastern part of the county. Most of the acreage is cultivated. The natural vegetation consists of longleaf pine and a few scattered oaks.

Tifton sandy loam, 0 to 2 percent slopes (TuA).—This soil is on upland ridges. It has a surface layer of dark-brown to dark grayish-brown sandy loam 5 to 9 inches thick. Beneath the surface layer is yellowish-brown to red sandy clay loam or sandy clay that extends to a depth of 28 to 44 inches. Iron concretions are common to numerous on the surface and throughout the profile. Runoff is slow, and consequently the erosion hazard is only slight.

Most of this soil has been cleared and is cultivated. The crops respond well to good farming practices.

Tifton sandy loam, 2 to 5 percent slopes (TuB).—The surface layer of this soil is dark-brown to dark grayish-brown, very friable sandy loam about 7 inches thick. It overlies 6 inches of dark-brown, friable sandy clay loam. Beneath this is red to yellowish-brown, friable sandy clay loam or sandy clay. Below a depth of 47 inches it is mottled with brownish yellow, light gray, yellowish red, and red. Small iron concretions are numerous in the upper layers, and a few soft iron concretions occur below a depth of 47 inches. Runoff is medium, and consequently the erosion hazard is moderate.

Most of this soil is cultivated (fig. 3, p. 24).

Tifton sandy loam, 2 to 5 percent slopes, eroded (TuB2).—The surface layer of this soil is brown or dark-brown sandy loam 3 to 6 inches thick. Beneath the surface layer, and extending to a depth of 26 to 40 inches, is yellowish-brown to red sandy clay loam or sandy clay. Iron concretions are common to numerous on the surface and throughout the profile.

In cultivated areas the plow layer generally is a mixture of the original A horizon and the upper part of the B horizon. In some places there are shallow gullies and a few deeper gullies. Runoff is medium, and consequently the erosion hazard is moderate.

Most of this soil is cultivated. The crops respond well to good farming practices.

Included in mapping were some areas where the plow layer is entirely within the B horizon, and some small areas where the slope is as much as 8 percent.

Tifton sandy loam, 5 to 8 percent slopes, eroded (TuC2).—The surface layer of this soil is brown or dark-brown sandy loam 3 to 6 inches thick. Beneath the surface layer is yellowish-red sandy clay loam or sandy clay that extends to a depth of 26 to 36 inches. Small iron concretions are common to numerous throughout the profile. In cultivated areas the plow layer is a mixture of the original A horizon and the upper part of the B horizon. In some places there are shallow gullies and a few deeper gullies. Runoff is rapid, and consequently the erosion hazard is severe.

Most of the acreage is idle or is used for pasture. Very little is cultivated, although crops respond well to management.

Included are some small areas where the plow layer is entirely within the B horizon.

Wagram Series

The Wagram series consists of well-drained, sandy, level to gently sloping soils. These soils have a 20- to 40-inch surface layer of loamy sand over brownish-yellow or yellowish-brown sandy loam or sandy clay loam.

These soils are low or moderate in natural fertility, contain little organic matter, and are strongly acid. They have a thick root zone. Permeability is moderately rapid, and the available water capacity is low or medium. Tilth is good.

The Wagram soils occur with the Lakeland, Eustis, Norfolk, Orangeburg, and Ocilla soils. They are finer textured than the Lakeland soils and the Eustis soils. They are similar to the Norfolk and Orangeburg soils in color, but they have a thicker sandy surface layer. The Wagram soils are better drained than the Ocilla soils.

Representative profile, located 1½ miles west of the Worth County line and ¼ mile north of the Mitchell County line (110 yards west of dirt road):

A1—0 to 4 inches, dark grayish-brown (2.5Y 4/2) loamy sand; weak, fine, granular structure; very friable; strongly acid; clear, smooth boundary. 2 to 6 inches thick.

A2—4 to 21 inches, very pale brown (10YR 7/4) loamy sand; weak, firm, granular structure; very friable; strongly acid; gradual, smooth boundary. 16 to 32 inches thick.

A3—21 to 24 inches, light yellowish-brown (10YR 6/4) loamy sand; weak, fine, granular structure; very friable; strongly acid; clear, smooth boundary. 2 to 6 inches thick.

B1t—24 to 28 inches, brownish-yellow (10YR 6/6) sandy loam; moderate, medium, granular structure; very friable; very strongly acid; clear, smooth boundary. 2 to 6 inches thick.

B2t—28 to 62 inches, yellowish-brown (10YR 5/8) sandy clay loam; weak, medium, subangular blocky structure; friable; very strongly acid.

The Wagram soils are mostly in the eastern and central parts of the county. They are slightly droughty, and the response to management is fair. More than half the acreage has been cleared, and most of this is cultivated. The natural vegetation consists of hardwoods and pine.

Wagram loamy sand, 0 to 2 percent slopes (WeA).—This soil has a surface layer of brown or dark grayish-brown loamy sand 4 to 8 inches thick over 10 to 24 inches of yellow to yellowish-brown loamy sand. Beneath this is yellowish-brown to red heavy sandy loam or sandy clay loam. Runoff is slow, and consequently erosion is not a hazard.

This soil is suited to many crops. The response to management is fair.

Figure 3.—Stand of corn on Tifton sandy loam, 2 to 5 percent slopes.

Wagram loamy sand, 2 to 5 percent slopes (WeB).—This soil has a surface layer of very friable loamy sand that is dark grayish-brown in the uppermost 4 inches, yellow at a depth of 4 to 21 inches, and brownish yellow in the lower part. Below a depth of 28 inches is a thick layer of yellowish-brown, friable sandy clay loam. Runoff is slow, and consequently the erosion hazard is only slight.

This soil is mostly in the central part of the county. It is suited to many crops. The response to good farming practices is fair.

Included in mapping were some areas of a soil that is fine textured at a depth of less than 20 inches.

Use of Soils for Crops and Pasture

This section explains the system of capability grouping used by the Soil Conservation Service, discusses management by capability units, provides a table of estimated yields under high-level management and a brief discussion of the management that makes it possible to produce these yields, and describes the climate of Dougherty County and its effect on crop yields.

Capability Groups of Soils

Capability classification is the grouping of soils to show, in a general way, their suitability for most kinds of farming. It is a practical classification based on the limitations of the soils, the risk of damage when they are used, and the way they respond to treatment. The soils are classified according to degree and kind of permanent limitation, but without consideration of major and generally expensive landforming that could change the slope, depth, or other characteristics of the soils; and without consideration of possible but unlikely major reclamation.

In the capability sytem, all kinds of soils are grouped at three levels: the capability class, the subclass, and the unit.

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

Class I. Soils have few limitations that restrict their use.

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

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

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

Class V. Soils are subject to little or no erosion but have other limitations, impractical to remove, that limit their use largely to pasture, range, woodland, or wildlife food and cover.

Class VI. Soils have severe limitations that make them generally unsuited to cultivation and limit their use largely to pasture or range, woodland, or wildlife food and cover.

Class VII. Soils have very severe limitations that make them unsuited to cultivation and that restrict their use largely to pasture, range, woodland, or wildlife food and cover.

Class VIII. Soils and landforms have limitations that preclude their use for commercial plant production and restrict their use to recreation, wildlife, or water supply, or to esthetic purposes.

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

In class I there are no subclasses, because the soils of this class have few limitations. Class V can contain, at the most, only subclasses indicated by *w*, *s*, and *c*, because the soils in it are subject to little or no erosion, though they have other limitations that restrict their use largely to pasture, range, woodland, wildlife, or recreation.

CAPABILITY UNITS are soil groups within the subclasses. The soils in one capability unit are enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity and other responses to management. Thus, the capability unit is a convenient grouping for making many statements about management of soils. Capability units are generally designated by adding an Arabic numeral to the subclass symbol, for example, IIe–3 or IIIe–5. Thus, in one symbol, the Roman numeral designates the capability class, or degree of limitation, and the small letter indicates the subclass, or kind of limitation, as defined in the foregoing paragraph. The Arabic numeral specifically identifies the capability unit within each subclass.

Management by Capability Units[2]

The soils of Dougherty County have been grouped in 27 capability units. The soils in each unit have about the same limitations and susceptibility to damage, need about the same management, and respond to management in about the same way. The individual soils in each unit are shown in the "Guide to Mapping Units."

If adequately fertilized and limed, most of the soils are productive of the locally grown crops. More than 70 percent of the acreage has a moderately coarse textured or coarse textured surface layer that is friable or loose and is easy to till. Much of the acreage has a moderately permeable subsoil. Only a small acreage has slopes that are steeper than 5 percent.

About 14 percent of the acreage has only slight limitations, and only ordinary good management practices are needed to maintain productivity and good tilth. Some of the practices that help to maintain productivity and good tilth are the regular application of fertilizer and lime according to the results of soil tests, good management of crop residue, and the use of suitable cropping systems. Chopped or shredded crop residue, left on or near the surface, helps to provide protective cover. If turned under, this residue improves tilth and increases the available water capacity.

Erosion is the main hazard on about 43 percent of the acreage, but it is only a moderate limitation in most places. The more gently sloping soils can be protected by contour cultivation and a cropping system that includes crops that produce moderate to large amounts of residue. Steeper soils or soils on longer slopes need a combination of two or more of the following: Contour farming, stripcropping, terraces, vegetated waterways, and cropping systems that include close-growing crops that have been adequately fertilized and that produce a large amount of residue.

Excess water is the main limitation on about 33 percent of the acreage. Some drainage may be needed, depending on the degree of limitation and the crop to be grown.

About 10 percent of the acreage is sandy and has low available water capacity. Management practices that return organic matter to the soil are needed if these sandy soils are to be cultivated. Good management of crop residue is important.

In the following pages, each of the 27 capability units is described and management problems are discussed. The units are not numbered consecutively, because not all of the units in the statewide system are represented in this county.

[2] J. N. NASH, conservation agronomist, Soil Conservation Service, helped prepare this section.

Capability unit I–1

This capability unit consists of deep, well-drained soils that have slopes of less than 2 percent. The surface layer is very friable loamy sand 7 to 18 inches thick, and the subsoil is friable sandy clay loam or sandy loam.

These soils contain little organic matter, are low or moderate in natural fertility, and are strongly acid. They have good tilth and can be cultivated throughout a wide range of moisture content. The root zone is thick. Water moves into and through these soils at a moderate rate, and the available water capacity is medium.

The soils in this unit are well suited to many crops, including corn, cotton, peanuts, small grain, sorghum, pecans, and truck crops, and to pasture and hay crops, including bahiagrass, bermudagrass, and crimson clover. Most of the acreage is used for cultivated crops or pasture.

There are no special management problems. Crops respond well to fertilization, and most crops benefit from lime. Returning crop residue to the soil and including soil-improving crops in the rotation help to maintain the content of organic matter and to maintain good tilth. A suitable cropping system is 1 year of corn followed by 1 year of peanuts and then 1 year of cotton. All crop residue should be left on the soil.

Capability unit I–2

This capability unit consists of deep, well-drained soils that are on uplands and have slopes of less than 2 percent. The surface layer is very friable sandy loam 4 to 9 inches thick, and the subsoil is friable or firm sandy clay. The Tifton soils have numerous pebbles as much as three-fourths of an inch in diameter on the surface and in the soil.

The soils of this capability unit contain little organic matter, are low or moderate in natural fertility, and are strongly acid. They have good tilth. The range of moisture content within which these soils can be cultivated is narrower than that for the soils of capability unit I–1, and more power is required to pull tillage implements. The root zone is thick. Water moves into and through these soils at a moderate rate, and the available water capacity is medium.

The soils in this unit are well suited to many crops, including corn, cotton, peanuts, small grain, and pecans, and to pasture and hay crops, including bahiagrass, bermudagrass, crimson clover, and lespedeza. Most of the acreage has been cleared and is used for cultivated crops or pasture.

There are no special management problems. Crops respond well to fertilizer, and most crops benefit from lime. Returning crop residue to the soil and including soil-improving crops in the rotation help to maintain the content of organic matter and to maintain good tilth. An example of a suitable cropping system is 1 year of corn followed by 1 year of peanuts and then 1 year of cotton. All crop residue should be left on the soil.

Capability unit IIe–1

This capability unit consists of deep, well-drained soils that have slopes of 2 to 5 percent. The surface layer is very friable loamy sand 3 to 18 inches thick, and the subsoil is friable sandy clay loam or sandy loam.

These soils contain little organic matter, are low or moderate in natural fertility, and are strongly acid. They have good tilth and can be cultivated throughout a wide range of moisture content. The root zone is thick. Water moves into and through these soils at a moderate rate, and the available water capacity is medium.

The soils in this unit are well suited to many crops, including corn, cotton, peanuts, small grain, sorghum, pecans, and truck crops, and to pasture and hay crops, including bahiagrass, bermudagrass (fig. 4), and crimson clover. Most of the acreage has been cleared. A little more than half the acreage is used for cultivated crops, and a little is used for pasture.

Surface runoff is rapid enough to create a moderate hazard of erosion. Some of the measures that can be used to help control erosion are contour farming, terracing, stripcropping, and vegetating of waterways. Close-growing crops that produce a large amount of residue help to control erosion, to maintain the content of organic matter, and to improve tilth. Crops respond well to fertilizer, and many benefit from lime. An example of a suitable cropping system is 4 years of a close-growing crop, such as bahiagrass, followed by 2 years of peanuts. This system is suitable for fields in which the slopes are no steeper than 3 percent and no more than 200 feet long and in which there are straight rows and vegetated waterways and no terraces. A row crop, such as corn, can be grown year after year if the field is terraced and contour cultivated and the crop residue is left on the soil.

Capability unit IIe–2

This capability unit consists of deep, well-drained soils that are on uplands and have slopes of 2 to 5 percent. The surface layer is very friable sandy loam 3 to 12 inches thick, and the subsoil is friable or firm sandy clay. The Tifton soils have numerous pebbles as much as three-fourths of an inch in diameter on the surface and in the soil.

These soils contain little organic matter, are low or moderate in natural fertility, and are strongly acid. They have good tilth. The range of moisture content within which these soils can be cultivated is narrower than that for the soils in capability unit IIe–1, and more power is required to pull the tillage implements. The root zone is thick. Water moves into and through these soils at a moderate rate, and the available water capacity is medium.

The soils in this unit are well suited to many crops, including corn, cotton, peanuts, small grain, and pecans, and to pasture and hay crops, including bahiagrass, bermudagrass, crimson clover, and lespedeza. Most of the acreage has been cleared. A little more than half the acreage is cultivated, and a little is used for pasture.

Surface runoff is rapid enough to create a moderate hazard of erosion. Some of the practices that can be used to help control erosion are contour cultivation, terracing or stripcropping, and vegetating of waterways. Close-growing crops that produce a large amount of residue help to control erosion, to maintain the content

Figure 4.—**Harvesting a hay crop of Coastal bermudagrass on Red Bay loamy sand, 2 to 5 percent slopes, eroded, which is in capability unit IIe–1.**

of organic matter, and to improve tilth. Crops respond well to fertilizer, and many benefit from lime. An example of a suitable cropping system is a mulch-planted row crop, such as corn, grown year after year. The residue should be mowed and left undisturbed for winter cover. This system is suitable for contour-cultivated fields that are not terraced and in which the slopes are no steeper than 3 percent and no more than 300 feet long.

Capability unit IIe–3

This capability unit consists of Flint fine sandy loam, 2 to 5 percent slopes, a moderately well drained soil. The surface layer is friable fine sandy loam 2 to 6 inches thick, and the subsoil is firm clay or silty clay.

This soil contains little organic matter, is low or moderate in natural fertility, and is strongly acid. It has poor tilth and can be cultivated only within a narrow range of moisture content. Water moves into and through this soil at a slow rate because of the firm or plastic subsoil. The available water capacity is medium.

This soil is suited to only a few crops, including corn, grain sorghum, oats, bahiagrass, crimson clover, and lespedeza. Most of the acreage is wooded.

Surface runoff is rapid enough to create a moderate hazard of erosion. Some of the practices that can be used to help control erosion are contour cultivation, strip-cropping, and vegetating of waterways. Close-growing crops that produce a large amount of residue help to control erosion, to maintain the content of organic matter, and to improve tilth. Crops respond to fertilizer, and many benefit from lime. An example of a suitable cropping system is 2 years of a close-growing crop, such as bahiagrass, followed by 1 year of a cultivated crop, such as corn. This system is suitable for fields in which the slopes are no steeper than 3 percent and no more than 200 feet long and in which there are straight rows and no terraces. Planting often has to be delayed because of wetness, and the crops are damaged in some years by heavy rains in spring and in summer.

Capability unit IIw–1

This capability unit consists of Local alluvial land, a moderately well drained land type that has slopes of less than 2 percent and is in small depressions that have no natural outlets. At the surface is silt loam to sandy loam that is 18 to 45 inches thick and is underlain by sandy clay loam or sandy clay in most places.

Figure 5.—Flooding after a heavy rain in an area of Local alluvial land, which is in capability unit IIw–1.

This land type is high in content of organic matter and moderate in natural fertility. It has good tilth, and its root zone is thick. The available water capacity is medium.

This land type is highly productive if adequately drained. It is suited to cultivated crops, including corn, peanuts, and grain sorghum, and to pasture and hay crops, including bahiagrass, Coastal bermudagrass, crimson clover, white clover, and lespedeza.

This land type is frequently flooded (fig. 5) in winter, and planting often has to be delayed because of wetness. In some years the crops are damaged by heavy rains in spring and in summer. Ditches will remove much of the excess water in many areas, but they are expensive to construct in most places. Crops respond well to fertilizer, and most of them benefit from lime. Because this land type is in slight depressions or draws, the cropping system used is commonly the same as that used in adjacent fields. Cultivated crops, such as corn, can be grown year after year if the crop residue is left on the soil.

Capability unit IIw–2

This capability unit consists of moderately well drained or somewhat poorly drained soils that have slopes of less than 2 percent. Much of the acreage is on large flats that have few natural outlets and are difficult to drain. Some of the acreage is flooded for long periods in winter, in spring, and early in summer. The surface layer is very friable sandy loam 4 to 18 inches thick, and the subsoil is friable sandy clay loam.

These soils contain little organic matter, are low or moderate in natural fertility, and are strongly acid. They have good tilth, and their root zone is thick. Water moves into these soils at a moderate rate, and permeability is moderate or slow. The available water capacity is medium.

The soils in this unit are suited to cultivated crops, including corn, peanuts, and grain sorghum, and to hay and pasture crops, including Coastal bermudagrass, bahiagrass, crimson clover, white clover, and lespedeza. If adequately drained, they are highly productive. A considerable acreage is cultivated or used for pasture. None of the areas that are flooded frequently are cultivated.

Planting often has to be delayed because of wetness, and crops are damaged in some years by heavy rain in spring and in summer. A system of shallow ditches will remove much of the excess water, and leveling and shaping help to eliminate low spots. Most crops respond well to fertilizer, and many crops benefit from lime. Yields of high-value crops can be increased by irrigating in prolonged dry periods. Row crops can be grown year after year, but they grow better in short rotations. An example of a suitable cropping system that helps to maintain the organic-matter content and to improve structure is 3 years of a row crop, such as corn, followed by 1 year of a truck crop. The residue from the row crop should be mowed and then chopped or disked.

Capability unit IIw–3

This capability unit consists of Flint fine sandy loam, 0 to 2 percent slopes, a moderately well drained soil on stream terraces. This soil contains little organic matter, is low or moderate in natural fertility, and is very strongly acid. It has poor tilth and can be cultivated

only within a narrow range of moisture content. A firm, clayey subsoil impedes the movement of water.

This soil is suited to only a few crops, including corn, peanuts, grain sorghum, pecans, bahiagrass, bermudagrass, crimson clover, and lespedeza. About half the acreage is used for cropland and half for woodland.

Planting often has to be delayed because of wetness, and crops are damaged in some years by heavy rains in spring and in summer. The response of most crops to fertilizer is fair, and many crops benefit from lime. Crop residue worked into the soil helps to maintain the content of organic matter and to maintain good tilth. Row crops can be grown year after year, but they grow better in short rotations. An example of a suitable cropping system is 1 year of a row crop followed by 1 year of grain sorghum. All crop residue should be left on the soil.

Capability unit IIs–1

This capability unit consists of deep, well-drained soils that are on uplands and have slopes of 0 to 5 percent. The surface layer is very friable loamy sand 18 to 40 inches thick. It is underlain by friable sandy clay loam or sandy loam.

These soils contain little organic matter, are low or moderate in natural fertility, and are strongly acid. They have good tilth and can be cultivated throughout a wide range of moisture content. Water moves into the soil at a moderately rapid rate, and the available water capacity is low or medium. Surface runoff is slow, and erosion is only a slight hazard.

The soils in this unit are slightly droughty and therefore are limited to some extent in suitability for crops. They are best suited to corn, peanuts, small grain, and truck crops, and to pasture and hay crops, including bahiagrass, bermudagrass, and crimson clover. A little more than half the acreage is cultivated, and about a quarter is wooded.

Maintaining the content of organic matter increases the available water capacity. Close-growing crops that produce a large amount of residue help to maintain the content of organic matter as well as to control erosion and to improve tilth. Some of the practices that can be used to help control erosion are contour cultivation, stripcropping, and vegetating of waterways. Crops respond well to fertilizer, and many benefit from lime. An example of a suitable cropping system is 1 year of a row crop followed by 1 year of small grain. All crop residue should be left on the soil. This system is suitable for fields that have been stripcropped on the contour.

Capability unit IIIe–1

This capability unit consists of deep, well-drained soils that are on uplands and have slopes of 5 to 8 percent. The surface layer is very friable loamy sand 3 to 8 inches thick, and the subsoil is friable sandy clay loam.

These soils contain little organic matter, are low or moderate in natural fertility, and are strongly acid. They have good tilth and can be cultivated throughout a wide range of moisture content. The root zone is thick. Water moves into the soil at a moderate rate, and the available water capacity is medium.

The soils in this unit are suited to many crops, including corn, cotton, peanuts, small grain, and pecans, and to pasture and hay crops, including bahiagrass, bermudagrass, and crimson clover. More than half the acreage is wooded, and nearly a third is cultivated.

Surface runoff is rapid enough to create a severe hazard of erosion. Some of the practices that can be used to help control erosion are contour cultivation, terracing, vegetating of waterways, and stripcropping. Close-growing crops that produce a large amount of residue help to control erosion, to maintain the content of organic matter, and to improve tilth. Crops respond well to fertilizer, and many benefit from lime. An example of a suitable cropping system is a mulch-planted row crop, such as corn, grown year after year. All crop residue should be left on the soil. This system is suitable for terraced, contour-cultivated fields in which the slopes are no steeper than 6 percent.

Capability unit IIIe–2

This capability unit consists of deep, well-drained, eroded soils that have slopes of 5 to 8 percent and a severely eroded soil that has slopes of 2 to 5 percent. The surface layer of the eroded soils is sandy loam 3 to 7 inches thick, and that of the severely eroded soil is sandy clay loam 1 inch to 3 inches thick. The subsoil is friable or firm sandy clay.

These soils contain little organic matter, are low or moderate in natural fertility, and are strongly acid. They have only fair tilth. The range of moisture content within which these soils can be cultivated is narrower than that for the soils of capability unit IIIe–1, and more power is required to pull tillage implements. The root zone is thick. Water moves into these soils at a moderate rate, and permeability is moderate or moderately slow. The available water capacity is medium.

The soils in this unit are suited to many crops, including corn, cotton, small grain, and sorghum, and to pasture and hay crops, including bahiagrass, bermudagrass, crimson clover, and lespedeza. About a third of the acreage is cultivated, and a somewhat smaller part is used for pasture.

Surface runoff is rapid enough to create a severe hazard of erosion. Some of the practices that can be used to help control erosion are contour cultivation, terracing, vegetating of waterways, and stripcropping. Close-growing crops that produce a large amount of residue help to control erosion, to maintain the content of organic matter, and to improve tilth. Crops respond well to fertilizer, and many benefit from lime. An example of a suitable cropping system is 3 years of a close-growing crop, such as Coastal bermudagrass, followed by 1 year of a row crop. This system is suitable for contour-cultivated fields that have not been terraced and in which the slopes are no more than 200 feet long.

Capability unit IIIe–3

This capability unit consists of moderately well drained or somewhat poorly drained soils that have slopes of 0 to 8 percent. The surface layer is friable loamy sand, and the subsoil is plastic clay.

These soils contain small amounts of organic matter and are strongly acid. They are slightly wet, because water moves through the subsoil slowly or very slowly. The erosion hazard is moderate or severe in cultivated areas. More than half the acreage is cobbly. The cob-

blestones are numerous enough, both on the surface and within the profile, to interfere with tillage. The root zone is restricted by the clayey subsoil.

The soils in this unit are suited to bahiagrass, lespedeza, crimson clover, slash pine, and loblolly pine. They are used mainly as woodland, but there are small isolated fields and pastures scattered throughout the area. Some of the small, steep, cobbly areas are not suitable for cultivation. Crops respond well to fertilizer, and most grasses need lime.

Capability unit IIIe–4

This capability unit consists of Carnegie sandy loam, 2 to 5 percent slopes, eroded, a well-drained, pebbly soil on uplands. The surface layer is very friable sandy loam 3 to 6 inches thick, and the subsoil is friable or firm sandy clay loam or sandy clay. There are numerous iron concretions as much as three-fourths of an inch in diameter on the surface and in the soil.

This soil contains little organic matter, is low or moderate in natural fertility, and is strongly acid. It has good tilth and can be worked throughout a wide range of moisture content. The root zone is moderately thick. Water moves into the soil at a moderate rate, and permeability is moderately slow. The available water capacity is medium.

This soil is fairly well suited to crops, including corn, cotton, peanuts, oats, and rye, and to hay and pasture crops, including bahiagrass, Coastal bermudagrass, and crimson clover. Most of the acreage has been cultivated, but much of it now is either idle or used for pasture or woodland.

Surface runoff is rapid enough to create a severe hazard of erosion. Some of the practices that help to control erosion are contour cultivation, terracing, stripcropping, and vegetating of waterways. Close-growing crops that produce a large amount of residue help to control erosion, to maintain the content of organic matter, and to improve tilth. Crops respond well to fertilizer, and many benefit from lime. An example of a suitable cropping system is 3 years of a close-growing crop, such as bahiagrass, followed by 2 years of a row crop. This system is suitable for terraced, contour-cultivated fields in which the slopes are no steeper than 3 percent.

Capability unit IIIe–5

This capability unit consists of Lucy loamy sand, 5 to 8 percent slopes, a deep, well-drained soil on uplands. The surface layer is very friable loamy sand 18 to 30 inches thick, and the subsoil is friable sandy clay loam or sandy loam.

This capability unit consists of deep, nearly level, moderate in natural fertility, and is strongly acid. It has good tilth and can be cultivated throughout a wide range of moisture content. Water moves into the soil at a moderately rapid rate, and the available water capacity is low or medium.

This soil is suited to corn, peanuts, small grain, sorghum, truck crops, bahiagrass, bermudagrass, and crimson clover. Most of the acreage is wooded, but part of it is cultivated.

Surface runoff is rapid enough to create a severe hazard of erosion. Some of the measures that help to control erosion are contour cultivation, vegetating of waterways, and stripcropping. Close-growing crops that produce a large amount of residue help to control erosion, to maintain the content of organic matter, and to improve tilth. Crops respond well to fertilizer, and many benefit from lime. An example of a suitable cropping system is 3 years of a close-growing crop, such as bahiagrass, followed by 2 years of a row crop. This system is suitable for contour-cultivated fields that have not been terraced and that have slopes no steeper than 6 percent and no more than 200 feet long.

Capability unit IIIw–1

This capability unit consists of deep, nearly level, moderately well drained or somewhat poorly drained soils. The surface layer is very friable loamy sand about 20 to 50 inches thick. This is underlain by friable sandy clay loam.

These soils contain little organic matter, are low in natural fertility, and are strongly acid or very strongly acid. They have good tilth and can be cultivated throughout a wide range of moisture content. The root zone is thick.

Water moves into and through these soils at a rapid rate, and the available water capacity is low. The water table is high in winter and in spring.

The soils in this unit are suited to only a few crops, including corn, peanuts, truck crops, bahiagrass, and bermudagrass. Nearly three-fourths of the acreage is woodland; only a small acreage is used as pasture or for cultivated crops.

Planting often has to be delayed because of wetness, and crops are damaged in some years by heavy rains in spring and in summer. A system of ditches can remove much of the excess water, and low spots can be eliminated by leveling and shaping. Surface runoff is slow and creates only a slight hazard of erosion. Crop response to fertilizer is fair, and many crops benefit from lime.

Crop residue helps to improve tilth and to maintain the content of organic matter, and, in turn, to increase the available water capacity. An example of a suitable cropping system is 1 year of corn followed by 1 year of small grain and grain sorghum. All crop residue should be left on the surface. Row crops can be grown year after year, but it is better to include some close-growing crops in the cropping system.

Capability unit IIIw–2

This capability unit consists of Bladen loam, a poorly drained soil that is on nearly level stream terraces and is flooded occasionally. The surface layer is loam commonly about 8 inches thick, and the subsoil is firm clay or heavy sandy clay.

This soil is low or moderate in natural fertility and is very strongly acid. It has poor tilth and can be cultivated only within a narrow range of moisture content. Water moves into it and through it very slowly.

Because it is excessively wet, this soil is not well suited to cultivated crops, and it is not generally cultivated. A few crops, including corn, sorghum, bahiagrass, white clover, and lespedeza, can be grown. A small acreage has been cleared and is used for pasture; the rest is woodland, chiefly hardwoods.

Figure 6.—Rye used for stripcropping on Americus loamy sand, 0 to 5 percent slopes, which is in capability unit IIIs–1.

Capability unit IIIs–1

This capability unit consists of deep, somewhat excessively drained, sandy soils that have slopes of less than 5 percent. The surface layer is very friable loamy sand 30 to 60 inches thick. It is underlain by friable sandy loam or sandy clay loam.

These soils contain little organic matter, are low in natural fertility, and are strongly acid. They have good tilth and can be cultivated throughout a wide range of moisture content. Water moves into and through these soils at a moderately rapid rate, and the available water capacity is low. Surface runoff is slow, and erosion is only a slight hazard.

The soils in this unit are best suited to corn, peanuts, small grain, sorghum, truck crops, bahiagrass, and bermudagrass. About half the acreage is cultivated, and a little is used for pasture.

Maintaining the content of organic matter increases the available water capacity. The use of close-growing crops that produce a large amount of residue helps to maintain the content of organic matter as well as to control erosion and to improve tilth. Some of the practices that also help to control erosion are contour cultivation, stripcropping (fig. 6), and vegetating of waterways. Crop response to fertilizer is fair; best results are obtained with split applications of fertilizer. Many crops benefit from lime. An example of a suitable cropping system is 2 years of corn followed by 1 year of row crops, such as cotton or peanuts. All crop residue should be left on the soil; the residue from corn should be shredded. This system is suitable for contour-cultivated fields in which the slopes are no steeper than 3 percent and no more than 200 feet long.

Capability unit IVe–2

This capability unit consists of Greenville sandy clay loam, 5 to 8 percent slopes, severely eroded, a deep, well-drained soil. The surface layer is sandy clay loam 1 inch to 3 inches thick, and the subsoil is friable or firm sandy clay.

This soil contains little organic matter, is low or moderate in natural fertility, and is strongly acid. It has fair tilth and can be cultivated within only a moderate range of moisture content. The root zone is thick. Water moves through this soil at a moderate rate, and the available water capacity is medium.

This soil is suited to many crops, including corn, cotton, and small grain, and to pasture and hay crops, including bahiagrass, bermudagrass, crimson clover, and lespedeza. Nearly half the acreage is pasture, and the rest is used for cultivated crops or woodland.

Surface runoff is rapid enough to create a severe hazard of erosion. Some of the measures that can be used to help control erosion are contour cultivation, stripcropping, terracing, and vegetating of waterways. Results are best if the crop rotation consists mostly of close-growing crops or grass. The addition of organic matter helps to control erosion, maintain the content of organic

245-890—67——3

matter, and improve tilth. Crops respond well to fertilizer, and many benefit from lime. An example of a suitable cropping system is 3 years of a close-growing crop, such as bahiagrass, followed by 1 year of a row crop. This system is suitable for contour-cultivated fields in which the slopes are no more than 150 feet long.

Capability unit IVe–4

This capability unit consists of Carnegie sandy loam, 5 to 8 percent slopes, eroded, a well-drained, pebbly soil on uplands. The surface layer is very friable sandy loam 2 to 5 inches thick, and the subsoil is friable or firm sandy clay loam or sandy clay.

This soil contains little organic matter, is low or moderate in natural fertility, and is strongly acid. It has good tilth and can be worked throughout a wide range of moisture content. The root zone is moderately thick. Water moves through the soil at a moderately slow rate.

This soil is fairly well suited to cultivated crops, including corn, cotton, peanuts, oats, and rye, and to hay and pasture crops, including bahiagrass, Coastal bermudagrass, and crimson clover. Nearly half the acreage is used for pasture; half is used for timber; a little is cultivated.

Surface runoff is rapid enough to create a severe hazard of erosion. Some of the practices that help to control erosion are contour cultivation, terracing, stripcropping, and vegetating of waterways. Results are best if the crop rotation consists mostly of close-growing crops or grass. The addition of organic matter helps to control erosion, maintain the content of organic matter, and improve tilth. Crops respond well to fertilizer, and many benefit from lime. A suitable cropping system is 3 years of a close-growing crop, such as bahiagrass, followed by 1 year of a row crop. This system is suitable for terraced, contour-cultivated fields in which the slopes are no more than 6 percent.

Capability unit IVw–4

This capability unit consists of Pelham loamy sand, 0 to 2 percent slopes, a poorly drained soil that is in slight depressions or poorly defined draws and is frequently flooded. The surface layer is dark grayish-brown to very dark gray loamy sand, and the subsoil is sandy clay loam. The natural fertility is low or moderate, and the reaction is very strongly acid.

If properly drained, this soil is fairly well suited to truck crops, corn, white clover, and bahiagrass. Because of the flooding and wetness hazards, most of the acreage is woodland, chiefly of hardwoods.

Most crops respond well to fertilizer, and many benefit from lime. Crop residue worked into the soil helps to maintain the content of organic matter and to maintain good tilth. Row crops can be grown year after year, but they grow better in short rotations.

Capability unit IVs–1

This capability unit consists of deep, somewhat excessively drained soils that have slopes of 0 to 8 percent. The surface layer is loose or very friable sand or loamy sand 30 to 60 inches thick. It is underlain by friable sandy loam or sandy clay loam.

These soils contain little organic matter, are low in natural fertility, and are strongly acid. They have good tilth and can be cultivated throughout a wide range of moisture content. Water moves into and through these soils at a rapid rate, and the available water capacity is low. Surface runoff is slow, and erosion is only a slight hazard.

The soils in this unit are best suited to peanuts, small grain, truck crops, bahiagrass, and bermudagrass. More than half the acreage is woodland, and a quarter is used for cultivated crops.

Maintaining the content of organic matter increases the available water capacity. The use of close-growing crops that produce a large amount of residue helps to maintain the content of organic matter, control erosion, and improve tilth. Some of the practices that also help to control erosion are contour cultivation, stripcropping, and vegetating of waterways. Crop response to fertilizer is fair; best results are obtained with split applications. Many crops benefit from lime. An example of a suitable cropping system is 2 years of corn or a similar row crop followed by 1 year of peanuts and a winter cover of rye. The crop residue from corn should be left on the soil. This system is suitable for contour-cultivated fields in which the slopes are no steeper than 3 percent and no more than 200 feet long.

Capability unit Vw–1

This capability unit consists of poorly drained or very poorly drained soils in ponded depressions. The surface layer has variable texture, and the subsoil is predominantly gray clay mottled with red and brown.

These soils are low in natural fertility and are very strongly acid. Permeability is very slow, and the available water capacity is low. Surface runoff is very slow. In some areas water stands for long periods.

These soils are not suited to cultivated crops. If drained they can be used for pasture, but they are better suited to timber. Only fair yields of such pasture crops as bahiagrass and white clover can be expected. Applications of lime and a complete fertilizer are required for maximum yields of pasture crops. Most of the acreage is woodland.

Capability unit Vw–3

This capability unit consists of Alluvial land, wet, a poorly drained land type that is made up of stratified material of variable texture. This land type is along small streams and is frequently flooded. It is low in natural fertility, contains considerable amounts of organic matter and plant debris, and is very strongly acid.

This land type is waterlogged and is poorly suited to cultivated crops. If adequately drained, it makes fair pasture, but it is generally better suited to trees. Nearly all the acreage is wooded, mostly with hardwoods.

Capability unit VIe–1

This capability unit consists of Cuthbert-Orangeburg complex, 5 to 8 percent slopes, eroded. These soils are moderately well drained or well drained, occur on uplands, and have predominantly short slopes. The surface layer is very friable sandy loam or loamy sand. The subsoil is clayey in the Cuthbert soil and sandy clay loam in

the Orangeburg soil. The profiles vary greatly within short distances.

These soils contain little organic matter, are low or moderate in natural fertility, and are strongly acid. Erosion is a severe hazard.

The soils in this unit are not suited to cultivated crops. They are fair for pasture, but they are better suited to timber. Only perennials, such as bahigrass, Coastal bermudagrass, and crimson clover, should be used for pasture. Crops should be fertilized according to the results of soil tests. Overgrazing should be avoided because of the constant hazard of erosion. All the acreage is wooded.

Capability unit VIIe-2

This capability unit consists of Cuthbert-Orangeburg complex, 12 to 17 percent slopes, eroded. These soils are moderately well drained or well drained. Both soils have a surface layer of sandy loam or loamy sand 3 to 15 inches thick, but the Cuthbert soil has a clayey subsoil and the Orangeburg soil a loamy subsoil.

These soils contain little organic matter, are low or moderate in natural fertility, and are strongly acid. Erosion is a very severe hazard. The clayey subsoil in the Cuthbert soil restricts the movement of water and the growth of plants.

These soils are not suited to cultivated crops and are only fair for pasture. They are better suited to timber. Only perennials, such as bahiagrass, Coastal bermudagrass, and crimson clover, should be used for pasture. Overgrazing should be avoided because of the constant hazard of erosion. Most of the acreage is wooded.

Capability unit VIIw-1

This capability unit consists of Swamp, a nearly level, very poorly drained land type on flood plains along creeks. This land type is flooded frequently and for long periods. It is low in natural fertility and generally is very strongly acid. The content of organic matter is generally high in the uppermost part. Fresh sediments are deposited during the winter and spring floods.

Swamp should be so managed as to encourage the growth of the most valuable hardwood trees. It can also be managed for hunting and fishing, for it provides natural habitats for deer, squirrel, turkey, wild hog, duck, and fish. The principal trees are cypress, swamp blackgum, sweetgum, red maple, ash, water oak, and poplar.

Capability unit VIIIs-1

This capability unit consists of Dune land, which is not suited to cultivated crops or pasture. It has only a sparse growth of grass and in some places a scattering of scrub oak and pine. It would be extremely difficult to establish a stand of pine, and only very low yields could be expected.

Estimated Yields [3]

Estimated average yields of the principal crops grown in Dougherty County are shown in table 2. These are yields that can be expected under high-level management on soils that have not been irrigated. They are averages for the entire county, not for any particular farm or tract. Losses from flooding were not considered in making these estimates.

[3] D. L. POPE, work unit conservationist, Soil Conservation Service; J. D. DAVIS, county agent, Agriculture Extension Service, and JACK CARTEE, office manager, Agricultural Stabilization Conservation Service, helped write this section.

TABLE 2.—*Estimated average yields per acre of the principal crops under high-level management*

[Management does not include irrigation. Dashes indicate that the crop is not suited to the soil specified or is not commonly grown on it]

Soil	Corn	Oats	Wheat	Cotton	Peanuts	Pecans	Coastal bermudagrass		Bahiagrass for pasture
							For hay	For pasture	
	Bu.	*Bu.*	*Bu.*	*Lb. of lint*	*Lb.*	*Lb.*	*Tons*	*Cow-acre-days* [1]	*Cow-acre-days* [1]
Albany sand, 0 to 2 percent slopes	45	40			1,000		4.0	225	185
Alluvial land, wet									240
Americus loamy sand, 0 to 5 percent slopes	40	40		325	1,200	800	3.0	195	135
Bladen loam	35								230
Carnegie sandy loam, 2 to 5 percent slopes, eroded	50	45	25	500	1,500	800	5.0	240	180
Carnegie sandy loam, 5 to 8 percent slopes, eroded	40	40	15	400	1,250	600	4.0	225	165
Cuthbert-Orangeburg complex, 5 to 8 percent slopes, eroded:									
Cuthbert									
Orangeburg	40	35	18	400	1,200	700	4.5	235	220
Cuthbert-Orangeburg complex, 12 to 17 percent slopes:									
Cuthbert									
Orangeburg									
Dunbar, Izagora, and Bladen soils:									
Dunbar	55	40							230
Izagora	65	55	25				5.0	260	225
Bladen	35								230

See footnote at end of table.

TABLE 2.—*Estimated average yields per acre of the principal crops under high-level management*—Continued

Soil	Corn	Oats	Wheat	Cotton	Peanuts	Pecans	Coastal bermudagrass		Bahiagrass for pasture
							For hay	For pasture	
	Bu.	*Bu.*	*Bu.*	*Lb. of lint*	*Lb.*	*Lb.*	*Tons*	*Cow-acre-days* [1]	*Cow-acre-days* [1]
Dunbar-Izagora-Bladen complex:									
Dunbar									
Izagora									
Bladen									
Dune land									
Eustis loamy sand, 0 to 5 percent slopes	40	40		350	1,200	800	4.0	200	170
Eustis loamy sand, 5 to 8 percent slopes	35	35		275	900	600	3.5	175	145
Flint fine sandy loam, 0 to 2 percent slopes	45	45					5.0	260	190
Flint fine sandy loam, 2 to 5 percent slopes	35	35					5.0	260	160
Goldsboro sandy loam, 0 to 2 percent slopes	75	60	25	500	1,800	1,200	5.0	280	230
Grady clay loam									190
Grady soils									200
Greenville sandy clay loam, 2 to 5 percent slopes, severely eroded	50	50	25	500	1,400	800	3.5	200	165
Greenville sandy clay loam, 5 to 8 percent slopes, severely eroded	40	35	15	400	1,100	600	3.1	180	155
Greenville sandy loam, 0 to 2 percent slopes	75	70	35	750	1,800	1,000	7.0	320	240
Greenville sandy loam, 2 to 5 percent slopes	75	70	35	750	1,800	1,000	6.9	310	230
Greenville sandy loam, 2 to 5 percent slopes, eroded	65	60	30	650	1,750	900	6.2	300	235
Greenville sandy loam, 5 to 8 percent slopes, eroded	55	55	25	600	1,400	800	5.0	250	210
Irvington sandy loam, 0 to 2 percent slopes	70	60	30	550	1,800	1,200	5.1	265	240
Izagora-Dunbar loamy fine sands:									
Izagora	65	55	25				5.0	265	225
Dunbar	55	40							220
Lakeland sand, 0 to 5 percent slopes	30	30		250	1,000		3.1	150	150
Local alluvial land	45					1,200	6.0	325	250
Lucy loamy sand, 0 to 2 percent slopes	55	50	25	500	1,700	1,000	4.5	200	190
Lucy loamy sand, 2 to 5 percent slopes	50	45	20	450	1,600	900	4.5	200	190
Lucy loamy sand, 5 to 8 percent slopes	40	40	15	400	1,200	700	4.0	185	175
Lynchburg sandy loam, 0 to 2 percent slopes	65	50			1,350		5.2	275	230
Marlboro sandy loam, 2 to 5 percent slopes	80	70	35	750	2,000	1,000	7.2	360	250
Norfolk loamy sand, 0 to 2 percent slopes	75	65	30	650	2,000	1,200	6.5	350	250
Norfolk loamy sand, 2 to 5 percent slopes	70	60	30	650	1,900	1,200	6.0	330	240
Ocilla loamy sands, 0 to 2 percent slopes	60	60			1,600		4.5	225	170
Orangeburg loamy sand, 0 to 2 percent slopes	75	65	30	650	1,800	1,200	6.5	340	230
Orangeburg loamy sand, 2 to 5 percent slopes	70	60	30	625	1,800	1,200	6.0	320	220
Orangeburg loamy sand, 2 to 5 percent slopes, eroded	65	50	25	575	1,700	1,100	5.5	315	220
Orangeburg loamy sand, 5 to 8 percent slopes, eroded	50	45	18	500	1,400	700	5.0	300	200
Pelham loamy sand, 0 to 2 percent slopes	35								220
Red Bay loamy sand, 0 to 2 percent slopes	75	65	30	650	1,800	1,200	6.5	340	230
Red Bay loamy sand, 2 to 5 percent slopes, eroded	60	50	25	575	1,700	1,100	5.5	310	220
Red Bay loamy sand, 5 to 8 percent slopes, eroded	50	45	18	500	1,400	700	4.5	300	210
Sawyer-Susquehanna cobbly loamy sands, 0 to 5 percent slopes:									
Sawyer	45	45	25	425	1,200	720	4.5	235	200
Susquehanna	25	15		200	600		3.0	160	160
Sawyer-Susquehanna cobbly loamy sands, 2 to 8 percent slopes, eroded:									
Sawyer	35	30	15	350	800		4.0	225	190
Susquehanna									
Sawyer-Susquehanna loamy sands, 2 to 5 percent slopes, eroded:									
Sawyer	50	45	25	450	1,200	720	5.0	250	225
Susquehanna	25	15		200	600		3.0	170	170
Swamp									
Tifton sandy loam, 0 to 2 percent slopes	80	70	35	750	2,000	1,000	7.2	370	250
Tifton sandy loam, 2 to 5 percent slopes	75	70	35	750	1,900	1,000	6.9	360	240
Tifton sandy loam, 2 to 5 percent slopes, eroded	70	60	30	650	1,800	900	6.5	350	230
Tifton sandy loam, 5 to 8 percent slopes, eroded	55	50	25	550	1,600	800	6.0	235	220
Wagram loamy sand, 0 to 2 percent slopes	55	50	25	500	1,700	1,000	5.0	260	190
Wagram loamy sand, 2 to 5 percent slopes	50	65	20	450	1,600	900	5.0	260	190

[1] Cow-acre-days is a term used to express the carrying capacity of pasture. The value is obtained by multiplying the number of animal units carried per acre by the number of days the pasture is grazed during a year without injury to the sod. An acre of pasture that provides 30 days of grazing for 2 cows has a carrying capacity of 60 cow-acre-days.

In addition to the practices suggested in the descriptions of the capability units, high-level management includes the following:

(1) Preparing an adequate seedbed.
(2) Planting or seeding at suitable rates and at appropriate times, and using suitable methods.
(3) Using cropping systems that conserve the soil, and choosing crops that leave a large amount of residue.
(4) Using high-yielding crop varieties.
(5) Controlling water with terraces, contour cultivation, drainage, vegetated waterways, or stripcropping.
(6) Controlling weeds, insect pests, and plant diseases.
(7) Fertilizing and liming as indicated by the results of soil tests.

The following are the management practices assumed to have been used to obtain yields equal to the estimates given in table 2. The amounts of fertilizer are on a per acre basis. In all cases lime is applied as indicated by the results of soil tests.

Corn receives 35 to 45 pounds of nitrogen (N), 70 to 90 pounds of phosphoric acid (P_2O_5), and 105 to 135 pounds of potash (K_2O) at planting time and 80 to 100 pounds of additional nitrogen (N) as a topdressing. The density of the stand should be 10,000 to 12,000 plants per acre.

Oats receive 35 to 45 pounds of nitrogen (N), 70 to 90 pounds of phosphoric acid (P_2O_5), and 105 to 135 pounds of potash (K_2O) at planting time and 60 to 70 pounds of additional nitrogen (N) as a topdressing. Two bushels of seed are used per acre.

Wheat receives 35 to 45 pounds of nitrogen (N), 70 to 90 pounds of phosphoric acid (P_2O_5), and 105 to 135 pounds of potash (K_2O) at planting time and 50 to 60 pounds of additional nitrogen (N) as a topdressing. Two bushels of seed are used.

Cotton receives 40 to 50 pounds of nitrogen (N), 80 to 100 pounds of phosphoric acid (P_2O_5), and 120 to 150 pounds of potash (K_2O) at planting time and 70 to 90 pounds of additional nitrogen (N) as topdressing. The density of the stand is 50,000 to 60,000 plants per acre. In addition, the farm operator has a program for controlling insects.

Peanuts receive 20 to 30 pounds of nitrogen (N), 40 to 60 pounds of phosphoric acid (P_2O_5), and 60 to 90 pounds of potash (K_2O). Virginia-type peanuts are topdressed with 400 to 600 pounds of gypsum. One hundred and thirty pounds of seed is used. In addition, the farm operator has a program for controlling insects and plant diseases.

Pecans receive 25 to 40 pounds of nitrogen (N), 50 to 80 pounds of phosphoric acid (P_2O_5), and 75 to 120 pounds of potash (K_2O). Zinc is used according to needs. Recommended varieties are used. In addition, the farm operator has a program for controlling insects and diseases.

Coastal bermudagrass receives 35 to 45 pounds of nitrogen (N), 70 to 90 pounds of phosphoric acid (P_2O_5), and 105 to 135 pounds of potash (K_2O) early in spring and later 100 to 200 pounds of additional nitrogen (N) as topdressing. In addition, the farm operator has a program for controlling insects.

245-890—67——4

Bahiagrass receives 20 to 30 pounds of nitrogen (N), 40 to 60 pounds of phosphoric acid (P_2O_5), and 60 to 90 pounds of potash early in spring and 80 to 100 pounds of additional nitrogen (N) as topdressing. In addition, the farm operator has a program for controlling insects.

Climate and Crops [4]

The climate of Dougherty County is characterized by short, mild winters and rather humid summers. Spring is usually windy and stormy. Some of the most pleasant weather occurs in autumn. The days then are mild, and the nights are cool and crisp. More of the days are clear and sunny than in any other season, and there is less rainfall.

Table 3 shows, by months, the average daily maximum temperature, the average daily minimum temperature, and the average precipitation. Tables 4 and 5 give, by months, the number of days on which specified amounts of rainfall may be expected. Table 6 lists the number of 2-, 4-, and 6-week periods of dry weather in each month for a 10-year period. Table 7 gives the probability of the last freezing temperature in spring and first freezing temperature in fall on specified days.

A maximum temperature of 90°F. or above occurs on nearly 4 days out of 5 in June, July, and August and on about half the days in May and September. A high of 100° or more is not uncommon in summer. The temperature drops to freezing or below a little more than 20 times in an average winter, mostly during 2- or 3-day cold spells in December, January, and February. It has dropped below 20° occasionally, and with increased frequency in the last few years. The highest temperature recorded at Albany was 106°, which occurred in June 1931 and September 1925; the lowest was 2° below zero, which occurred in February 1899.

The average annual rainfall is almost 48 inches, and the seasonal distribution is ordinarily favorable. Usually, March and July are the wettest months and October is the driest month. Wet weather in spring sometimes makes it necessary to delay planting on somewhat poorly drained and moderately well drained soils and sometimes causes damage to crops on such soils. Wet weather in July, August, and September sometimes damages hay, cotton, and peanuts while these crops are being harvested. Most of the rainfall in warm weather comes from local showers and thundershowers, which are most likely to occur in the afternoon or early in the evening. Rainfall in winter usually covers a larger area and may last for several hours.

Brief snow flurries are not unusual, but measurable amounts of snow have been reported only a few times.

The growing season is about 260 days long, or from early in March to late in November. Occasionally a late freeze damages the blossoms of fruit trees and nut trees. A temperature of 32° has occurred as late in spring as April 26 and as early in autumn as October 21. From the data in table 7 the chances of frost damage to crops in spring and fall can be estimated (*4*).

[4] HORACE S. CARTER, State climatologist, U.S. Weather Bureau, helped prepare this section.

TABLE 3.—*Temperature and precipitation data*

[All data from the Albany Weather Bureau Station, Dougherty County, Ga.; based on records from 1931 to 1960]

Month	Temperature				Precipitation		
	Average daily maximum	Average daily minimum	2 years in 10 will have at least 4 days with—		Average total	1 year in 10 will have—	
			Maximum temperature equal to or higher than—	Minimum temperature equal to or lower than—		Less than—	More than—
	°F.	°F.	°F.	°F.	Inches	Inches	Inches
January	63.1	42.6	78	27	3.46	1.3	6.5
February	65.3	44.0	79	28	4.22	1.3	6.7
March	71.5	48.9	84	33	5.21	2.2	10.2
April	79.1	56.1	89	43	4.59	1.3	7.7
May	87.0	64.0	96	54	3.87	1.7	6.9
June	92.5	70.7	99	65	4.05	1.9	7.6
July	92.7	72.7	99	69	5.69	3.1	9.9
August	92.7	72.1	99	66	4.81	1.6	7.4
September	88.7	68.2	97	59	3.56	.9	6.3
October	80.6	57.6	90	43	2.11	.4	4.8
November	70.2	46.9	83	31	2.52	.4	6.2
December	63.3	42.2	78	27	3.75	1.2	8.3
Year	78.9	57.2	[1] 101	[2] 22	47.84	37.9	61.2

[1] Average annual highest temperature. [2] Average annual lowest temperature.

TABLE 4.—*Average number of days per year (by months) with rainfall equal to or greater than the stated amounts*

[10-year record, 1953 through 1962]

Rainfall equal to or greater than—	Average number of days in—												
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
0.10 inch	6	7	6	6	6	8	9	6	6	3	4	6	73
0.25 inch	4	4	5	5	4	5	6	4	4	3	2	4	50
0.50 inch	2	3	3	4	2	3	4	2	3	2	1	2	31

TABLE 5.—*Total number of days in 10 years (by months) with rainfall equal to or greater than the stated amounts*

[10-year record, 1953 through 1962]

Rainfall equal to or greater than—	Total number of days in—												
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	10-year period
1 inch	5	14	9	22	9	13	19	7	13	2	6	8	127
2 inches	0	3	2	7	3	0	5	1	4	1	1	1	28
3 inches	0	0	1	1	0	0	1	1	2	1	0	0	7
4 inches	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 6.—*Total number of 2-week, 4-week, and 6-week [1] periods in 10 years with no day having 0.25 inch or more of precipitation*

Periods equal to or longer than—	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	10-year period
2 weeks	3	6	6	5	6	5	2	5	7	8	9	7	69
4 weeks	1	1	1	1	2	2	0	0	2	3	3	2	18
6 weeks	0	0	1	0	1	0	0	0	0	2	2	1	7

[1] Dry periods are counted as occurring in the month having the most days in the period. For example, if the dry period begins in September and extends through October and into November, it is counted as occurring in October.

TABLE 7.—*Probabilities of last freezing temperature in spring and first freezing temperature in fall*

Probability	Dates for given probability and temperature		
	24° F.	28° F.	32° F.
Spring:			
1 year in 10 later than	March 6	March 13	March 21
2 years in 10 later than	February 21	March 4	March 15
5 years in 10 later than	January 18	February 13	March 3
Fall:			
1 year in 10 earlier than	November 25	November 15	November 4
2 years in 10 earlier than	November 29	November 24	November 10
5 years in 10 earlier than	December 23	December 2	November 23

Lists A and B can be used with table 8 (*11*) to predict the likelihood of drought damage to a particular crop on a specified soil. In list A, find the name of the crop and the average depth of its roots. Then refer to list B, which gives the capacity of the soils to hold moisture to a depth of 12 inches, 24 inches, or 36 inches. When you have learned the available moisture capacity of the soil, to the depth to which the roots of the crop will penetrate, turn to table 8, which gives the probability of drought days, by months, for soils that have a moisture-storage capacity of 1 inch, 2 inches, 3 inches, 4 inches, and 5 inches.

List A: Normal Root Zone for Common Crops on Permeable Soils

Eighty percent of roots at depth not exceeding—

12 inches	*24 inches*	*36 inches*
Annual grasses	Bahiagrass	Bicolor lespedeza
Annual lespedeza	Coastal bermudagrass	Sericea lespedeza
Common bermudagrass	Crimson clover	Fruit trees
	White clover	Pecan trees
Most garden vegetables	Corn	
	Cotton	
Peanuts	Grain sorghum	
Small grain	Green beans	
	Lima beans	
	Soybeans	
	Tobacco	
	Watermelons	

Suppose, for example, that you want to know the likelihood of drought retarding the growth of garden vegetables on Norfolk loamy sand in June. List A shows that the roots of most garden vegetables are in the uppermost 12 inches of the soil. List B shows that Norfolk loamy sand holds approximately 1 inch of available moisture to a depth of 12 inches. The column in table 8 headed "1 inch" shows that the chances are that in 1 year out of 10 there will be at least 24 days of drought in June, in 2 years out of 10 at least 21 days, in 3 years out of 10 at least 19 days, and in 5 years out of 10 at least 16 days.

List B: Total Available Moisture

Soils:	Approximate available moisture, in inches of water in soil from surface to a depth of—		
	12 inches	*24 inches*	*36 inches*
Albany sand	0.6	1	2
Alluvial land, wet	(1)	(1)	(1)
Americus loamy sand	1	2	3
Bladen loam	2	3	5
Carnegie sandy loam	1	2	(2)
Cuthbert soils	(1)	(1)	(1)
Dunbar soils	1	3	5
Dune land	(1)	(1)	(1)
Eustis loamy sand	1	2	3
Flint fine sandy loam	1	3	5
Goldsboro sandy loam	1	3	5
Grady clay loam	(1)	(1)	(1)
Grady soils	(1)	(1)	(1)
Greenville sandy clay loam	2	3	5
Greenville sandy loam	2	3	5
Irvington sandy loam	1	3	4
Izagora loamy fine sand	1	3	5
Lakeland sand	.5	1	2
Local alluvial land	1	2	4
Lucy loamy sand	1	2	3
Lynchburg sandy loam	1	3	4
Marlboro sandy loam	2	3	5
Norfolk loamy sand	1	3	4

See footnotes at end of table.

(List B continued on p. 38.)

List B: Total Available Moisture—Continued

	Approximate available moisture, in inches of water in soil from surface to a depth of—		
	12 inches	*24 inches*	*36 inches*
Ocilla loamy sands	1	2	3
Orangeburg loamy sand	1	3	4
Pelham loamy sand	(1)	(1)	(1)
Red Bay loamy sand	1	3	4
Sawyer cobbly loamy sand	(1)	(1)	(1)
Sawyer loamy sand	1	3	(2)
Susquehanna cobbly loamy sand	(1)	(1)	(1)
Susquehanna loamy sand	(1)	(1)	(1)
Swamp	(1)	(1)	(1)
Tifton sandy loam	1	3	5
Wagram loamy sand	1	2	3

[1] Not generally cultivated.
[2] Roots do not penetrate readily below a depth of 24 inches.

Or suppose, for another example, that you want to know the likelihood of drought retarding the growth of corn on Orangeburg loamy sand in May. List A shows that corn has most of its roots in the uppermost 24 inches of the soil. List B shows that Orangeburg loamy sand holds approximately 3 inches of moisture available to a depth of 24 inches. The column in table 8 headed "3 inches" shows that in 5 years out of 10 there will be at least 6 days of drought in May.

Use of Soils for Woodland [5]

A little less than half of Dougherty County is woodland. The principal commercial trees are longleaf pine, on the dry ridges; slash pine and loblolly pine, on the moist sandy flats; and pine, gum, and yellow-poplar, on the smaller, somewhat poorly drained bottoms. There are local markets for both pulpwood and sawtimber.

The soils of the county have been placed in eight woodland suitability groups. Each group consists of soils that are about the same in suitability for wood crops, management needs, and potential productivity. The terms used in describing each group are explained in the following paragraphs.

Potential productivity refers to the amount of usable wood expected to be produced on a given soil under a

[5] NORMAN E. SANDS, forester, Soil Conservation Service, helped write this section.

TABLE 8.—*Probabilities of drought days on soils of different moisture-storage capacities*

Month	Probability	Minimum drought days if soil has a moisture-storage capacity of [2]—				
		1 inch	2 inches	3 inches	4 inches	5 inches
April	1 year in 10	18	8	0	0	0
	2 years in 10	15	5	0	0	0
	3 years in 10	13	0	0	0	0
	5 years in 10	9	0	0	0	0
May	1 year in 10	25	24	19	13	7
	2 years in 10	23	20	15	8	0
	3 years in 10	21	17	12	0	0
	5 years in 10	17	12	6	0	0
June	1 year in 10	24	23	22	21	17
	2 years in 10	21	19	18	16	13
	3 years in 10	19	17	15	13	10
	5 years in 10	16	12	11	8	0
July	1 year in 10	16	14	14	13	12
	2 years in 10	14	12	10	10	9
	3 years in 10	13	9	8	7	7
	5 years in 10	5	0	0	0	0
August	1 year in 10	18	14	11	8	8
	2 years in 10	15	10	7	0	0
	3 years in 10	13	7	0	0	0
	5 years in 10	10	0	0	0	0
September	1 year in 10	23	22	19	16	14
	2 years in 10	20	17	13	11	8
	3 years in 10	18	14	9	7	0
	5 years in 10	9	0	0	0	0
October	1 year in 10	29	28	27	24	23
	2 years in 10	25	21	19	15	14
	3 years in 10	22	17	13	9	7
	5 years in 10	17	10	0	0	0

[1] Months of January, February, March, November, and December are not shown, because crops are rarely damaged by drought in these months.

[2] Moisture-storage capacity of a soil is expressed as the inches of rainfall or irrigation water that the soil can hold and make available to plants.

specified level of management. The most commonly accepted indicator of potential productivity is the site index. *Site index* is the average total height of the dominant and codominant trees in well-stocked stands at a stated reference age. Forest research has provided data on the basis of which average site indexes for existing forest stands growing on identified soils can be determined. The averages represent the midpoints of site index classes that have a range of about 10 feet. The soils within each woodland suitability group are near enough alike in average site index that the average value for the group may be used in forest management.

Site index can be translated into growth rates by means of published yield tables developed through forest research (*6*, *10*). The yearly growth rates for the principal trees in this county are given in the woodland suitability groups. The rates, in board feet by the Scribner log rule, are given for pines and hardwoods in even-aged, fully stocked stands. The pines were 50 years old and 8 or more inches in diameter, and the hardwoods were 60 years old and 12 or more inches in diameter.

Plant competition refers to the rate of invasion by unwanted trees, shrubs, and vines when openings are made in the canopy. Competition is *slight* if it does not prevent adequate natural regeneration and early growth or interfere with the normal development of planted seedlings. It is *moderate* if it delays natural or artificial regeneration and slows the growth of seedlings but does not prevent the eventual development of a fully stocked, normal stand. Competition is *severe* if it prevents adequate natural or artificial regeneration without intensive preparation of the site and without special maintenance practices, such as weeding.

Equipment limitations result from soil characteristics and topographic features that restrict or prevent the use of conventional equipment for planting and harvesting wood crops, for constructing roads, for controlling unwanted vegetation, and for controlling fires. The limitation is *slight* if there is little or no restriction on the type of equipment that can be used or on the time of the year that equipment can be used. It is *moderate* if the use of equipment is restricted by one or more unfavorable characteristics, such as slope, stones or other obstructions, seasonal wetness, instability, or risk of injury to roots of trees. The limitation is *severe* if special equipment is needed and the use of equipment is severely restricted by one or more unfavorable soil characteristics.

Seedling mortality refers to the expected loss of seedlings as a result of unfavorable soil characteristics or topographic features, not as a result of plant competition. Even if healthy seedlings of suitable species are correctly planted or occur naturally in adequate numbers, some will not survive if conditions are unfavorable. Mortality is *slight* if less than 25 percent of the seedlings die; *moderate* if 25 to 50 percent die; and *severe* if more than 50 percent die.

Woodland Suitability Groups

The eight woodland suitability groups recognized in the county are described in the following pages. The individual soils that have been included in each group are shown in the "Guide to Mapping Units." Dune land and Swamp have not been placed in a group. Average site indexes and average annual growth per acre for some of the more important commercial trees are presented. Plant competition, equipment limitation, and seedling mortality are discussed, and the degree of limitation is expressed in the relative terms, "slight," "moderate," or "severe."

Woodland suitability group 1

This group consists of deep, well-drained soils that have a moderately permeable subsoil. Roots penetrate these soils easily to a great depth. The available water capacity is medium.

For loblolly pine growing on these soils, the site index is 89 and the yearly growth rate is 550 board feet per acre; for slash pine the site index is 89 and the growth rate is 510; for longleaf pine the site index is 74 and the growth rate is 270; for sweetgum the site index is 99 and the growth rate is 495; and for white oak the site index is 95 and the growth rate is 400.

Plant competition is moderate, because the supply of moisture is adequate to encourage the growth of undesirable trees, shrubs, and vines. After an opening has been made in the canopy, at least one weeding is necessary to release desirable seedlings.

The equipment limitation is only slight, because these soils are predominantly gently sloping and are wet for only short periods.

Seedling mortality is slight or moderate. Normally, the moisture supply is adequate for the survival of more than 70 percent of the seedlings.

Woodland suitability group 2

This group consists mainly of moderately well drained and somewhat poorly drained soils. It includes also some small areas of soils that are on flats, in depressions, in drainageways and are poorly drained. All the soils are medium textured and have a moderately permeable or moderately slowly permeable subsoil.

For loblolly pine growing on the moderately well drained and somewhat poorly drained soils, the site index is 90 and the yearly growth rate is 560 board feet per acre; for slash pine the site index is 90 and the growth rate is 520; for longleaf pine the site index is 74 and the growth rate is 270; for sweetgum the site index is 96 and the growth rate is 460; and for red oak the site index is 94 and the growth rate is 390. On the poorly drained soils, the site indexes for most species especially that for pine, are slightly lower.

Plant competition is moderate or severe because the supply of moisture, all through the growing season, is adequate to encourage the growth of undesirable woody vegetation, including heavy brush. Site preparation, such as harrowing or controlled burning, generally helps to assure normal growth and to establish a better stand.

The equipment limitation is moderate to severe because these soils are wet for periods ranging from 2 months to most of the year. Logging during wet weather may impair the structure and stability of the soil and may also damage the tree roots.

Seedling mortality is slight, and natural reseeding is generally adequate to reestablish stands if there are seed trees in the area. In ordinary weather, when moisture is adequate, seedlings planted on open land can be expected to have a mortality rate of less than 25 percent.

Woodland suitability group 3

This group consists of well-drained to somewhat poorly drained, gently sloping or sloping soils that have a moderately permeable to slowly permeable subsoil. The available water capacity is medium. The soil material below a depth of about 24 inches hinders the penetration of roots.

For slash pine growing on these soils, the site index is 91 and the yearly growth rate is 530 board feet per acre; for loblolly pine the site index is 89 and the growth rate is 550; for longleaf pine the site index is 73 and the growth rate is 260; and for shortleaf pine the site index is 72 and the growth rate is 390. On the somewhat poorly drained soils that have a clayey subsoil, the site indexes are generally lower.

Plant competition is moderate, because enough moisture is available to encourage the growth of some undesirable vegetation. The competing vegetation does not ordinarily prevent the establishment of desired species, but one weeding is generally needed.

Erosion is not a major hazard on most of the soils in this group, but in a few of the steeper areas it is a moderate or severe hazard.

The equipment limitation is moderate in most areas but severe in some of the more cobbly areas.

Seedling mortality is slight. About 25 percent of the seedlings planted in eroded areas can be expected to die.

Woodland suitability group 4

This group consists of poorly drained soils that have a medium-textured to fine-textured subsoil. These soils are on flats, in depressions, and in drainageways. On the drier parts (generally the outer edges) of the flats and drainageways, pure stands of pine, predominantly slash pine, are common, but on the lower parts of the broader flats, which are wet most of the year, gum and cypress predominate.

For loblolly pine growing on these soils, the site index is 87 and the yearly growth rate is 520 board feet per acre; for slash pine the site index is 82 and the growth rate is 430; for longleaf pine the site index is 67 and the growth rate is 200; for yellow-poplar the site index is 118 and the growth rate is 730; for sweetgum the site index is 90 and the growth rate is 400; and for red oak the site index is 90 and the growth rate is 350.

Plant competition is severe where openings are made in the canopy. Land clearing, controlled burning, and the use of chemicals are required to remove the undesirable trees, shrubs, and vines.

The equipment limitation is severe in ponded areas but moderate in other areas. Conventional equipment can be used only in the drier part of the year. During the wet season, harvesting is possible only if special logging equipment is used, and even then the soil structure may be damaged and the tree roots injured.

Seedling mortality is slight, except in ponded areas where it is severe. Natural regeneration can be relied upon only in the drier areas. Satisfactory stocking from an initial planting can be expected in only 2 years out of 5. It is necessary to drain the waterlogged areas before a stand of trees can be established.

Woodland suitability group 5

This group consists of coarse-textured, somewhat excessively drained soils. The available water capacity is low, and ordinarily there is not enough water available for rapid growth of trees. Roots penetrate easily to a depth of several feet.

For loblolly pine growing on these soils, the site index is 83 and the yearly growth rate is 460 board feet per acre; for slash pine the site index is 76 and the growth rate is 360; for longleaf pine the site index is 70 and the growth rate is 230; and for shortleaf pine the site index is 70 and the growth rate is 360.

Plant competition is moderate. Where openings have been made in the canopy, two weedings may be needed to release desirable seedlings.

Seedling mortality is moderate. Between 50 and 70 percent of the seedlings can be expected to survive the months of July and August, when the moisture supply is critical.

Woodland suitability group 6

This group consists of Lakeland sand, 0 to 5 percent slopes, a deep, coarse-textured, droughty soil.

For slash pine growing on this soil, the site index is 78 and the yearly growth rate is 380 board feet per acre; for loblolly pine the site index is 74 and the growth rate is 350; for longleaf pine the site index is 67 and the growth rate is 200; and for shortleaf pine the site index is 70 and the growth rate is 360.

Plant competition is ordinarily slight, because the soil is droughty.

The equipment limitation is moderate; conventional equipment can be used in dry seasons.

Seedling mortality is moderate or severe. Less than 50 percent of the seedlings planted survive in some dry years, and replanting is required to establish a stand of trees.

Woodland suitability group 7

This group consists of moderately well drained and well drained soils that have a fine textured or moderately fine textured subsoil.

For loblolly pine growing on these soils, the site index is 80 and the yearly growth rate is 430 board feet per acre; for slash pine the site index is 80 and the growth rate is 410; and for longleaf pine the site index is 72 and the growth rate is 260. The site indexes are slightly higher in the well-drained soils.

Plant competition is moderate because the available water capacity is moderate and encourages the growth of undesirable plants. The competing vegetation does not ordinarily prevent the establishment of desirable species, but one weeding is generally needed.

In most areas erosion is not a major hazard, but in a few of the steeper areas, it is a severe hazard.

The equipment limitation is moderate; the use of conventional equipment is limited on the steeper slopes and during short periods when the soils are wet.

Woodland suitability group 8

This group consists of moderately well drained or somewhat poorly drained sandy soils that have rapid permeability. Drought is not a serious hazard, but the Albany soil may not supply enough moisture for the growth of trees in the long dry periods of summer.

For slash pine growing on these soils, the site index is 80 and the yearly growth rate is 410 board feet per acre; for loblolly pine the site index is 80 and the growth rate is 430; for longleaf pine the site index is 70 and the growth rate is 230; and for sweetgum the site index is 90 and the growth rate is 400.

Plant competition is moderate because these soils hold enough moisture to encourage the growth of undesirable woody vegetation. The competing vegetation does not ordinarily prevent the establishment of desirable species. Site preparation helps in reestablishing a stand.

The equipment limitation is moderate because these soils are wet for a period of as long as 3 months. Using equipment during periods of wet weather is likely to damage the structure of the soil and injure tree roots.

Seedling mortality is slight or moderate, and natural reseeding is generally adequate to reestablish stands if there are seed trees in the area. If the weather is normal, seedlings planted on open land can be expected to have a mortality rate of less than 25 percent.

Use of Soils for Wildlife

The soils of Dougherty County produce food and cover for many kinds of wildlife. Bobwhite and dove live in open areas. Rabbit, squirrel, fox, opossum, raccoon, skunk, and many nongame birds live in both woodland and open areas. Deer and wild turkey live in the large wooded areas along the streams and in swampy areas of the central and western parts of the county. Fish, wild duck, and beaver live in and along the streams and ponds scattered throughout the county.

The food and cover needs of the more important kinds of wildlife in the county are discussed in the following paragraphs. The climate in this county is such that food and cover plants are abundant or can be grown readily if needed.

Bobwhite (quail).—Choice foods for bobwhite are chicken corn, wheat, Egyptian wheat, partridgepeas, acorns, blackberries, browntop millet, bullgrass, corn, cowpeas, Florida beggarweed, flowering dogwood, annual lespedeza, bicolor lespedeza, peanuts, pine seeds, common ragweed, soybeans, and sweetgum seeds. Bobwhite also eat many insects. The food must be close to vegetation that protects the birds from predators and provides shelter from extreme heat and other adverse weather. Scattered plantings a fifth of an acre in size provide good distribution of food and cover and help to increase the bobwhite population.

Deer.—Choice foods for deer are acorns, bahiagrass, clover, chufa, corn, cowpeas, greenbrier, annual lespedeza, bicolor lespedeza, oats, soybeans, rye, and yaupon. A wooded area of 500 acres or more generally provides enough cover for deer.

Dove, mourning.—Among choice foods for dove are benne, browntop millet, bullgrass, corn, chicken corn, Japanese millet, pine seeds, common ragweed, wheat, and sweetgum seeds. Doves do not eat insects, green leaves, or fruits. They drink water daily.

Duck.—Choice foods for duck are acorns, browntop millet, chufa, corn, Japanese millet, and smartweed seeds. Although ducks occasionally eat acorns and corn on dry land, they generally need food that has been flooded.

Rabbit.—For cover, rabbits need a thicket of blackberry, plum, or other plants. Choice foods are clover, winter grasses, and other succulent plants, all of which are available in most parts of the county.

Squirrel.—Choice foods for squirrel are acorns, blackgum seeds, black cherries, chufa, corn, flowering dogwood, magnolia, peanuts, pecans, pine seeds, cypress, and tupelo fruit.

Turkey.—Wild turkeys survive only in large wooded areas, generally 2,000 acres or more in size. Turkeys need surface water to drink each day, and they often roost in large trees over or near water. Choice foods are insects, acorns, bahiagrass seed, bullgrass, blackberries, dewberries, browntop millet, chufa, clover leaves, corn, chicken corn, cowpeas, peanuts, flowering dogwood, gallberry, wild grapes, oats, pecans, pine seeds, rye, wheat, and soybeans.

Nongame birds.—Several kinds of nongame birds eat nothing but insects; some eat only seed; a few eat insects and nuts and fruits; and others eat all of these foods.

Fish.—The principal game fish in this county are bluegill and bass. The choice foods of bluegill are aquatic worms, insects, and larvae. Bass feed chiefly on small fish. The amount of fish food produced is related directly to the fertility of the water, which is affected by the fertility of the soils of the watershed and somewhat by the fertility of the soils at the bottom of the pond. Because the soils in this county are acid and low in fertility, most ponds need to be fertilized and limed before they will produce a significant amount of food for fish.

Channel catfish are raised principally in ponds where water is controlled. They are released in February and removed before cold weather. Production of 1,500 pounds of catfish per acre of water in a growing season is not uncommon.

Wildlife Groups

The soils in Dougherty County have been placed in 10 groups according to their suitability as habitats for specified kinds of wildlife. In the following paragraphs, these 10 groups are described and some of the suitable food and cover plants are listed. The "Guide to Mapping Units" in the back of this report shows the individual soils that have been included in each wildlife group.

Wildlife group 1

This group consists of poorly drained or very poorly drained soils on broad, low flats and in drainageways and depressions. These soils range from loamy sand to clay loam in texture. Water covers most of the acreage

for short periods each year. Swamps and some of the other areas are covered continuously during the wetter months.

Nearly all of the acreage is woodland. Food and cover for wildlife are plentiful. The vegetation consists of plants that tolerate excess surface water, including blackgum, baldcypress, Japanese millet, oak, smartweed, magnolia, tupelo, and pine. Most of the acreage is in tracts large enough to provide suitable habitats for deer and turkey. Waterholes are needed in some locations.

Wildlife group 2

This group consists of moderately well drained or somewhat poorly drained soils on nearly level, broad flats and in depressions. These soils have a sandy surface layer 20 to 60 inches thick. The water table fluctuates from near the surface in wet seasons to a depth of 3 feet or more during prolonged droughts.

Nearly all of the acreage is woodland. Food and cover for wildlife are plentiful. The vegetation consists of such plants as bahiagrass, Florida beggarweed, browntop millet, magnolia, oak, and pine. Some large wooded areas are suitable for deer and turkey, but waterholes are needed in some places. These sandy soils generally cannot be flooded for ducks.

Wildlife group 3

This group consists of poorly drained to moderately well drained soils on nearly level, broad flats and in depressions. These soils have a 3- to 18-inch surface layer chiefly of sandy loam and a subsoil chiefly of sandy clay loam and sandy clay. They have medium available water capacity.

Approximately 80 percent of the acreage is woodland, and 20 percent is cropland or pasture. Such plants as browntop millet, crimson clover, corn, chicken corn, cowpeas, Japanese millet, and annual lespedeza provide food and cover for wildlife. Most of the acreage is in wooded areas large enough to be suitable for deer and turkey. Natural drainageways and ponds furnish water.

Wildlife group 4

This group consists of somewhat poorly drained to well-drained upland soils that have slopes of 2 to 8 percent. These soils have a 2- to 8-inch surface layer of loamy sand or sandy loam and a subsoil of sandy clay loam to clay.

About 50 percent of the acreage is woodland, and the rest is cropland or pasture. Bahiagrass, blackberry, crimson clover, annual lespedeza, and oak can be established and maintained to provide food and cover for wildlife. Moderately intensive practices are needed to help control erosion.

Wildlife group 5

This group consists of well-drained or somewhat excessively drained upland soils that have slopes of 0 to 8 percent. These soils have a surface layer of loamy sand 18 inches to several feet thick. Permeability is moderate or moderately rapid, and the available water capacity is low or medium. Tilth is good.

About 70 percent of the acreage is cropland or pasture, and the rest is woodland. Such plants as benne (sesame), blackberry, browntop millet, corn, chicken corn, cowpeas, and oak furnish food and cover for wildlife. There are few streams or ponds, and the soils are too sandy to be suitable for the construction of ponds or waterholes to furnish water for wildlife.

Wildlife group 6

This group consists of Lakeland sand, 0 to 5 percent slopes, a somewhat excessively drained soil on uplands. This soil has a surface layer of sand 3½ to 6 feet thick. Permeability is rapid, and the available water capacity is low. Tilth is good.

About 60 percent of the acreage is woodland. Cover for wildlife is adequate, but food is scarce because of the low available water capacity and low fertility. Supplemental food can be produced more economically on adjacent soils. Drinking water must be provided in areas nearby.

Wildlife group 7

This group consists of Dune land, a land type of deep, loose, excessively drained sand that has slopes of 5 to 12 percent. This land type has a surface layer of sand 6 to 10 inches thick. Underneath this is coarse sand to a depth of 6 to 20 feet. Permeability is very rapid, and the available water capacity is low.

These areas do not provide adequate cover or sufficient food and water for wildlife. Supplemental food can be produced more economically on adjacent soils.

Wildlife group 8

This group consists of well-drained soils that have slopes of 0 to 8 percent and are in broad, undulating areas of the uplands. These soils have a surface layer of loamy sand 3 to 18 inches thick. Permeability is moderate, and the available moisture capacity is medium. Natural fertility is moderate or low. Tilth is good.

About 55 percent of the acreage is cropland, and the rest is pasture or woodland. Such plants as bahiagrass, Florida beggarweed, benne, blackberry, browntop millet, crimson clover, corn, chicken corn, cowpeas, Japanese millet, magnolia, oak, oats, peanuts, peas, pine, and wheat provide food and cover for wildlife. There are few streams or natural ponds. Drinking water for wildlife can be provided more economically in adjacent areas.

Wildlife group 9

This group consists of well-drained soils that have slopes of 0 to 8 percent and are in broad, undulating areas of the uplands. These soils have a surface layer of sandy loam 3 to 9 inches thick. Beneath this is heavy sandy clay loam or sandy clay. Permeability is moderate or moderately slow, and the available water capacity is medium. Natural fertility is low or moderate. Tilth is good.

Approximately 60 percent of the acreage is cropland, and the rest is pasture and woodland. Such plants as bahiagrass, Florida beggarweed, benne, blackberry, browntop millet, crimson clover, corn, chicken corn, cowpeas, Japanese millet, annual lespedeza, magnolia, oak, oats, peanuts, peas, pine, and wheat provide food and cover for wildlife. Streams or ponds in adjacent areas provide water.

Wildlife group 10

This group consists of well-drained, severely eroded soils of the uplands. These soils have a 1- to 4-inch surface layer, chiefly of sandy clay loam. Beneath it is sandy clay. Permeability is moderate, infiltration is slow, and the available water capacity is medium. Surface runoff is rapid. Natural fertility is low or moderate.

These soils are used as cropland, pasture, and woodland. Such plants as bahiagrass, blackberry, crimson clover, annual lespedeza, magnolia, oak, and pine provide food and cover for wildlife. Streams or ponds in adjacent areas provide water.

Use of Soils for Engineering [6]

Soil engineering is a subdivision of structural engineering. It deals with soil as the foundation material upon which structures rest or with soil as a structural material. Some soil properties are of special interest to engineers because they affect the construction and maintenance of roads, airports, pipelines, building foundations, drainage systems, water storage facilities, erosion control structures, and sewage disposal systems. Among the soil properties that the engineer considers most important are permeability to water, shear strength, compaction characteristics, soil drainage, shrink-swell potential, grain size, plasticity, and reaction. Also important are topography and the depth to the water table and to bedrock.

Generally, soils are used as they are in the places where they are found. A large part of soil engineering consists of locating the various soils, determining their engineering properties, correlating those properties with the requirements of the job, and selecting the best possible material for each job.

Information in this survey can be used by engineers to—

1. Make soil and land use studies that will aid in selecting and developing industrial, business, residential, and recreational sites.
2. Make preliminary estimates of the engineering properties of soils in the planning of agricultural drainage systems, farm ponds, and diversion terraces.
3. Make preliminary evaluations of soil and ground conditions that will aid in selecting highway, airport, pipeline, and cable locations and in planning detailed investigations at the selected locations.
4. Locate possible sources of stone, gravel, and other construction material.
5. Correlate the performance of engineering structures with soil mapping units to develop information that will be useful in designing and maintaining certain engineering structures.
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 and 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.

With the use of the soil map for identification, the engineering interpretations reported here can be useful for many purposes. It should be emphasized that they do not eliminate the need for sampling and testing at the site of specific engineering works involving heavy loads and excavations deeper than the depths of layers here reported. Even in these situations, the soil map is useful for planning more detailed investigations and for suggesting the kinds of problems that may be expected.

Some terms used by the soil scientist may not be familiar to engineers; many terms have special meanings in soil science. Such terms are defined in the Glossary.

Engineering Classification Systems

Most highway engineers classify soil material according to the system approved by the American Association of State Highway Officials (AASHO) (*2*).

In the AASHO system, soil materials are classified in seven groups, ranging from A–1, which consists of gravelly soils of high bearing capacity, to A–7, which consists of clay soils having low bearing capacity when wet. The relative engineering value of the soils within each group can be indicated by group index numbers, which range from 0 for the best materials to 20 for the poorest. The group index number, if it has been determined, is shown in parentheses after the soil-group symbol, thus: A–6(1).

Some engineers prefer the Unified classification system, developed by the U. S. Army Corps of Engineers (*13*). In this system, soil materials are identified as coarse grained (eight classes), fine grained (six classes), or highly organic (one class).

Classification by either system identifies soil material according to textural and plasticity characteristics and permits the engineer to appraise soil material by comparing it with more familiar soils that have the same classification.

Engineering Test Data

To help evaluate the soils in Dougherty County for engineering purposes, 9 samples of soils in the Bladen, Flint, and Sawyer series were tested according to standard procedures. The results are given in table 9.

Moisture-density data is obtained by compacting soil material several times at successively higher moisture content. Assuming that the compactive effort remains constant, the density of the compacted material increases until the optimum moisture content is reached. After that, the density decreases with increase in moisture content. The highest dry density obtained in the compaction test is termed "maximum dry density." Moisture-density data are important in earthwork because, 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.

[6] E. R. PULLEN, agricultural engineer, Soil Conservation Service, helped prepare this section.

245-890—67——5

TABLE 9.—*Engineering*

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

Soil type and location of sample	SCS report No. S62Ga. 47–	Depth from surface	Horizon	Moisture-density data [1]		Volume change [2]			Fragments larger than 3 inches in diameter indicated in field sampling (estimate)
				Maximum dry density	Optimum moisture	Shrinkage	Swell	Total volume change	
Bladen loam:		*In.*		*Lb. per cu. ft.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*
700 yd. E. of the junction of Slappey Drive and Ga. Hwy. 91 (modal profile).	8–1	0 to 8	A2g	98	22	15.3	4.7	20.0	
	8–2	8 to 65	B21g	100	23	12.5	13.6	26.1	
	8–3	65 to 96	B22g	100	22	18.8	9.7	28.5	
2.1 miles S. of Albany city limits and 1¼ miles W. of Flint River (sandier lower B and C horizons than modal).	7–1	0 to 5	A2	101	18	8.1	4.6	12.7	
	7–2	5 to 34	B21g	94	25	18.3	11.3	29.6	
	7–3	34 to 56	B22g	107	16	12.1	10.0	22.1	
Flint fine sandy loam:									
2.1 miles S. of Albany city limits and 1 1/16 miles W. of Flint River (300 feet east of River Road) (modal profile).	4–1	0 to 7	Ap	108	15	.3	6.1	6.4	
	4–2	7 to 17	B2	93	25	16.7	3.1	19.8	
	4–3	17 to 36	C1	97	21	5.6	8.3	13.9	
2.1 miles S. of Albany city limits and 1⅛ miles W. of Flint River (more clayey B and C1 horizons than modal).	5–1	0 to 6	Ap	109	13	1.7	9.9	11.6	
	5–2	8 to 14	B2	95	22	15.2	.8	16.0	
	5–3	18 to 48	C1	98	23	7.2	12.0	19.2	
0.75 mile S. of Lee County line, and 0.62 mile E. of Ga. Hwy. 91 (sandier than modal).	6–1	0 to 7	Ap	124	9	1.9	4.2	6.1	
	6–2	11 to 21	B2	108	17	7.9	3.7	11.6	
	6–3	21 to 48	C	96	23	13.3	4.4	17.7	
Sawyer loamy sand:									
1⅛ miles W. of Worth County line and ¼ mile N. of Mitchell County line (220 yards E. of dirt road) (modal profile).	10–1	0 to 7	Ap	110	11	.2	4.8	5.0	
	10–2	7 to 16	B2	88	29	18.3	8.8	27.1	
	10–3	19 to 48	C1	91	26	16.1	13.3	29.4	
110 yards W. of Worth County line and 2½ miles S. of U.S. Marine Corps Supply Center (south side of Spring Flats Road) (clayey B2 horizon, intergrading toward Susquehanna).	12–1	0 to 4	Ap	118	10	.6	4.1	4.7	
	12–2	4 to 11	B2	93	26	17.9	1.5	19.4	
	12–3	14 to 34	C1	91	27	16.6	4.6	21.2	
Sawyer cobbly loamy sand:									
500 feet N. of Central of Georgia RR. track and 5 miles SW. of Central of Georgia RR. and U.S. Hwy. crossing (modal profile).	1–1	0 to 6	Ap	117	12	1.6	3.0	4.6	8
	1–2	11 to 19	B2	114	14	6.5	5.5	12.0	20
	1–3	19 to 36	C1	88	31	20.4	2.7	23.1	
9/16 mile W. of Worth County line and 2½ miles S. of U.S. Marine Corps Supply Center (in forks of Johnson and Spring Flats Road) (more clayey B and C horizons than modal).	3–1	0 to 7	A2	106	13	3.3	5.3	8.6	12
	3–2	9 to 15	B2	97	22	14.9	3.2	18.1	20
	3–3	15 to 36	C1	97	24	13.5	4.4	17.9	20

[1] Based on AASHO Designation: T 99–57, Methods A and C (*2*). Method C was used when the sample contained more than about 5 percent of the material retained on the No. 4 sieve.

[2] Based on "A System of Soil Classification" by W. F. Abercrombie (*1*).

[3] Mechanical analysis according to AASHO Designation: T 88–57 (*2*). Results by this procedure may differ somewhat from results obtained by the soil survey procedure of the Soil Conservation Service (SCS). In the AASHO procedure, the fine material is analyzed by the hydrometer method, and the various grain-size fractions are calculated on the basis of all the material, including that coarser than 2 millimeters in diameter. In the SCS soil survey

test data

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

Mechanical analysis [3]														Classification	
Percentage passing sieve—									Percentage smaller than—				Liquid limit	Plasticity index	AASHO	Unified [4]
3-in.	2-in.	1½-in.	1-in.	¾-in.	No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 40 (0.42 mm.)	No. 200 (0.074 mm.)	0.05 mm.	0.02 mm.	0.005 mm.	0.002 mm.				
						100	98	76	74	68	46	39	35	15	A-6(10)	CL.
					100	99	98	79	76	72	66	64	43	24	A-7-6(14)	CL.
						100	99	79	76	75	70	66	46	29	A-7-6(17)	CL.
						100	89	50	48	37	22	13	27	7	A-4(3)	SM-SC.
						100	97	79	79	78	77	73	54	33	A-7-6(19)	CH.
					100	99	91	45	42	36	33	31	27	14	A-6(3)	SC.
					100	99	91	33	27	16	11	9	[5]	[5]	A-2-4(0)	SM.
						100	97	69	67	66	62	59	51	28	A-7-6(16)	CH.
						100	97	54	53	53	50	48	42	21	A-7-6(8)	CL.
					100	99	84	29	26	15	7	6	[5]	[5]	A-2-4(0)	SM.
						100	93	66	64	64	59	53	33	17	A-6(9)	CL.
						100	92	66	59	59	55	52	42	21	A-7-6(11)	CL.
					100	99	85	35	34	25	14	9	[5]	[5]	A-2-4(0)	SM.
					100	99	89	52	47	46	44	40	28	14	A-6(5)	CL.
						100	93	75	68	68	65	60	52	25	A-7-6(16)	MH-CH.
						100	83	15	12	8	5	4	[5]	[5]	A-2-4(0)	SM.
						100	92	58	54	54	50	47	41	18	A-7-6(8)	CL.
						100	89	61	59	59	58	53	56	31	A-7-6(15)	CH.
			100	99	93	86	73	20	15	14	12	10	[5]	[5]	A-2-4(0)	SM.
					100	99	92	69	68	67	66	65	56	33	A-7-6(18)	CH.
					100	99	92	69	68	67	67	66	60	32	A-7-6(18)	CH.
92	91	88	87	86	83	80	73	17	16	10	6	3	[5]	[5]	A-2-4(0)	SM.
80	76	75	75	75	72	69	63	30	29	26	23	22	23	11	A-6(1)	SC.
					100	98	95	78	76	75	75	74	60	35	A-7-6(20)	CH.
88	86	86	84	84	77	67	55	18	17	12	9	7	[5]	[5]	A-2-4(0)	SM.
80	79	79	78	78	78	77	73	47	46	45	43	39	49	30	A-7-6(14)	CL.
80	80	78	78	78	77	74	68	44	44	43	42	38	48	29	A-7-6(12)	CL.

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

[4] SCS and BPR have agreed to consider that all soils having plasticity indexes within 2 points of A-line are to be given a borderline classification. Examples of borderline classifications obtained by this use are MH–CH and SM–SC.

[5] Nonplastic.

To get the percentages of shrinkage and swelling recorded under "Volume change," samples were prepared at optimum moisture content and then subjected to drying and wetting. The sum of these two values is the "Total volume change."

The relative proportions of the different size particles in the soil samples were determined through mechanical analysis made by a combination of the sieve and hydrometer methods.

The test that determines the plastic limit and liquid limit measures the effect of water on the consistence of the soil material. As the moisture content of a clayey soil increases from a very dry state, the material changes from a semisolid to a plastic state. As the moisture content is further increased, the material changes from a plastic to a liquid state. The plastic limit is the moisture content at which the soil material changes 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 liquid limit and plastic limit.

TABLE 10.—*Estimated*

Soil series and map symbols	Depth from surface	Classification	
		USDA texture	Unified
	Inches		
Albany (AdA)	0 to 40	Sand	SM, SP–SM
	40 to 86	Sandy clay loam	SC, CL
Alluvial land (Avp)	(1)	(1)	(1)
Americus (ArB)	0 to 65	Loamy sand	SM
Bladen (BiA)	0 to 8	Loam	ML
	8 to 65	Clay	CL, CH
Carnegie (CoB2, CoC2)	0 to 4	Sandy loam	SM
	4 to 48	Sandy clay loam to sandy clay	SC, CL
Cuthbert-Orangeburg (COC2, COE):			
Cuthbert	0 to 9	Sandy loam	SM
	9 to 24	Silty clay to sandy clay	CL, MH, CH
	24 to 52	Sandy clay	CL
Orangeburg	0 to 10	Loamy sand	SM
	10 to 48	Sandy clay loam	SC
	48 to 60	Sandy loam	SC, SM
Dunbar, Izagora, and Bladen (Dib):			
Dunbar	0 to 4	Sandy loam	SM
	4 to 32	Silty clay loam	MH, CL
	32 to 62	Silty clay	MH, CH, CL
Izagora	0 to 5	Sandy loam	SM
	5 to 41	Silty clay loam	MH, CL
	41 to 58	Sandy clay	CL
Bladen	0 to 6	Sandy loam	SC, SM
	6 to 48	Clay	CL, CH
	48 to 60	Sandy clay	CL
Dunbar-Izagora-Bladen (Dob):			
Dunbar	0 to 5	Silt loam	CL, ML
	5 to 31	Silty clay	CL, CH
	31 to 42	Sand	SW
Izagora	0 to 6	Silt loam	CL, ML
	6 to 22	Silty clay loam	MH, CL
	22 to 61	Sandy clay	CL
Bladen	0 to 5	Silt loam or silty clay loam	CL, CH
	5 to 51	Clay	CL, CH
	51 to 66	Coarse sand	SW
Dune land (Dsl)	0 to 10	Sand	SM, SP–SM
	10 to 60	Coarse sand	SP
Eustis (EqB, EqC)	0 to 7	Loamy sand	SM
	7 to 66	Loamy sand	SM

See footnotes at end of table.

It indicates the range of moisture content within which a soil is in a plastic condition.

Estimated Engineering Properties

Table 10 gives, for the soils of each series, estimates of the soil properties significant in engineering. These estimates are based on test data, on field observations, and on past experience in engineering. The estimates are for the modal profile; consequently, some variation from them must be expected.

Permeability refers to the quality that enables a soil horizon to transmit water or air. The estimates of permeability are based on study of structure and consistence and on field observations.

Available water capacity refers to the difference between the amount of water in a soil at field capacity and the amount in the same soil at the permanent wilting point. This capacity is governed by the texture and structure of the individual soil. Fine-grained soils have a greater water-holding capacity than coarse-grained ones.

properties of the soils

Classification—Continued	Percentage passing sieve—			Permeability	Available water capacity	Reaction	Shrink-swell potential
AASHO	No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 200 (0.074 mm.)				
				Inches per hour	*Inches per inch of soil*	*pH*	
A-2, A-3	100	100	10 to 15	>6.3	0.05	5.1 to 5.5	Low.
A-4, A-6	100	100	45 to 55	0.63 to 2.0	.14	4.5 to 5.0	Low.
[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]
A-2	100	100	15 to 30	2.0 to 6.3+	.07	4.5 to 5.5	Low.
A-4	100	100	50 to 75	0.63 to 2.0	.14	4.5 to 5.0	Low.
A-7, A-6	100	100	45 to 90	<0.2	.15	5.1 to 5.5	High.
A-2	[2] 80 to 95	[3] 95 to 100	20 to 35	2.0 to 6.3	.12	5.1 to 5.5	Low.
A-4, A-6	[2] 85 to 95	[3] 95 to 100	40 to 65	0.6 to 2.0	.10	4.5 to 5.0	Moderate.
A-2	100	100	15 to 35	2.0 to 6.3	.10	5.1 to 5.5	Low.
A-6, A-7	100	100	50 to 80	0.2 to 0.63	.14	4.5 to 5.0	High.
A-6, A-7	100	100	50 to 65	0.2 to 0.63	.15	4.5 to 5.0	Moderate.
A-2	100	100	10 to 25	2.0 to 6.3	.08	5.1 to 5.5	Low.
A-2, A-4	100	100	25 to 50	0.63 to 2.0	.15	4.5 to 5.0	Low.
A-2, A-4	100	100	20 to 40	2.0 to 6.3	.12	4.5 to 5.0	Low.
A-2	100	100	20 to 35	2.0 to 6.3	.10	4.5 to 5.0	Low.
A-7	100	100	80 to 90	0.2 to 0.63	.14	4.5 to 5.0	Moderate.
A-7	100	100	80 to 90	<0.63	.14	4.5 to 5.0	Moderate.
A-2	100	100	15 to 30	2.0 to 6.3	.10	5.1 to 5.5	Low.
A-7	100	100	80 to 90	0.2 to 0.63	.15	4.5 to 5.0	Moderate.
A-6	100	100	50 to 65	0.2 to 0.63	.15	4.5 to 5.0	Moderate.
A-2, A-4	100	100	20 to 40	2.0 to 6.3	.12	4.5 to 5.0	Low.
A-7, A-6	100	100	75 to 90	<0.2	.14	4.5 to 5.0	High.
A-6	100	100	50 to 65	0.2 to 0.63	.14	4.5 to 5.0	Moderate.
A-6, A-7	100	100	50 to 80	0.2 to 0.63	.14	4.5 to 5.0	Moderate.
A-6, A-7	100	100	80 to 90	<0.2	.14	4.5 to 5.0	Moderate.
A-2	100	100	5 to 15	>6.3	.05	4.5 to 5.0	Low.
A-6	100	100	50 to 80	0.2 to 0.63	.14	4.5 to 5.0	Moderate.
A-7	100	100	80 to 90	0.2 to 0.63	.15	<4.5	Moderate.
A-6	100	100	50 to 65	0.2 to 0.63	.15	<4.5	Moderate.
A-6, A-7	100	100	60 to 85	0.2 to 0.63	.14	4.5 to 5.0	Moderate.
A-6, A-7	100	100	75 to 90	<0.2	.14	4.5 to 5.0	High.
A-2	100	100	5 to 15	>6.3	.14	6.1 to 6.5	Low.
A-2, A-3	100	100	5 to 10	>6.3	.03	5.1 to 5.5	Very low.
A-3	100	100	0 to 5	>6.3	.03	5.1 to 5.5	Very low.
A-2	100	100	15 to 30	>6.3	.07	5.1 to 5.5	Low.
A-2	100	100	15 to 30	2.0 to 6.3	.07	4.5 to 5.0	Low.

TABLE 10.—*Estimated*

Soil series and map symbols	Depth from surface	Classification	
		USDA texture	Unified
	Inches		
Flint (FrA, FrB)	0 to 9	Fine sandy loam	SM
	9 to 30	Clay to silty clay	CL, CH
	30 to 48	Sandy clay	CL, MH
	48 to 70	Sandy loam	SC, SM
Goldsboro (GmA)	0 to 11	Sandy loam	SM
	11 to 54	Sandy clay loam	SC
Grady (Gcl, Grd)	0 to 6	Clay loam or sandy loam	SM, SC, CL
	6 to 58	Clay to sandy clay	CL, CH
Greenville (GoA, GoB, GoB2, GoC2, GqB3, GqC3)	0 to 6	Sandy loam	SM
	6 to 64	Sandy clay or sandy clay loam	CL
Irvington (IgA)	0 to 5	Sandy loam	SM
	5 to 23	Sandy clay loam	SC
	23 to 54	Sandy clay or sandy clay loam	SC, CL
Izagora-Dunbar (Iza):			
Izagora	0 to 6	Loamy fine sand	SM
	6 to 31	Sandy clay loam	SC, CL
	31 to 58	Sandy clay	SC, CL
Dunbar	0 to 8	Loamy fine sand	SM
	8 to 40	Sandy clay	CL
	40 to 52	Clay	CL, CH
Lakeland (LpB)	0 to 62	Sand	SM, SM–SP
Local alluvial land (Lcm)	(1)	(1)	(1)
Lucy (LMA, LMB, LMC)	0 to 24	Loamy sand	SM
	24 to 30	Sandy loam	SM, SC
	30 to 60	Sandy clay loam	SC
Lynchburg (LtA)	0 to 9	Sandy loam	SM
	9 to 48	Sandy clay loam	SC, SM–SC
Marlboro (MzB)	0 to 6	Sandy loam	SM, SC
	6 to 11	Sandy clay loam	SM, SC
	11 to 58	Sandy clay	CL
Norfolk (NhA, NhB)	0 to 7	Loamy sand	SM
	7 to 14	Sandy loam	SC, SM
	14 to 62	Sandy clay loam	SC, CL
Ocilla (OhA)	0 to 28	Loamy sand	SM
	28 to 60	Sandy clay loam	SC
Orangeburg (OeA, OeB, OeB2, OeC2)	0 to 7	Loamy sand	SM
	7 to 12	Sandy loam	SC, SM
	12 to 64	Sandy clay loam	SC, CL
Pelham (PlA)	0 to 27	Loamy sand	SM
	27 to 68	Sandy clay loam	SC
Red Bay (RgA, RgB2, RgC2)	0 to 7	Loamy sand	SM
	7 to 9	Sandy loam	SC, SM
	9 to 68	Sandy clay loam	SC, CL
Sawyer-Susquehanna (SSB, SSC2):			
Sawyer	0 to 9	Loamy sand	SM
	9 to 48	Sandy clay	SC, CL, CH
Susquehanna	0 to 7	Loamy sand	SM
	7 to 72	Clay	MH, CH

See footnotes at end of table.

properties of the soils—Continued

Classification—Continued	Percentage passing sieve—			Permeability	Available water capacity	Reaction	Shrink-swell potential
AASHO	No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 200 (0.074 mm.)				
				Inches per hour	*Inches per inch of soil*	*pH*	
A–2, A–4	100	80 to 100	25 to 40	2. 0 to 6. 3	0. 12	4. 5 to 5. 0	Low.
A–6, A–7	100	85 to 100	50 to 85	<0. 2	. 16	4. 5 to 5. 0	Moderate.
A–6	100	90 to 100	50 to 75	0. 2 to 0. 63	. 14	4. 5 to 5. 0	Moderate.
A–2, A–4	100	90 to 100	20 to 40	2. 0 to 6. 3	. 10	4. 5 to 5. 0	Low.
A–2	100	100	20 to 35	2. 0 to 6. 3	. 12	5. 1 to 5. 5	Low.
A–4	100	100	35 to 50	0. 63 to 2. 0	. 15	4. 5 to 5. 0	Low.
A–2, A–4	100	100	30 to 65	0. 2 to 0. 63	. 15	4. 5 to 5. 0	Low to moderate.
A–6, A–7	100	100	50 to 75	<0. 2	. 15	4. 5 to 5. 0	Moderate to high.
A–2	100	100	20 to 35	2. 0 to 6. 3	. 12	5. 1 to 5. 5	Low.
A–6	100	100	50 to 65	0. 63 to 2. 0	. 15	4. 5 to 5. 0	Moderate.
A–2	[2] 85 to 95	[3] 95 to 100	15 to 35	2. 0 to 6. 3	. 12	4. 5 to 5. 0	Low.
A–4	[2] 85 to 95	[3] 95 to 100	35 to 50	0. 63 to 2. 0	. 12	4. 5 to 5. 0	Moderate.
A–4, A–6	[2] 85 to 95	[3] 95 to 100	40 to 60	0. 2 to 0. 63	. 12	4. 5 to 5. 0	Moderate.
A–2	100	100	15 to 30	2. 0 to 6. 3	. 08	4. 5 to 5. 0	Low.
A–4, A–6	100	100	35 to 55	0. 63 to 2. 0	. 15	4. 5 to 5. 0	Moderate.
A–4, A–6	100	100	40 to 60	0. 2 to 0. 63	. 15	4. 5 to 5. 0	Moderate.
A–2	100	100	20 to 35	2. 0 to 6. 3	. 09	5. 1 to 5. 5	Low.
A–4, A–6	100	100	50 to 60	0. 2 to 0. 63	. 14	4. 5 to 5. 0	Moderate.
A–6, A–7	100	100	60 to 80	<0. 63	. 14	6. 1 to 6. 5	Moderate.
A–2, A–3	100	100	5 to 15	>6. 3	. 05	5. 1 to 5. 5	Low.
[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1].
A–2	100	100	15 to 30	2. 0 to 6. 3	. 08	5. 1 to 5. 5	Low.
A–2, A–4	100	100	20 to 40	2. 0 to 6. 3	. 10	4. 5 to 5. 0	Low.
A–2, A–4	100	100	25 to 45	0. 63 to 2. 0	. 13	4. 5 to 5. 0	Low.
A–2	100	100	15 to 35	2. 0 to 6. 3	. 10	4. 5 to 5. 0	Low.
A–2, A–4	100	100	35 to 50	0. 2 to 2. 0	. 12	4. 5 to 5. 0	Moderate or low.
A–2, A–4	[2] 95 to 100	[3] 95 to 100	20 to 45	2. 0 to 6. 3	. 12	5. 1 to 5. 5	Low.
A–4	100	100	35 to 50	0. 63 to 2. 0	. 15	4. 5 to 5. 0	Moderate.
A–4, A–6	100	100	50 to 65	0. 63 to 2. 0	. 15	4. 5 to 5. 0	Moderate.
A–2	100	100	10 to 30	2. 0 to 6. 3	. 08	5. 1 to 5. 5	Low.
A–2, A–4	100	100	25 to 45	2. 0 to 6. 3	. 11	5. 1 to 5. 5	Low.
A–4, A–6	100	100	35 to 55	0. 63 to 2. 0	. 13	5. 1 to 5. 5	Low.
A–2	100	100	15 to 30	2. 0 to 6. 3	. 08	4. 5 to 5. 0	Low.
A–2, A–4	100	100	25 to 45	0. 63 to 2. 0	. 12	4. 5 to 5. 0	Low.
A–2	100	100	10 to 30	2. 0 to 6. 3	. 08	5. 1 to 5. 5	Low.
A–2, A–4	100	100	25 to 45	2. 0 to 6. 3	. 11	4. 5 to 5. 0	Low.
A–4	100	100	35 to 55	0. 63 to 2. 0	. 13	4. 5 to 5. 0	Low.
A–2	100	100	15 to 30	2. 0 to 6. 3	. 08	4. 5 to 5. 0	Low.
A–2, A–4	100	100	25 to 45	0. 63 to 2. 0	. 14	4. 5 to 5. 0	Low.
A–2	100	100	10 to 30	2. 0 to 6. 3	. 08	5. 1 to 5. 5	Low.
A–2, A–4	100	100	25 to 45	2. 0 to 6. 3	. 11	4. 5 to 5. 0	Low.
A–4	100	100	35 to 55	0. 63 to 2. 0	. 12	4. 5 to 5. 0	Low.
A–2	[4] 85 to 90	[5] 75 to 85	10 to 30	2. 0 to 6. 3	. 09	5. 1 to 5. 5	Low.
A–6, A–7	[4] 70 to 80	[5] 75 to 85	35 to 80	0. 2 to 0. 63	. 15	<4. 5	High.
A–2	[4] 70 to 80	[5] 60 to 70	10 to 30	2. 0 to 6. 3	. 09	4. 5 to 5. 0	Low.
A–7	[4] 70 to 80	[5] 70 to 80	55 to 70	<0. 2	. 15	5. 1 to 5. 5	High.

TABLE 10.—*Estimated*

Soil series and map symbols	Depth from surface	Classification	
		USDA texture	Unified
	Inches		
Sawyer-Susquehanna (SUB2):			
Sawyer	0 to 5	Loamy sand	SM
	5 to 26	Sandy clay	CL, SC, CH
	26 to 42	Clay	CH, CL
Susquehanna	0 to 5	Loamy sand	SM
	5 to 60	Clay	MH, CH
Swamp (Swa)	(1)	(1)	(1)
Tifton (TuA, TuB, TuB2, TuC2)	0 to 7	Sandy loam	SM
	7 to 13	Sandy clay loam	SC
	13 to 64	Sandy clay loam or sandy clay	SC, CL
Wagram (WeA, WeB)	0 to 24	Loamy sand	SM
	24 to 28	Sandy loam	SM, SC
	28 to 62	Sandy clay loam	SC

[1] Variable. [2] Iron pebbles retained on No. 4 sieve. [3] Iron pebbles retained on No. 10 sieve.

Reaction refers to the degree of acidity or alkalinity of a soil.

Shrink-swell potential is an indication of the volume change to be expected with change in moisture content. It is estimated primarily on the basis of the amount and type of clay in the soil. In general, soils classified as CH and A–7 are high in shrink-swell potential; sands and those soil materials having small amounts of nonplastic or slightly plastic fines are low; and silty clays and sandy clays that are nonplastic or slightly plastic are moderate.

Engineering Interpretations

Table 11 lists, for each soil series, suitability ratings for specific purposes and soil features that significantly affect highway construction or soil and water conservation engineering. These features generally are apparent only after field investigation.

The ratings in the column headed "Topsoil" are based on stability of the soil on the banks and shoulders of the road. Normally only material from the surface layer is used for topsoil, but other layers may also be suitable. Suitability depends mostly on texture. Loamy sand and sandy loam are the most desirable.

In rating soils as a source of material for road fill, the features generally considered are plasticity, water content, compaction characteristics, and erodibility. Neither highly plastic clay nor loose sand is suitable for road fill.

Highway location is affected by a seasonal high water table, flooding, seepage, plasticity, erodibility, instabil-

TABLE 11.—*Engineering*

Soil series and map symbols	Suitability as source of—		Soil features adversely affecting—
	Topsoil	Road fill	Highway location
Albany (AdA)	Poor	Fair	Unstable slopes; water table within 15 to 30 inches of the surface for 1 or 2 months each year.
Alluvial land, wet (Avp)	Poor	Poor	Flooding; high water table
Americus (ArB)	Poor	Good	None
Bladen (BiA)	Poor	Poor	Flooding; high water table; plastic, clayey subsoil.

properties of the soils—Continued

Classification—Continued	Percentage passing sieve—			Permeability	Available water capacity	Reaction	Shrink-swell potential
AASHO	No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 200 (0.074 mm.)				
				Inches per hour	*Inches per inch of soil*	*pH*	
A-2	100	100	10 to 30	2.0 to 6.3	0.09	4.5 to 5.0	Low.
A-6, A-7	100	100	45 to 70	0.2 to 0.63	.15	4.5 to 5.0	Moderate or high.
A-7	100	100	55 to 70	<0.2	.15	4.5 to 5.0	High.
A-2	100	100	10 to 30	2.0 to 6.3	.09	4.5 to 5.0	Low.
A-7	100	100	55 to 70	<0.2	.15	4.5 to 5.0	Very high.
[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1].
A-2	[2] 80 to 95	[3] 95 to 100	20 to 35	2.0 to 6.3	.12	5.1 to 5.5	Low.
A-4	[2] 85 to 95	[3] 95 to 100	35 to 50	0.63 to 2.0	.13	4.5 to 5.0	Moderate.
A-4, A-6	[2] 85 to 95	[3] 95 to 100	40 to 65	0.2 to 1.0	.12	4.5 to 5.0	Moderate.
A-2	100	100	15 to 30	2.0 to 6.3	.08	5.1 to 5.5	Low.
A-2, A-4	100	100	20 to 40	2.0 to 6.3	.10	4.5 to 5.0	Low.
A-2, A-4	100	100	25 to 45	0.63 to 2.0	.13	4.5 to 5.0	Low.

[4] Rock fragments retained on No. 4 sieve. [5] Rock fragments retained on No. 10 sieve.

ity, and rock fragments. Flooding and a seasonal high high water table are the most common adverse features in Dougherty County.

In selecting the reservoir area for a farm pond, the subsoil features are important, particularly such features as permeability and seepage. An on-site investigation of underground drainage should be made before a farm pond is constructed.

In selecting the soil material for the embankments of a farm pond, some of the features to be considered are strength and stability, compaction characteristics, and permeability. If core walls are used, stability is important. The core should be constructed out of soil material that has moderate to slow permeability and good compaction characteristics. Permeability is not important in filling the side slopes. Soil material that has a high shrink-swell potential is not suitable for use in either the core or the side slopes.

Agricultural drainage is affected mainly by lack of suitable outlets; other features significant in drainage are a seasonal high water table, slow permeability, and flooding.

Features that affect sprinkler irrigation are low available water capacity, slow infiltration, and moderately slow or slow permeability. Because of the kinds of crops grown, the practice of sprinkler irrigation is not widespread in this county.

Some of the soil features that have to be considered in constructing terraces and diversions are thickness, erodibility, rate of infiltration, and rate of permeability. Slow infiltration and slow permeability are the most common adverse features in this county.

interpretations

Soil features adversely affecting—Continued				
Farm ponds		Agricultural drainage	Sprinkler irrigation	Terraces and diversions
Reservoir area	Embankments			
Rapid permeability and seepage.	Rapid permeability; low strength and stability.	Seasonal high water table; scarcity of suitable outlets.	Low available water capacity.	Not needed.
Variable	Low strength and stability.	Flooding; high water table.	Not commonly used for cultivated crops.	Not needed.
Moderately rapid permeability and seepage.	Moderately rapid permeability; low strength and stability.	Not needed	Low available water capacity.	Not needed; rapid infiltration.
Flooding; variable substrata.	High shrink-swell potential; cracks when dry.	Flooding; very slow permeability; scarcity of outlets.	Not needed	Not needed.

TABLE 11.—*Engineering*

Soil series and map symbols	Suitability as source of—		Soil features adversely affecting—
	Topsoil	Road fill	Highway location
Carnegie (CoB2, CoC2)	Fair	Fair	None
Cuthbert–Orangeburg (COC2, COE):			
Cuthbert	Poor	Poor	Fair stability; some seepage spots
Orangeburg	Fair	Good	None. Moderately high strength and stability.
Dunbar, Izagora, and Bladen (Dib):			
Dunbar	Fair	Fair	Seasonal high water table; plastic clayey subsoil; occasional flooding in some areas.
Izagora	Fair	Fair	Seasonal high water table; occasional flooding in some areas.
Bladen	Poor	Poor	Flooding; high water table; plastic clayey subsoil.
Dunbar–Izagora-Bladen (Dob):			
Dunbar	Fair	Fair	Very frequent flooding; plastic, clayey subsoil.
Izagora	Fair	Fair	Very frequent flooding
Bladen	Poor	Poor	Very frequent flooding; plastic, clayey subsoil.
Dune land (Dsl)	Poor	Poor	Very low strength and stability
Eustis (EqB, EqC)	Fair	Fair or good	None
Flint (FrA, FrB)	Poor	Poor	Seasonal high water table; slow permeability; plastic, clayey subsoil.
Goldsboro (GmA)	Good	Good	Seasonal high water table
Grady (Gcl, Grd)	Poor or fair	Poor	Flooding; high water table; plastic, clayey subsoil.
Greenville (GoA, GoB, GoB2, GoC2, GqB3, GqC3)	Fair	Fair	None
Irvington (IgA)	Fair	Fair	Seasonal high water table

interpretations—Continued

Soil features adversely affecting—Continued				
Farm ponds		Agricultural drainage	Sprinkler irrigation	Terraces and diversions
Reservoir area	Embankments			
Moderate permeability; slow seepage.	None	Not needed	None	None.
Sand lenses; some seepage spots.	Fair strength and stability.	Not needed	Not commonly cultivated.	Slow infiltration and permeability.
Moderate permeability; slow to moderate seepage.	None. Moderate permeability; moderately high strength and stability.	Not needed	None	None.
Variable substrata; occasional flooding in some areas.	Moderate strength and stability; high shrink-swell potential.	Slow permeability; seasonal high water table; scarcity of outlets.	Slow infiltration and slow permeability.	Not needed; nearly level.
Variable substrata; occasional flooding in some areas.	Moderate strength and stability.	Moderate permeability; seasonal high water table; scarcity of outlets.	None	Not needed; nearly level.
Flooding; variable substrata.	High shrink-swell potential; cracks when dry.	Flooding; very slow permeability; scarcity of outlets.	Not needed	Not commonly cultivated.
Variable substrata; very frequent flooding.	Moderate strength and stability; high shrink-swell potential.	Very frequent flooding; slow permeability.	Very frequent flooding; not commonly cultivated.	Not needed.
Variable substrata; very frequent flooding.	Moderate strength and stability.	Very frequent flooding; moderate permeability.	Very frequent flooding; not commonly cultivated.	Not needed.
Variable substrata; very frequent flooding.	High shrink-swell potential; cracks when dry.	Very frequent flooding; very slow permeability.	Very frequent flooding; not commonly cultivated.	Not needed.
Very rapid permeability and seepage.	Very low strength and stability.	Not needed	Not used for cultivated crops; low available water capacity.	Not needed; rapid infiltration.
Moderately rapid permeability and seepage.	Moderately rapid permeability; low strength and stability.	Not needed	Low available water capacity.	Not needed; rapid infiltration.
Variable substrata	Moderate strength and stability; moderate shrink-swell potential.	Slow permeability; scarcity of outlets.	Slow infiltration and permeability.	Not needed; nearly level.
Moderate permeability, slow to moderate seepage.	None	Seasonal high water table; scarcity of outlets.	None	Not needed; nearly level.
Variable substrata	High shrink-swell potential.	Slow permeability; scarcity of outlets.	Slow infiltration and permeability.	Not needed; wet, nearly level.
Moderate permeability; moderate to slow seepage.	None	Not needed	None	None.
Moderate permeability; moderate to slow seepage.	None	Seasonal high water table; scarcity of outlets.	None	Not needed; nearly level.

TABLE 11.—*Engineering*

Soil series and map symbols	Suitability as source of—		Soil features adversely affecting—
	Topsoil	Road fill	Highway location
Izagora-Dunbar (Iza):			
Izagora	Fair	Fair	Seasonal high water table; occasional flooding in some areas.
Dunbar	Fair or poor	Fair	Seasonal high water table; plastic, clayey subsoil ;occasional flooding in some areas.
Lakeland (LpB)	Poor	Fair	None
Local alluvial land (Lcm)	Fair or poor	Poor	High water table; flooding
Lucy (LMA, LMB, LMC)	Fair	Fair or good	None
Lynchburg (LtA)	Fair or good	Fair or good	Seasonal high water table
Marlboro (MzB)	Fair	Fair	None
Norfolk (NhA, NhB)	Fair	Good	None
Ocilla (OhA)	Fair	Good	Unstable slopes; water table within 15 to 30 inches of the surface for 1 or 2 months each year.
Orangeburg (OeA, OeB, OeB2, OeC2)	Fair	Good	None
Pelham (PlA)	Fair	Fair	Seasonal high water table; flooding; moderate strength and stability.
Red Bay (RgA, RgB2, RgC2)	Fair	Good	None
Sawyer-Susquehanna (SSB, SSC2):			
Sawyer	Poor	Poor or fair	High shrink-swell potential in substrata; rock fragments; moderate strength and stability; plastic clayey subsoil.
Susquehanna	Poor	Poor	High shrink-swell potential; low strength and stability; rock fragments; plastic clayey subsoil.
Sawyer-Susquehanna (SUB2):			
Sawyer	Fair	Fair	High shrink-swell potential in substrata; moderate strength and stability; plastic clayey subsoil.
Susquehanna	Poor	Poor	High shrink-swell potential; low strength and stability; plastic clayey subsoil.

interpretations—Continued

Soil features adversely affecting—Continued				
Farm ponds		Agricultural drainage	Sprinkler irrigation	Terraces and diversions
Reservoir area	Embankments			
Variable substrata; occasional flooding in some areas.	None	Moderate permeability; seasonal high water table; scarcity of outlets.	None	Not needed; nearly level.
Variable substrata; occasional flooding in some areas.	Moderate strength and stability; high shrink-swell potential.	Slow permeability; seasonal high water table; scarcity of outlets.	Slow infiltration and permeability.	Not needed; nearly level.
Rapid permeability and seepage.	Low strength and stability; rapid permeability.	Not needed	Low available water capacity.	Not needed; rapid infiltration.
Variable substrata	Low strength and stability.	Scarcity of suitable outlets.	None	Not needed; nearly level.
Moderate permeability and seepage.	Moderate to low strength and stability.	Not needed	None	Moderate to low strength and stability.
Moderate permeability; slow to moderate seepage.	None	Seasonal high water table; scarcity of outlets.	None	Not needed; nearly level.
Moderate permeability; moderate to slow seepage.	None	Not needed	None	None.
Moderate permeability; moderate to slow seepage.	None	Not needed	None	None.
Rapid permeability and seepage.	Rapid permeability; low strength and stability.	Seasonal high water table; scarcity of suitable outlets.	Low available water capacity.	Not needed.
Moderate permeability; moderate to slow seepage.	None	Not needed	None	None.
Moderate permeability; moderate to slow seepage.	Moderate strength and stability.	Seasonal high water table; scarcity of suitable outlets.	Not commonly cultivated.	Not needed; nearly level.
Moderate permeability and seepage.	None	Not needed	None	None.
None	High shrink-swell potential in substrata; rock fragments; moderate strength and stability.	Not needed	Moderately slow permeability and infiltration.	Rock fragments.
None	High shrink-swell potential; rock fragments; plastic clayey subsoil; low strength and stability.	Not needed	Very slow permeability	Very slow permeability; rock fragments.
None	High shrink-swell potential; moderate strength and stability.	Not needed	Moderately slow permeability.	None.
None	High shrink-swell potential; plastic clayey subsoil; low strength and stability.	Not needed	Very slow permeability	Very slow permeability.

TABLE 11.—*Engineering*

Soil series and map symbols	Suitability as source of—		Soil features adversely affecting—
	Topsoil	Road fill	Highway location
Swamp (Swa)	Poor	Poor	Very frequent flooding for long periods
Tifton (TuA, TuB, TuB2, TuC2)	Good	Fair	None
Wagram (WeA, WeB)	Fair	Fair or good	None

Soil Interpretations for Nonfarm Uses

Table 12 shows the degrees and kinds of limitations of each soil in Dougherty County for residences with public or community sewage systems, for septic tank filter fields, for campsites and intensive play areas, for picnic grounds, and for structures for light industry.

Although the detailed soil map and table 12 are guides for evaluating most of the soils, a detailed investigation at the site of the proposed construction is needed because as much as 15 percent of an area designated on the map as a specific soil may consist of spots of other soils too small to be shown on the published map.

The column headed "Residences with public or community sewage systems" refers to dwellings that are not more than three stories high. The degree of limitation depends on depth to water table, flood hazard, high shrink-swell potential, and slope.

The degree of limitation for filter fields depends on depth to water table, flood hazard, shrink-swell potential, slope, and percolation rate.

The heading "Campsites and intensive play areas" refers to areas suitable for outdoor living in tents for a period of at least 1 week and to areas suitable for playgrounds where baseball, basketball, tennis, and other organized games can be played. The degree of limitation depends on trafficability, depth to water table, flood hazard, slope, drainage, texture and consistence, coarse fragments on the surface, and outcrops of hard rock.

"Picnic grounds" refers to recreational areas suitable for outdoor meals. The degree of limitation depends on trafficability, erodibility, depth to water table, flood hazard, and slope.

"Structures for light industry" are buildings that are no more than three stories high. They are suitable for stores, offices, and small industries, if public or community facilities are available for sewage disposal. The degree of limitation depends on slope, high water table, flood hazard, shrink-swell potential, and corrosion potential.

Formation, Morphology, and Classification of the Soils

This section has two main parts. The first part describes the factors of soil formation and their effect on the soils in Dougherty County. The second part describes the placement of the soil series in the higher categories of soil classification.

Formation of the Soils

The principal environmental factors in soil formation are parent material, plants and animals, climate, relief, and time. The nature of the soil at any point on the earth's surface depends upon the combination of these factors. The relative importance of each factor differs from place to place. In a few places one factor may dominate in the formation of the soils and determine most of the soil properties. For example, soils that formed in pure quartz sand commonly have faint horizons, because quartz is highly resistant to weathering. Even in quartz sand, however, a distinct profile can form under certain types of vegetation if the topography is low and flat and the water table is high.

Parent material

Parent material largely determines the chemical and mineralogical composition of soils. The parent material of most of the soils in Dougherty County was unconsolidated, fragmentary, water-deposited material that ranged from coarse sand to fine clay in texture.

The geologic formations that underlie the soils of Dougherty County are the Flint River formation, of Oligocene age, in the eastern part of the county; Ocala limestone, of Eocene age, in the western part of the county; and recent alluvium and undifferentiated terrace deposits along the Flint River (*5*). The most extensive of the soils derived from the Flint River formation are the Orangeburg, Tifton, and Carnegie soils; from the Ocala limestone formation, the Greenville, Orangeburg, Red Bay, and Grady soils; and from alluvium, the Dunbar, Izagora, Flint, and Bladen soils.

interpretations—Continued

Soil features adversely affecting—Continued				
Farm ponds		Agricultural drainage	Sprinkler irrigation	Terraces and diversions
Reservoir area	Embankments			
Very frequent flooding for long periods.	Variable	Very frequent flooding for long periods.	Wet soil	Not needed; wet soil; very frequent flooding.
Moderate permeability; moderate to slow seepage.	None	Not needed	None	None.
Moderate permeability and seepage.	Moderate to low strength and stability.	Not needed	None	Moderate to low strength and stability.

TABLE 12.—*Degrees of limitation for selected nonfarm uses*

Soil series and map symbol	Residences with public or community sewage systems	Filter fields for septic-tank systems	Recreational facilities [1]		Structures for light industry
			Campsites and intensive play areas	Picnic grounds	
Albany (AdA)	Moderate; seasonal high water table; low available water capacity.	Severe; water table below a depth of 60 inches for less than 9 months of the year.	Moderate; fair trafficability.	Moderate; fair trafficability.	Moderate; seasonal high water table.
Alluvial land (Avp)	Severe; seasonal high water table; flooding.	Severe; seasonal high water table; flooding.	Severe; seasonal high water table; flooding.	Severe; seasonal high water table; flooding.	Severe; seasonal high water table; flooding.
Americus (ArB)	Slight; low available water capacity.	Slight; may contaminate nearby water supply.	Slight; low available water capacity.	Slight	Slight; low available water capacity.
Bladen (BiA)	Severe; seasonal high water table; flooding.	Severe; seasonal high water table; flooding.	Severe; seasonal high water table; flooding.	Severe; seasonal high water table; flooding.	Severe; seasonal high water table; flooding.
Carnegie (CoB2)	Slight	Severe; percolation slower than 75 minutes per inch.	Slight; numerous pebbles on surface.	Slight	Moderate; moderate shrink-swell potential.
Carnegie (CoC2)	Slight	Severe; percolation slower than 75 minutes per inch.	Moderate; 5 to 8 percent slopes.	Slight	Moderate; 5 to 8 percent slopes; moderate shrink-swell potential.
Dunbar, Izagora, and Bladen (Dib, Dob):					
Dunbar	Moderate or severe; seasonal high water table; flooding in some areas.	Severe; percolation slower than 75 minutes per inch; seasonal high water table; flooding in some areas.	Moderate; fair trafficability.	Moderate; fair trafficability.	Moderate or severe; seasonal high water table; moderate shrink-swell potential; flooding in some areas.
Izagora	Moderate or severe; seasonal high water table; flooding in some areas.	Severe; percolation slower than 75 minutes per inch; seasonal high water table; flooding in some areas.	Moderate; fair trafficability.	Moderate; fair trafficability.	Moderate or severe; seasonal high water table; moderate shrink-swell potential; flooding in some areas.

See footnote at end of table.

TABLE 12.—*Degrees of limitation for selected nonfarm uses*—Continued

Soil series and map symbol	Residences with public or community sewage systems	Filter fields for septic-tank systems	Recreational facilities [1]		Structures for light industry
			Campsites and intensive play areas	Picnic grounds	
Bladen	Severe; flooding; seasonal high water table; high shrink-swell potential.	Severe; percolation slower than 75 minutes per inch; flooding; seasonal high water table.	Severe; flooding; seasonal high water table.	Severe; flooding; seasonal high water table.	Severe; seasonal high water table; high shrink-swell potential; flooding.
Cuthbert-Orangeburg (COC2):					
Cuthbert	Moderate; high shrink-swell potential.	Severe; percolation slower than 75 minutes per inch.	Moderate; 5 to 8 percent slopes; fair trafficability.	Moderate; fair trafficability.	Moderate; 5 to 8 percent slopes; high shrink-swell potential.
Orangeburg	Slight	Slight	Moderate: 5 to 8 percent slopes.	Slight	Moderate; 5 to 8 percent slopes.
Cuthbert-Orangeburg (COE):					
Cuthbert	Moderate; 12 to 17 percent slopes; high shrink-swell potential.	Severe; percolation slower than 75 minutes per inch.	Severe; 12 to 17 percent slopes.	Moderate; 12 to 17 percent slopes; fair trafficability.	Severe; 12 to 17 percent slopes; high shrink-swell potential.
Orangeburg	Moderate; 12 to 17 percent slopes.	Moderate; 12 to 17 percent slopes.	Severe; 12 to 17 percent slopes.	Moderate; 12 to 17 percent slopes.	Severe; 12 to 17 percent slopes.
Dune land (Dsl)	Severe; beds of loose sand.	Severe; beds of loose sand.	Severe; beds of loose sand.	Severe; beds of loose sand.	Severe; beds of loose sand.
Eustis (EqB)	Slight; low available water capacity.	Slight; may contaminate nearby water supply.	Slight; low available water capacity.	Slight	Slight; low available water capacity.
Eustis (EqC)	Slight; low available water capacity.	Slight; may contaminate nearby water supply.	Moderate; 5 to 8 percent slopes.	Slight	Moderate; 5 to 8 percent slopes.
Flint (FrA, FrB)	Severe; seasonal high water table; occasional flooding in some areas; high shrink-swell potential.	Severe; percolation slower than 75 minutes per inch.	Moderate; fair trafficability.	Moderate; fair trafficability.	Severe; high shrink-swell potential; moderate corrosion potential; occasional flooding in some areas.
Goldsboro (GmA)	Slight	Moderate; water table below a depth of 60 inches less than 11 months per year; percolation 45 to 75 minutes per inch.	Slight	Slight	Moderate; seasonal high water table; moderate corrosion potential
Grady (Gcl, Grd)	Severe; seasonal high water table; flooding.	Severe; seasonal high water table; flooding; percolation slower than 75 minutes per inch.	Severe; seasonal high water table; flooding.	Severe; seasonal high water table; flooding.	Severe; seasonal high water table; flooding.
Greenville (GoA, GoB, GoB2).	Slight	Slight	Slight	Slight	Moderate; moderate shrink-swell potential.
Greenville (GoC2)	Slight	Slight	Moderate; 5 to 8 percent slopes.	Slight	Moderate; 5 to 8 percent slopes; moderate shrink-swell potential.
Greenville (GqB3)	Slight	Slight	Moderate; fair trafficability.	Moderate; fair trafficability.	Moderate; moderate shrink-swell potential.

See footnote at end of table.

TABLE 12.—*Degrees of limitation for selected nonfarm uses*—Continued

Soil series and map symbol	Residences with public or community sewage systems	Filter fields for septic-tank systems	Recreational facilities [1]		Structures for light industry
			Campsites and intensive play areas	Picnic grounds	
Greenville (GqC3)	Slight	Slight	Moderate; fair trafficability; 5 to 8 percent slopes.	Moderate; fair trafficability.	Moderate; moderate shrink-swell potential; 5 to 8 percent slopes.
Irvington (IgA)	Slight; seasonal perched water table.	Severe; percolation slower than 75 minutes per inch.	Moderate; fair trafficability; numerous small iron concretions on surface.	Moderate; fair trafficability.	Moderate; moderate shrink-swell potential.
Izagora-Dunbar (Iza):					
Izagora	Moderate or severe; seasonal high water table; flooding in some areas.	Severe; percolation slower than 75 minutes per inch; seasonal high water table; flooding in some areas.	Moderate; fair trafficability.	Moderate; fair trafficability.	Moderate or severe; seasonal high water table; moderate shrink-swell potential; flooding in some areas.
Dunbar	Moderate or severe; seasonal high water table; flooding in some areas.	Severe; percolation slower than 75 minutes per inch; seasonal high water table; flooding in some areas.	Moderate; fair trafficability.	Moderate; fair trafficability.	Moderate or severe; seasonal high water table; moderate shrink-swell potential; flooding in some areas.
Lakeland (LpB)	Moderate; low available water capacity; sandy; low productivity of plants.	Moderate; poor filtering action; may contaminate nearby water supply.	Moderate; sandy; fair trafficability.	Moderate; sandy; fair trafficability.	Moderate; sandy; low available water capacity.
Local alluvial land (Lcm).	Severe; flooding more than once each year for periods of 7 days to 1 month.	Severe; flooding more than once each year for periods of 7 days to 1 month.	Severe; flooding more than once each year for periods of 7 days to 1 month.	Severe; flooding more than once each year for periods of 7 days to 1 month.	Severe; flooding more than once each year for periods of 7 days to 1 month.
Lucy (LMA, LMB)	Slight; sandy; low available water capacity.	Slight	Slight; sandy; low available water capacity.	Slight; sandy	Slight; sandy.
Lucy (LMC)	Slight; sandy; low available water capacity.	Slight	Moderate; 5 to 8 percent slopes; low available moisture capacity.	Slight; sandy	Moderate; 5 to 8 percent slopes.
Lynchburg (LtA)	Moderate; seasonal high water table.	Severe; seasonal high water table; percolation slower than 75 minutes per inch.	Moderate; fair trafficability.	Moderate; fair trafficability.	Moderate; seasonal high water table; moderate or low shrink-swell potential.
Marlboro (MzB)	Slight	Moderate; percolation 45 to 75 minutes per inch.	Slight	Slight	Moderate; moderate shrink-swell potential.
Norfolk (NhA, NhB).	Slight	Slight	Slight	Slight	Slight.
Ocilla (OhA)	Slight or moderate; seasonal high water table.	Severe; water table below a depth of 60 inches for less than 9 months each year.	Moderate; fair trafficability.	Moderate; fair trafficability.	Slight or moderate; seasonal high water table.
Orangeburg (OeA, OeB, OeB2).	Slight	Slight	Slight	Slight	Slight.

See footnote at end of table.

TABLE 12.—*Degrees of limitation for selected nonfarm uses*—Continued

Soil series and map symbol	Residences with public or community sewage systems	Filter fields for septic-tank systems	Recreational facilities [1]		Structures for light industry
			Campsites and intensive play areas	Picnic grounds	
Orangeburg (OeC2)	Slight	Slight	Moderate; 5 to 8 percent slopes.	Slight	Moderate; 5 to 8 percent slopes.
Pelham (PlA)	Severe; high water table; flooding.	Severe; high water table; flooding.	Severe; high water table; flooding.	Severe; high water table; flooding.	Severe; high water table; flooding.
Red Bay (RgA, RgB2).	Slight	Slight	Slight	Slight	Slight.
Red Bay (RgC2)	Slight	Slight	Moderate; 5 to 8 percent slopes.	Slight	Moderate; 5 to 8 percent slopes.
Sawyer-Susquehanna (SSB, SSC2, SUB2):					
Sawyer	Severe; high shrink-swell potential.	Severe; percolation slower than 75 minutes per inch.	Moderate; fair trafficability; 5 to 8 percent slopes in some areas.	Moderate; fair trafficability.	Severe; high shrink-swell potential.
Susquehanna	Severe; high shrink-swell potential.	Severe; percolation slower than 75 minutes per inch.	Moderate; fair trafficability; 5 to 8 percent slopes in some areas.	Moderate; fair trafficability.	Severe; high shrink-swell potential.
Swamp (Swa)	Severe; water at or near the surface most of the time.	Severe; water at or near the surface most of the time.	Severe; water at or near the surface most of the time.	Severe; water at or near the surface most of the time.	Severe; water at or near the surface most of the time.
Tifton (TuA, TuB, TuB2).	Slight	Moderate; percolation 45 to 75 minutes per inch in lower part of profile.	Slight; numerous pebbles on surface.	Slight	Moderate; moderate shrink-swell potential.
Tifton (TuC2)	Slight	Moderate; percolation 45 to 75 minutes per inch in lower part of profile.	Moderate; 5 to 8 percent slopes; numerous pebbles on surface.	Slight	Moderate; 5 to 8 percent slopes; moderate shrink-swell potential.
Wagram (WeA, WeB).	Slight; sandy; low available water capacity.	Slight	Slight; sandy; low available water capacity.	Slight; sandy	Slight; sandy.

[1] Trafficability refers to the movement by people on foot, on horseback, or in small vehicles, such as golf carts.

Plants and animals

The kinds and numbers of plants and animals that live in and on the soil are governed largely by the climate and to a lesser and varying degree by each of the other environmental factors—parent material, climate, relief, and time.

In each cubic foot of most soils in Dougherty County, there are millions of micro-organisms, numerous small plants, and many insects and other small animals. The micro-organisms, including bacteria and fungi, help to weather rock and to decompose organic material. They are most numerous in the uppermost few inches of soil. Earthworms and other small invertebrates ingest soil material, alter its chemical properties, and mix it with other soil material.

The larger plants furnish organic matter and transfer mineral elements from the subsoil to the surface layer. After these elements have been taken in by the plant roots in the subsoil, they are carried upward and assimilated by the plant tissues. The minerals and much organic matter are then returned to the upper part of the soil as fallen fruit, leaves, twigs, stems, dead roots, and whole plants decay. Decaying leaves partly replace plant nutrients that are washed out of the surface layer by percolating water. The uprooting of trees brings soil material from the subsoil to the surface layer.

Many of the trees that were important in soil formation in this county are of kinds that shed their leaves each year, and many had roots that penetrated deep into the soil. Mixed forests of pine and hardwoods covered the uplands, and gum and cypress the flood plains. The undergrowth consisted chiefly of bay, maple, and swamp holly.

Man has influenced the formation of soils by clearing the forests, cultivating the soils, and introducing new

kinds of plants. Except for accelerated erosion and loss of organic matter, few results of these activities are yet apparent. Some may not become apparent for centuries, although the complex of living organisms that affect soil formation has been drastically changed as a result of man's activities.

Climate

The climate in Dougherty County is warm and humid. The summers are long and hot, and the winters are short and mild. In this kind of climate, the decay of minerals, the dissolution of bases, and the translocation of clay proceed rapidly. Iron oxidizes in the soils that have good internal drainage, and organic matter decays rapidly. The rapidly permeable soils are highly leached. Many of the soils are moist or saturated much of the year.

Relief

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

Most of Dougherty County is nearly level or very gently sloping, but a small part is gently rolling. The elevation ranges from about 170 feet along the Flint River to about 300 feet in the southeastern part of the county. Three general types of landscapes are recognized: low flats, broad ridges broken with rounded depressions, and gently rolling hills.

The flats occur along streams. They have a high water table, and they are flooded each year. The soils are moderately well drained to very poorly drained, and they have a gray or mottled subsoil.

On the broad ridges, the water table is several feet below the surface, except in the rounded depressions. Where the water table is low, the soils are well drained and moderately well drained and are predominantly red to yellowish red in color. In the depressions, where the water table is high, the soils are moderately well drained to poorly drained and have a gray or mottled subsoil.

A small area in the eastern and southeastern part of the county is gently rolling and is dissected by small streams. The water table in this area is several feet below the surface. The soils are moderately well drained and well drained. They are yellowish brown to red in color, and in places the subsoil is mottled.

Time

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

Generally, older soils show a greater degree of horizon differentiation than younger ones. For example, the smoother uplands in the county have been in the process of soil formation for a long time and have well-differentiated horizons. But on the broad flats along the larger streams, the soil material has not been in place long enough for well-differentiated horizons to develop.

Classification of the Soils by Higher Categories

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

Two systems of classifying soils are used in the United States. The older of these systems was adopted in 1938 (*3*) and later revised and expanded (*9*). The other[7] has been in general use by the Soil Conservation Service since January 1965, though it is undergoing continual study. This current system consists of six categories. Beginning with the most inclusive, these categories are the order, the suborder, the great group, the subgroup, the family, and the series. The criteria for classification are soil properties that are measurable or observable, but the properties are selected so that soils of similar genesis are grouped together. Placement of some soil series in the current system of classification, particularly in families, may change as more precise information becomes available. Readers interested in the development of this system should search for the latest available literature (*7*).

Table 13 shows the classification of the soil series of Dougherty County according to the current system. New soil series must be established and concepts of some established series, especially older ones that have been used little in recent years, must be revised in the course of the soil survey program across the country. A proposed new series has tentative status until review of the series concept at state, regional, and national levels of responsibility for soil classification result in a judgment that the new series should be established. All of the soil series described in this publication except the Albany series have been established earlier. The Albany series had tentative status when the survey was sent to the printer.

The categories of the current system are defined briefly in the following paragraphs.

ORDER: In the order, soils are grouped according to properties that seem to result from the same processes acting to about the same degree on soil material. Ten soil orders are recognized in the current system: Entisols, Vertisols, Inceptisols, Aridisols, Mollisols, Spodosols; Alfisols, Ultisols, Oxisols, and Histosols. Entisols, Alfisols, and Ultisols are represented in Dougherty County.

Entisols are recent mineral soils that lack genetic horizons or have only the beginnings of such horizons.

Alfisols are mineral soils that have a clay-enriched B horizon that has a base saturation of more than 35 percent in some parts.

Ultisols are mineral soils that have a clay-enriched horizon and have a base saturation of less than 35 percent at a depth of 50 inches below the top of the clay-enriched horizon.

[7] UNITED STATES DEPARTMENT OF AGRICULTURE. SOIL CLASSIFICATION, A COMPREHENSIVE SYSTEM. 7TH APPROXIMATION. 1960. [Supplement issued in March 1967.]

TABLE 13.—*Soil series in Dougherty County classified into higher categories*

Series	Current classification		
	Family	Subgroup	Order
Albany	Loamy, siliceous, thermic	Aquic Grossarenic Paleudults	Ultisols.
Americus	Coarse loamy, siliceous, thermic	Humic Psammentic Paleudults	Ultisols.
Bladen	Clayey, mixed, thermic	Typic Ochraquults	Ultisols.
Carnegie	Fine loamy, siliceous, thermic	Plinthic Paleudults	Ultisols.
Cuthbert	Clayey, kaolinitic, thermic	Typic Hapludults	Ultisols.
Dunbar	Clayey, kaolinitic, thermic	Aquic Paleudults	Ultisols.
Eustis	Sandy, siliceous, thermic	Psammentic Paleudults	Ultisols.
Flint	Clayey, mixed, thermic	Aquic Hapludults	Ultisols.
Goldsboro	Fine loamy, siliceous, thermic	Aquic Paleudults	Ultisols.
Grady	Clayey, kaolinitic, thermic	Typic Ochraquults	Ultisols.
Greenville	Clayey, kaolinitic, thermic	Humic Paleudults	Ultisols.
Irvington	Fine loamy, siliceous, thermic	Plinthic Ochreptic Fragiudults	Ultisols.
Izagora	Fine loamy over clayey, mixed, thermic	Aquic Paleudults	Ultisols.
Lakeland	Siliceous, acid, thermic, coated	Typic Quartzipsamments	Entisols.
Lucy	Loamy, siliceous, thermic	Arenic Paleudults	Ultisols.
Lynchburg	Fine loamy, siliceous, thermic	Aeric Ochraquults	Ultisols.
Marlboro	Clayey, kaolinitic, thermic	Typic Paleudults	Ultisols.
Norfolk	Fine loamy, siliceous, thermic	Typic Paleudults	Ultisols.
Ocilla	Loamy, siliceous, thermic	Aquic Arenic Paleudults	Ultisols.
Orangeburg	Fine loamy, siliceous, thermic	Typic Paleudults	Ultisols.
Pelham	Loamy, siliceous, thermic	Arenic Ochraquults	Ultisols.
Red Bay	Fine loamy, siliceous, thermic	Humic Paleudults	Ultisols.
Sawyer	Fine silty over clayey, mixed, thermic	Aquic Paleudults	Ultisols.
Susquehanna	Fine, montmorillonitic, thermic	Vertic Paleudalfs	Alfisols.
Tifton	Fine loamy, siliceous, thermic	Plinthic Paleudults	Ultisols.
Wagram	Loamy, siliceous, thermic	Arenic Paleudults	Ultisols.

SUBORDER: Each order is subdivided into suborders, primarily on the basis of soil characteristics that seem to produce classes having the greatest genetic similarity. The suborders have a narrower climatic range than the order. The criteria for suborders reflect either the presence or absence of waterlogging or soil differences resulting from climate or vegetation.

GREAT GROUP: Each suborder is divided into great groups according to the presence or absence of genetic horizons and the arrangement of these horizons.

SUBGROUP: Each great group is divided into subgroups, one representing the central (typic) concept of the group and others, called intergrades, the soils which have mostly the properties of one great group but also have one or more properties of the soils of another great group, suborder, or order.

FAMILIES: Each subgroup is divided into families, primarily on the basis of properties important to plant growth. Some of the properties considered are texture, mineralogy, reaction, soil temperature, permeability, consistence, and thickness of horizons.

Additional Facts About the County

Dougherty County was established in 1853. According to the U.S. Census, the population in 1960 was 75,680 for the county and 55,890 for the city of Albany.

Since early settlement, Dougherty County has been mainly agricultural. Cotton, once the chief cash crop, is now grown on only about 1,400 acres. About 8 percent of the acreage is owned by a paper company and managed entirely for timber production. About 42 percent of the acreage is in large plantations that are used for general farming and managed for wildlife production. Livestock and livestock products, especially cattle and calves, are the leading sources of income in the county. The principal crops are corn, peanuts, oats, cotton, pecans, hay, and pasture grasses.

The major industries include the processing of food and the manufacturing of textiles, clothing, fertilizer, farm equipment, mobile homes, and golf clubs.

Buslines, airlines, several railroads, and many highways provide transportation.

Relief and Drainage

Most of Dougherty County has level or very gently sloping relief and prominently developed "sinks," or depressions, ranging from a few hundred to several hundred acres in size. Most of the depressions lack natural outlets and are drained mainly through underground channels. After heavy rains, they are covered with water for periods of a few weeks to several months. A small acreage, largely in the eastern and southeastern parts of the county, has gently rolling relief and less numerous sinks than most of the county. It has an elevation of about 300 feet at its highest point, which is about 100 feet higher than the level or very gently sloping areas.

The Flint River flows from north to south through the central part of the county and drains most of the county. It has a well-defined channel lined with steep bluffs 10 to 20 feet high. Within the county, this river is fed mostly through underground channels. All other streams in the county eventually flow into it, but most of

these do not reach the river within the county. The principal streams flowing into it within the county are Piney Woods Creek, Dry Creek, and Muckafoonee Creek. Cooleewahee Creek and Chickasawhatchee Creek and their tributaries drain the western part of the county. These streams flow sluggishly through wide swampy areas and, in many places, lack a well-defined channel.

Water Supply

Wells that penetrate into Ocala limestone furnish most of the water for domestic use, supply irrigation water in a few places, and provide water for a few industries. Most domestic wells in the county are 3 inches in diameter and 100 to 200 feet in depth (*12*). The Flint River, one of the largest streams in Georgia, supplies plenty of water for processing and disposing of industrial wastes. Its flow averaged 3,880 million gallons a day between 1937 and 1955 (*8*). Artesian wells supply water for the city of Albany.

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Glossary

Acidity, soil. See Reaction.

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

Available water capacity. The capacity of a soil to hold water in a form available to plants. Amount of moisture held in a soil between field capacity, or about one-third atmosphere of tension, and the wilting coefficient, or about 15 atmospheres of tension.

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. Grains, pellets, or nodules of various sizes, shapes, and colors, consisting of concentrations of compounds or of soil grains cemented together. The composition of some concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are examples of material commonly found in concretions.

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

Cemented.—Hard and brittle; little affected by moistening.

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

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

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

Loose.—Noncoherent; will not hold together in a mass.

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.

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

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

Drainage, soil. The rapidity and extent of the removal of water from the soil, in relation to additions, especially by runoff, by flow through the soil to underground spaces, or by a combination of both processes.

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

Fragipan. A loamy, brittle, subsurface horizon that is very low in organic matter and clay but is rich in silt or very fine sand. The layer is seemingly cemented when dry, has a hard or very hard consistence, 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.

Horizon, soil. A layer of soil, approximately parallel to the surface, that has distinct characteristics produced by soil-forming processes.

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,* ranging from 5 millimeters to 15 millimeters (about 0.2 to 0.6 inch) in diameter along the greatest dimension; and *coarse,* more than 15 millimeters (about 0.6 inch) in diameter along the greatest dimension.

Parent material (soil). The horizon of weathered rock or partly weathered soil material from which soil has formed; horizon C in the soil profile.

Permeability. The quality that enables a soil horizon to transmit water or air. Terms used to describe permeability are as follows: *very slow, slow, moderately slow, moderate, moderately rapid,* and *very rapid.*

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

Profile, soil. A vertical section of the soil through all its horizons and extending into the parent material.

Reaction, soil. The degree of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is precisely neutral in reaction because it is neither acid nor alkaline. An acid, or "sour," soil is one that gives an acid reaction; an alkaline soil is one that is alkaline in reaction. In words, the degrees of acidity or alkalinity are expressed thus:

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

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

Sand. As a soil separate, individual rock or mineral ranging from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz, but sand may be any mineral composition. As a textural class, soil that is 85 percent or more sand and not more than 10 percent clay.

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

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Soil. A natural, three-dimensional body on the earth's surface that supports plants and that has properties resulting from the integrated effect of climate and living matter acting upon parent material, as conditioned by relief over periods of time.

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

Solum. The upper part of a soil profile, above the parent material, in which the processes of soil formation are active. The solum in mature soil includes the A and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and other plant and animal life characteristic of the soil are largely confined to the solum.

Structure, soil. The arrangement of primary soil particles into compound particles or clusters that are separated from adjoining aggregates and have properties unlike those of an equal mass of unaggregated primary soil particles. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), and *granular*. *Structureless* soils are (1) *single grain* (each grain by itself, as in dune sand) or (2) *massive* (the particles adhering together without any regular cleavage, as in many claypans and hardpans).

Subsoil. Technically, the B horizon; roughly, the part of the profile below plow depth.

Substratum. Any layer beneath the solum, or true soil; the C horizon.

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 flood plains, and are seldom subject to overflow. Marine terraces were deposited by the sea and are generally wide.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

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

Understory. The part of a forest that is below the upper crown canopy. Contrasts with overstory.

Upland (geologic). Land consisting of material unworked by water in recent geologic time and lying, in general, at a higher elevation than the alluvial plain or stream terrace. Land above the lowlands along rivers.

Volumetric change. The volume change in a soil mass that occurs when the content of moisture is reduced from a specified moisture content to its content at the limit of shrinkage. This change in volume is expressed as a percentage of the soil mass when it is dry.

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