Series 1959, No. 5

Issued January 1961

SOIL SURVEY

Gadsden County Florida

Growth Through Agricultural Progress

UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
In cooperation with
UNIVERSITY OF FLORIDA AGRICULTURAL EXPERIMENT STATIONS

HOW TO USE THE SOIL SURVEY REPORT

THIS SOIL SURVEY of Gadsden County, Fla., is designed to serve several groups of readers. It will help farmers in planning the kind of management that will protect their soils and provide good yields; assist engineers in selecting sites for roads, buildings, ponds, and other structures; aid foresters in managing woodlands; and add to soil scientists' fund of knowledge.

In making this survey, soil scientists walked over the fields and woodlands. They dug holes and examined surface soils and subsoils; measured slopes with a hand level; noticed differences in growth of crops, weeds, and brush; and, in fact, recorded all things about the soils that they believed might affect their suitability for farming, engineering, and related uses. They plotted the boundaries of the soils on aerial photographs. Then, cartographers prepared the detailed soil map in the back of this report.

Locating soils

Use the index to map sheets to locate areas on the large map. The index is a small map of the county on which numbered rectangles have been drawn to show where each sheet of the large map is located. When the correct sheet of the large map has been located, it will be seen that boundaries of the soils are outlined and that there is a symbol for each kind of soil. All areas marked with the same symbol are the same kind of soil, wherever they appear on the map. The symbol will be inside the area if there is enough room; otherwise, it will be outside the area and a pointer will show where the symbol belongs.

Finding information

Few readers will be interested in all of the soil report, for it has special sections for different groups, as well as some sections of value to all. The section "General Nature of the Area" will be of interest mainly to those not familiar with the county.

Farmers and those who work with farmers will be interested in the sections "Soils of Gadsden County" and "Use and Management of Soils." Study of these sections will aid them in identifying soils on a farm, in learning ways the soils can be managed, and in judging what yields can be expected. The "Guide to Mapping Units, Capability Units, and Woodland Suitability Groups" at the back of the report will guide you to practically everything in this report that is written about each soil. In this guide the map symbols for the soils of the county are in alphabetic order. Listed for each soil are the page numbers of its description and of the discussion of its capability unit and woodland suitability group.

Foresters and others interested in woodlands can refer to the subsection "Woodland Use of Soils." In that subsection the soils of the county are placed in woodland suitability groups and the management of these groups is discussed.

Engineers will want to refer to the section "Engineering Interpretations." A table in that section gives characteristics of the soils that affect engineering.

Soil scientists and others concerned with the scientific aspects of soils will find information about how the soils were formed and how they were classified in the section "Formation and Classification of Soils."

Students, teachers, and other users will find information about soils and their management in various parts of the report, depending on their particular interest.

* * * * *

To provide information for good land use, this survey was made cooperatively by the United States Department of Agriculture and the Florida Agricultural Experiment Stations. The survey is a part of the technical assistance furnished by the Soil Conservation Service to the Gadsden Soil Conservation District. Fieldwork was completed in 1959. Except where otherwise stated, this report refers to conditions in the county at the time the survey was made.

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SOIL SURVEY OF GADSDEN COUNTY, FLORIDA

By B. P. THOMAS, in charge, H. H. WEEKS, and M. W. HAZEN, JR., Soil Conservation Service [1]

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

GADSDEN COUNTY is in the northwestern part of Florida. Quincy, the county seat, is on U.S. Highway No. 90, about midway between Pensacola and Jacksonville. Distances by air from Quincy to the principal cities in the State are shown in figure 1. The Ochlockonee River runs along the eastern boundary and the Apalachicola River along the western boundary.

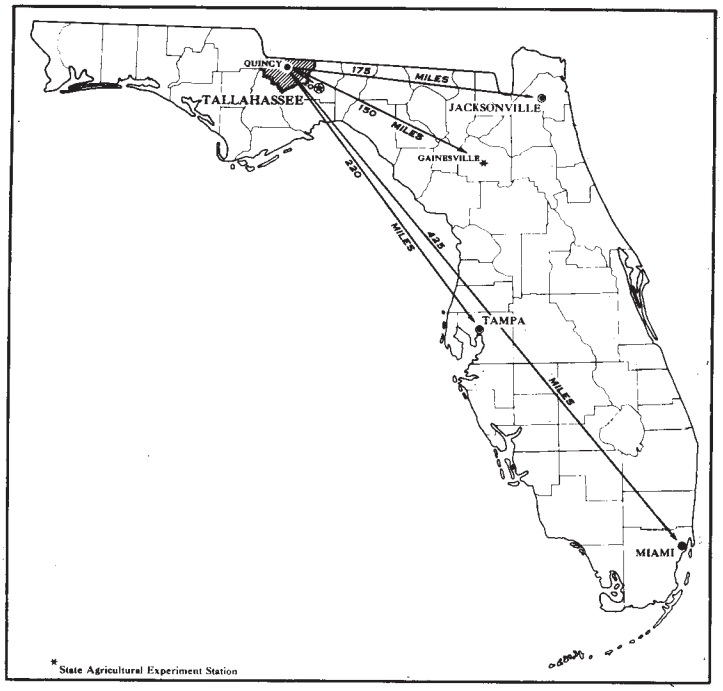

Figure 1.—Location of Gadsden County in Florida.

Lake Talquin is on the southeastern boundary. The county is about 32 miles long and 22 miles wide. It has a land area of 325,120 acres, or 508 square miles. A humid, temperate climate prevails, and rainfall is abundant and generally well distributed. The county is a general farming area and one of the foremost agricultural counties in northwestern Florida. The principal crops are corn, tobacco, small grains, cabbage, pole beans, sweetpotatoes, sugarcane, and peanuts. Shade tobacco is the main cash crop.

[1] Others participating in the field survey were R. M. CRAIG, E. M. DUFFEE, A. L. FURMAN, H. F. HUCKLE, W. T. JACOBS, JR., J. W. KEYES, and R. WILDERMUTH, Soil Conservation Service.

General Soil Map [2]

In mapping a county or other large tract, it is fairly easy to see many differences as one travels from place to place. Some of the differences are in shape, steepness, and length of slopes; in the course, depth, and speed of streams; in the width of the bordering valleys; in the kinds of wild plants; and in the kinds of agriculture. With these more obvious differences there are other less easily noticed differences in the patterns of soils. The soils differ along with the other parts of the environment.

By drawing lines around the different patterns of soils on a small map, one may obtain a map of the general soil areas, or, as they are sometimes called, soil associations. Such a map is useful to those who want to compare different parts of the county, or who want to locate large areas suitable for some particular kind of agriculture or other broad land use.

The general soil map at the back of this report shows in color the nine general soil areas in Gadsden County. On this map there is a descriptive legend, titled "Soil Associations", that tells the kinds of soils in each general soil area. These areas are described in the following pages.

Well to excessively drained, deep, undulating loamy sands to coarse sands on uplands: Lakeland-Eustis

This general soil area, or soil association, is on gently sloping ridges that broaden in a few places to fairly large, nearly level areas. It has a well-established stream pattern of creeks, branches, and draws with narrow, wet bottoms. Adjacent to most streams are short moderately steep to steep slopes. This soil area occupies about 29 percent of the county. Most of it is in the eastern and southern parts, but some is distributed throughout the county.

[2] This section was written by B. P. THOMAS, soil scientist, and DAVID P. POWELL, assistant State soil scientist, Soil Conservation Service.

Lakeland and Eustis soils dominate in this soil area. These soils have dark-gray to grayish-brown loamy sand or coarse sand surface layers and yellow to yellowish-red loamy sand to coarse sand subsoils. The surface layers are 4 to 6 inches thick, and the coarse-textured subsoils extend to a depth of 30 inches or more.

Large, fairly uniform areas of deep droughty sands and coarse sands dominate in the southern part of the county. Lakeland and Eustis soils make up about 85 percent of these large areas, and Rutlege, Plummer, and similar wet, swampy soils make up the rest.

Better soils occur in the central and northern parts of the county, where the soils are mostly finer sands and have finer textured substrata nearer the surface. Here about 70 percent of this general soil area is Lakeland and Eustis soils; 20 percent is Ruston, Norfolk, Orangeburg, and similar soils; and 10 percent is wet, swampy soils.

The areas dominated by deep coarse sands are poorly suited to cultivation and have not been farmed. Most of these areas remain in scrub oak and scattered pines. About 50 percent of the acreage in this general soil area is moderately well suited to most farm crops. About 35 percent is suited to occasional cropping or to improved pasture but needs intensive management. This acreage is mostly in woodland. The remaining 15 percent is too steep or too wet for farming and is used as woodland.

Well-drained, undulating, upland soils with loamy fine sand surface soils and sandy clay loam subsoils: Norfolk-Ruston-Orangeburg

This general soil area occurs mostly on upland ridges with gently sloping ridgetops that broaden in a few places to fairly large, nearly level areas. It has a well-established stream pattern of creeks, branches, and draws with narrow, wet bottoms. Adjacent to most streams are moderately steep to steep slopes. This general soil area makes up about 40 percent of the county and is in the central, northern, and northeastern parts.

Norfolk, Ruston, and Orangeburg soils occupy about 75 percent of this general soil area. These soils have dark-gray to grayish-brown loamy sand to fine sandy loam surface layers that in most places are about 4 to 13 inches thick. In some places these surface layers are as much as 30 inches thick. The subsoils range from fine sandy loam to sandy clay loam in texture and from red to yellow in color. Red Bay, Eustis, Lakeland, Faceville, Magnolia, and other upland soils occur in small widely distributed areas. These soils make up about 20 percent of this general soil area. Hannahatchee, Plummer, Rutlege, Rains, and Grady soils and wet alluvial land make up the remaining 5 percent.

The nearly level and gently sloping ridges are well suited to farming and are farmed extensively. They occupy about 55 percent of this area. About 30 percent of the area is on steeper slopes that are well suited to crops and pasture but need intensive management to prevent erosion. Much of this acreage is farmed. Approximately 10 percent is too steep and susceptible to erosion for cultivation, but this acreage is well suited to trees. The remaining 5 percent of this area is on wet bottom land. This bottom land has a heavy growth of swamp hardwoods, vines, and bushes and is used very little for agriculture.

Many of the larger, well-managed general farms in the county are in this general soil area. Much shade tobacco is grown on the more gently sloping areas. The soils respond well to good management. Much of the acreage that is suitable for cultivation is still woodland. This general soil area has a potential for future development.

Well-drained, undulating, upland soils with loamy sand surface soils and fine sandy clay loam to fine sandy clay subsoils: Magnolia-Faceville-Carnegie

This general soil area is mostly on gently sloping ridgetops that broaden in a few places to fairly large, nearly level areas. It has a well-established stream pattern of creeks, of branches, and of draws with narrow wet bottoms. Adjacent to most streams are moderately steep slopes. This general soil area occupies about 2 percent of the county and occurs in small areas in the central and eastern parts.

Magnolia, Faceville, and Carnegie soils make up about 85 percent of this general soil area. These soils have very dark gray to grayish-brown loamy sand to fine sandy loam surface layers less than 18 inches thick. Their subsoils range from fine sandy clay loam to fine sandy clay in texture and from brownish yellow to red in color. Tifton, Norfolk, Ruston, Orangeburg, Red Bay, and other upland soils are in small widely distributed areas. They make up about 10 percent of the acreage. Hannahatchee, Plummer, Rutlege, Rains, and Grady soils and wet alluvial land make up the remaining 5 percent.

The nearly level and gently sloping ridges are well suited to cultivation and are farmed extensively. They occupy about 50 percent of this general soil area. About 35 percent is on steeper slopes that are well suited to crops and pasture but need intensive management to prevent erosion. Much of this acreage is farmed. Approximately 12 percent is too steep and susceptible to erosion for cultivation, but this acreage is well suited to trees. About 3 percent of this general soil area consists of wet bottom land where the natural vegetation is mainly water-tolerant hardwoods, shrubs, and vines. This wet bottom land is used very little for agriculture.

Some of the better general farms in the county are in this general soil area. The area is particularly well suited to shade tobacco, which is grown extensively. The soils respond well to good management. Most of the acreage that is suitable for cultivation has been cleared and is used for that purpose.

Well and moderately well drained, moderately steep, upland soils with loamy sand to sandy loam surface soils and sandy clay or clay subsoils: Susquehanna-Cuthbert-Shubuta

This general soil area has been highly dissected by streams, creeks, and branches. It consists of ridges and stream bottoms. The ridgetops are narrow, and the stream bottoms are narrow and poorly drained. Most of the acreage has moderately steep to steep slopes. This area occupies about 12 percent of the county. Most of it is west of Mt. Pleasant, but there are small areas in the central part of the county.

Susquehanna, Cuthbert, and Shubuta soils dominate in this area in the western part of the county. These soils

occur in about equal amounts. The Sawyer and Susquehanna soils dominate in the small acreage in the central part of the county. Boswell soils occur in many small areas, mainly on steep slopes in the western part.

The major soils in this general soil area have dark-gray to grayish-brown loamy fine sand to fine sandy loam surface layers. Their subsoils range from sandy clay loam to clay in texture and from yellowish brown to red in color. In small scattered areas are Faceville, Norfolk, Ruston, Boswell, Lakeland, Binnsville, and Eustis soils. The underlying materials of these soils are not at a uniform depth and do not have a uniform texture. The better drained soils make up about 95 percent of this general soil area. Poorly drained Rutlege, Plummer, and Rains soils and wet alluvial land make up the remaining 5 percent.

The soils of this area are highly susceptible to erosion. On slopes mild enough for safe cultivation, these soils are moderately well suited to shallow-rooted crops. Only about 20 percent of the acreage is suited to row crops. An additional 10 percent can be cultivated occasionally if the control of erosion is intense. Areas suitable for cultivation are normally small and are not well suited for field layout. About 65 percent of the acreage is too steep and susceptible to erosion for farming. This acreage has not been farmed. Most of it remains as woodland and has a good stand of longleaf, slash, and loblolly pines, various hardwoods, and low shrubs. About 5 percent of this area is on wet bottom land that has a natural cover of cypress, bay, gum, occasional pines, and small native shrubs. This wet bottom land is used very little for agriculture.

Little of this general soil area has been used for farming. A few small areas, however, have been cleared for pasture and crops. Most of this general soil area is best suited to pine trees.

Moderately well and poorly drained, nearly level, upland sands: Blanton-Klej-Plummer

This general soil area consists mostly of nearly level soils that are moderately well drained and poorly drained. Some of the acreage is gently sloping and somewhat poorly drained. Short, narrow seepage areas occur on the steeper slopes. Narrow, wet stream bottoms are in the flatter areas. Slightly lower than the dominant soils are well-established stream patterns of creeks, branches, and draws. This general soil area occupies about 11 percent of the county and occurs mostly in the eastern and southern parts.

Blanton, Klej, and Plummer soils occupy about 75 percent of this general soil area. These soils have gray to dark-gray loamy sand to coarse sand surface layers. The subsoils are mottled and range from light gray to yellow in color and from coarse sands to loamy sands in texture. The sandy surface layers are 3 to 8 inches thick, and the subsoils extend to a depth of 30 inches or more. About 85 percent of the acreage is nearly level to gently sloping, and the rest is on steeper slopes.

Sands and coarse sands dominate in the southern part of the county, and sands and fine sands dominate in the eastern part. Better, slightly finer textured soils are in the central part of the county. Lakeland, Eustis, Leon, and Rutlege soils and wet alluvial land occur in small areas and make up about 25 percent of this general soil area.

Because they are coarse and sandy, the soils in the southern part of the county are poorly suited to farming. Most areas remain as woodland that consists mostly of thin stands of longleaf and slash pines, turkey and post oaks, and low shrubs. Small areas in the finer sands have been cleared and are used for corn, small grains, and other crops, and for pasture.

Moderately well and somewhat poorly drained, nearly level or gently sloping, upland soils with loamy sand surface soils and sandy loam or sandy clay loam subsoils: Goldsboro-Lynchburg

This general soil area is mostly nearly level or gently sloping and moderately well drained to somewhat poorly drained, but it includes a few small areas on steeper slopes. It consists of broad, flat or gently undulating areas. In these broad areas are narrow, wet stream bottoms, branches, and draws. Gently sloping to sloping areas are adjacent to most draws. This general soil area occupies about 2 percent of the county. It is mainly in the west-central part of the county, but few small areas are in the northern and northeastern parts.

Goldsboro and Lynchburg soils make up about 70 percent of this general soil area. These soils dominate in the broad flats and undulating areas. They have gray to very dark gray loamy fine sand to loamy sand surface layers that may be as much as 30 inches thick. The subsoils are mottled and range from fine sandy loam to fine sandy clay loam in texture and from very pale brown to yellow in color. Rains, Grady, Portsmouth, Plummer, and Klej soils and wet alluvial land occur in widely distributed small areas and make up the remaining 30 percent of this area. About 90 percent of this general soil area is on nearly level to gentle slopes, and the rest is on steeper slopes.

The moderately well drained soils are well suited to cultivation and are farmed extensively. They occupy about 50 percent of this general soil area. The somewhat poorly drained soils are mainly in pasture and trees. They occupy about 35 percent of this area. The remaining 15 percent is poorly drained and is predominantly woodland.

Moderately well to poorly drained soils on nearly level stream terraces: Leaf-Izagora

This general soil area is on long, narrow, nearly level stream terraces that make up less than 1 percent of the county. It occurs mostly on the terraces that border the Ochlockonee River on the eastern boundary of the county. Small areas are along the Apalachicola River on the west side of the county.

The surface layers of the Leaf and Izagora soils are dominantly gray to black fine sand to very fine sandy loam. The subsoils are mottled and range from gray to yellowish brown in color and from fine sand to fine sandy clay in texture.

Other soils of this general soil area are Blanton (terrace phase), Kalmia, and Myatt. Along the Apalachicola River in the northwestern corner of the county is a small, narrow strip of Congaree soil that has dark grayish-brown silty loam surface and subsurface layers and a dark

reddish-brown silty clay loam subsoil. Small areas of Huckabee soils with deep, sandy profiles occur locally. A very small part of this area consists of small, wet creek bottoms and drains.

This general soil area is not cultivated. Many of the soils would be suited to cultivation if they were not so inextensive and isolated. The hazard of occasional overflow from adjacent streams also limits suitability for farming. All of this general soil area is used as woodland, and that is its best use.

Undeveloped and moderately wet land and land subject to flooding: Swamp

This general soil area is made up primarily of very poorly drained soils that occur adjacent to the major streams. It is covered with a dense growth of hardwoods and water-tolerant plants. This area consists of Alluvial land and Swamp. It makes up about 3 percent of the county.

The soils are very poorly drained throughout the year and are frequently flooded by high water. This general soil area occurs throughout the county in long narrow strips along streams. It includes the two large swamps in the county, which are Reed Swamp along the Ochlockonee River and a swamp near the southern end of Lake Talquin. The soils in these swampy areas are primarily alluvial materials that, within short distances, vary in texture, color, and thickness of layers. In these areas are Leaf, Myatt, and similar soils.

This general soil area has little or no agricultural value and has remained in forest. The native growth consists of cypress, bay, gum, occasional pines, wax myrtle, small native bushes, and water-tolerant plants.

Miscellaneous land areas: Mines, pits, and dumps

This land consists of mines and pits from which fuller's earth has been removed. The dumps consist primarily of waste material from these mines and pits. The largest area is just north of Quincy, and other small areas are in the north-central part of the county. This land has no agricultural value, but some areas are filled with water and provide good fishing.

Use and Management of Soils

This section consists of five main parts. The first part discusses general practices of good soil management. In the second part, after the nationwide system of capability classification is explained, the soils of the county are placed in capability units, or management groups, and use and management for these groups of soils are discussed. The third part consists of a table that gives, for each soil, estimated yields for crops and pasture under two levels of management. The fourth part discusses woodland management, and the fifth, engineering interpretations.

General Practices of Soil Management [3]

Soils planted to cultivated crops and those planted to pasture plants need to be managed so that the productivity of the soils is maintained. The soils must be conserved, for they normally become less productive as their use for cultivated crops and for pasture continues. In the following pages general practices of management are discussed.

Cultivated crops

Cultivation reduces the supply of organic matter, removes plant nutrients from the soil, and increases the hazard of erosion. A soil is protected and its productivity is maintained by a cropping system that provides perennial sod or annual cover crops between periods of clean cultivation. Sod crops and cover crops that are returned to the soil help to maintain the supply of organic matter (fig. 2). While they are growing, cover crops and sod

***Figure 2.*—Regular use of green-manure crops in a rotation protects the soil and maintains productivity. Class II land.**

crops protect the soil from erosion. The length of time that soils should be cultivated, compared to the time they should have a cover or sod crop, depends on the nature of the soil, including its slope and amount of erosion.

Most of the soils of Gadsden County are suited to common legumes and nonlegumes. They are suited to both warm-season and cool-season plants. The warm-season plants should be seeded in spring and early in summer. The cool-season plants should be seeded in September and early in October.

Fertilization.—Legumes ought to be fertilized at the time of planting with 25 to 30 pounds of phosphate and 50 to 60 pounds of potash per acre. Nonlegumes need a minimum of 45 to 60 pounds of nitrogen, 20 pounds of phosphate, and 40 pounds of potash per acre. Fertilizer left by preceding crops frequently furnishes enough phosphate and potash, and additions of these nutrients are not needed every season.

Fertilizer should be applied on all cropland, for the soils in the county are naturally low in plant nutrients. Additions of fertilizer increase yields and the amount of crop residue as well. The needs of different crops vary, but you can find out how much fertilizer is needed for each crop and how it should be applied from the county agricultural agent or the University of Florida Agricultural Experiment Stations.

[3] This section was written by H. E. VAN ARSDALL, management agronomist, DAVID P. POWELL, assistant State soil scientist, and B. P. THOMAS, soil scientist, Soil Conservation Service.

Legumes use large amounts of phosphate and potash, and nonlegumes need nitrogen in addition to phosphate and potash. Because nitrogen is retained in the soil for only a short time, apply just enough of this nutrient to supply the need of the crop being grown. Some of the more productive soils in the county can retain phosphate and potash. Soils ought to be tested so that you know the kinds and amounts of nutrients needed by individual crops on specific soils.

Erosion control.—Surface runoff on bare soils must be controlled so that it does not wash away the soil. If runoff is slowed, the hazard of erosion is reduced and the water has more time to soak into the soil. Terraces, contour cultivation, and wide strips of close-growing vegetation are commonly used to control runoff and erosion.

Terraces of the channel type are suited to most of the better soils in the county that have uniform slopes of not more than 8 percent. This kind of terrace is made by digging a broad, shallow channel and, with the spoil, forming a broad-based ridge on the lower side. These terraces should be nearly level and constructed across the slope. They intercept the water moving down the slope and conduct it from the field slowly. The spacing of the terraces varies according to the kind of soil and the slope. Terraces are generally 50 to 110 feet apart. The water from the terraces should be discharged into well-stabilized waterways or into areas with dense vegetation. Figure 3 shows a step in the construction of a channel-type terrace.

***Figure 3.*—Checking the construction of a channel-type terrace in Orangeburg loamy fine sand, 2 to 5 percent slopes.**

Natural draws make the best waterways. If draws are not available, dig wide, shallow channels and protect them with sod or other close-growing vegetation. These channels should be stabilized before water is discharged into them. To prevent channel cutting, the gradient and capacity of waterways should be determined by considering the characteristics of the soil and the volume of water that will be discharged from the terraces. Figure 4 shows a natural draw that is not protected by vegetation, and figure 5 shows one that is well protected.

In contour cultivation, the furrows are plowed across the slope in the same direction that the terraces extend.

***Figure 4.*—Unprotected, badly eroded natural draw.**

***Figure 5.*—Natural draw protected by a good sod provides a safe waterway.**

The furrows act as individual small terraces that slow the water as it moves down the slope and at the same time, the water is carried across the slope. In the gently sloping, more porous sandy soils, contour cultivation is generally sufficient to control runoff water. On other soils contour cultivation is needed as a supplement to terraces. On the field shown in figure 6, the contour furrows are plowed across the slope and parallel to terraces.

Water is also intercepted and spread by wide strips of close-growing vegetation planted at intervals across the slope. These strips supplement terraces and contour cultivation. When they alternate with strips of row crops (fig. 7), they improve the soil.

Irrigation.—Although rainfall is generally adequate to supply the moisture needs of most general crops, the use of sprinklers to irrigate crops of high value is increasing. Irrigation is profitable only at a high level of management that provides for the addition of large amounts of manure and commercial fertilizer, the return of crop residue to the soil, and the planting of cover crops.

Figure 6.—Soil plowed on the contour.

Figure 8.—This farm pond stores water for irrigation, helps control downstream floods, and is an excellent fish pond.

Figure 7.—Strip of mixed Pensacola bahiagrass and indigo is effective in reducing runoff and erosion on gently sloping loamy sands.

Water for irrigation can be stored in small farm ponds that are constructed in natural drains having small watersheds. The pond site should be carefully studied because, before a site is selected, it is necessary to know the suitability of the foundation material, the amount of water available, and the storage capacity of the proposed pond. Dams and spillways should be carefully designed and constructed. Figure 8 shows a small pond in Gadsden County.

Artificial drainage.—Some moderately well drained soils that have a perched water table or slow internal drainage, or both, may be excessively wet at times. These soils can be drained by properly installed tile lines. A system of tile lines consists of a main line that has laterals spaced 60 to 120 feet apart. The tile should be laid at depths of 2½ to 4½ feet. Before deciding on the spacing and depth of the tile, determine the permeability and slope of the soil and the height of the water table.

Many wet soils are highly productive if water is controlled. Low-lying, land-locked areas must be provided with surface drainage. Generally the main problem is locating or constructing outlet ditches and finding areas where the water can be disposed safely. Although erosion is generally not a problem, cover crops and sod should be used to supply organic matter. The soils also need applications of fertilizer and lime.

Pasture

Good pasture serves several purposes. Its sod protects the soil against erosion; it supplies food for livestock; and it improves the soil by adding organic matter and making the soil more porous.

Many pasture plants are suited to the soils of Gadsden County. The warm-season plants, bahiagrass and improved strains of bermudagrass, have a wide range of suitability. They produce large amounts of forage even on soils that are droughty to slightly wet. White clover, sweet clover, and crimson clover are grown in mixtures with bahiagrass and bermudagrass, but they are difficult to maintain when they are grown with bahiagrass for extended periods. Improved bermudagrass responds to large applications of fertilizer. Bahiagrass grows well on soils of medium fertility.

Tall fescue, which is a cool-season grass, is suited to soils having a good available moisture-holding capacity. Most of its growth is at times when other grasses are dormant. It needs medium to large applications of fertilizer. Regular additions of fertilizer and lime are profitable on all pasture.

Grass-clover pasture can be grown on soils that have a good available moisture-holding capacity or a high water table. Additions of phosphate and potash stimulate good growth of clovers. Nitrogen added in summer increases the growth of grasses. Droughty soils that are not suited to clovers but are suited to grasses should be fertilized with nitrogen, phosphate, and potash. The grazing capacity on these pastures depends to a large extent on the amount of fertilizer applied.

Most soils in the county need to be limed if the growth of pasture plants, particularly clovers, is to be satisfactory. The amount and frequency of application should be determined by soil tests.

Grazing needs to be regulated so that pasture plants have time to recover after they are grazed. The grazing should be regulated with the purpose of producing the

most forage and conserving the soil. Figure 9 shows a well-managed pasture on which the steeply sloping class VI soils are protected.

Figure 9.—**Well-managed pasture on Faceville-Shubuta-Ruston complex, 8 to 12 percent slopes. Class VI land.**

Capability Groups of Soils [4]

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

In this system all the kinds of soil are grouped at three levels, the capability class, subclass, and unit. The eight capability classes in the broadest grouping are designated by Roman numerals I through VIII. In class I are the soils that have few limitations, the widest range of use, and the least risk of damage when they are used. The soils in the other classes have progressively greater natural limitations. In class VIII are soils and landforms so rough, shallow, or otherwise limited that they do not produce worthwhile yields of crops, pasture, or wood products. Gadsden County has no class VIII soils.

The subclasses indicate major kinds of limitations within the classes. Within most of the classes there can be as many as four subclasses. The subclass is indicated by adding a small letter, *e*, *w*, *s*, or *c* to the class numeral, for example, II*e*. The letter *e* shows that the main limitation is risk of erosion unless close-growing plant cover is maintained; *w* means that water in or on the soil will interfere 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 only in some parts of the country and not in Gadsden County, indicates that the chief limitation is climate that is too cold or too dry.

Most soils of Gadsden County have two kinds of limitations that affect use and management about equally. Excessively drained soils on slopes are generally both droughty and subject to erosion; many soils that have poor soil qualities also have seasonal problems of excess water; and many perpetually wet soils have serious limitations even if adequately drained. These soils with two kinds of limitations are placed in units that have two small letters designating the subclass. The first letter stands for the limitation that is the more severe.

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

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

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

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

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

- Unit I–1: Nearly level, well-drained, deep soils that have a loamy surface soil and a friable, moderately permeable, clayey subsoil.
- Unit I–2: Nearly level, well-drained, deep soils that have a loamy surface soil and a moderately slowly permeable, clayey subsoil.

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

Subclass IIe: Well-drained soils that have wide crop suitability but are subject to moderate erosion and need protection when cultivated.

- Unit IIe–1: Gently sloping, well-drained, uneroded to moderately eroded, deep soils that have a loamy surface soil and a well-developed, moderately permeable, clayey subsoil.
- Unit IIe–2: Gently sloping, well-drained, uneroded to moderately eroded, deep soils that have a loamy surface soil and a moderately slowly permeable, clayey subsoil.

Subclass IIse: Well-drained soils that impose a few limitations on choice of plants because of soil qualities and make necessary simple practices of erosion control.

- Unit IIse–1: Nearly level to gently sloping, well-drained, uneroded to moderately eroded, deep soils that have a thick, sandy surface soil and a friable, clayey subsoil.

[4] This subsection was written by W. H. Buckhannan, soil specialist, David P. Powell, asst. State soil scientist, and B. P. Thomas, soil scientist, Soil Conservation Service.

Subclass IIsw: Moderately well drained and somewhat poorly drained soils on which choice of crops is slightly restricted because of very sandy texture; seasonally wet.
Unit IIsw–1: Nearly level soils in depressions that are flooded occasionally.
Unit IIsw–2: Nearly level to gently sloping, moderately well drained, deep soils that have a sandy surface soil and a moderately to slowly permeable, clayey subsoil.

Class III.—Soils that have severe limitations that reduce the choice of plants, or that require special conservation practices, or both.
Subclass IIIe: Well-drained soils that have wide crop suitability but are subject to moderately severe erosion if cultivated.
Unit IIIe–1: Sloping, uneroded to moderately eroded, well-drained, deep soils that have a loamy surface soil and a moderately permeable, friable, clayey subsoil.
Unit IIIe–2: Sloping, uneroded to moderately eroded, well-drained, deep soils that have a loamy surface soil and a moderately slowly permeable, clayey subsoil.
Subclass IIIes: Well-drained soils that have a moderately severe hazard of erosion when cultivated and slight limitations in crop suitability because of limited available moisture-holding capacity and low natural fertility.
Unit IIIes–1: Sloping, slightly eroded, well-drained, deep soils that have a thick, sandy surface soil and a friable, clayey subsoil.
Unit IIIes–2: Gently sloping, well-drained, slightly eroded soils that have a loamy or sandy surface soil and a dense clay subsoil.
Subclass IIIse: Well-drained soils that have severe limitations because of a low available moisture-holding capacity, low inherent fertility, and a moderate risk of erosion.
Unit IIIse–1: Nearly level to gently sloping, slightly eroded, well-drained, deep, very rapidly permeable loamy sands more than 30 inches thick.
Unit IIIse–2: Nearly level to gently sloping, very rapidly permeable, deep sands with sandy texture throughout.
Unit IIIse–3: Nearly level to gently sloping, slightly to moderately wet, strongly acid, rapidly permeable, deep sands.
Subclass IIIws: Poorly drained and very poorly drained soils that have a low available moisture-holding capacity, have low fertility, or deteriorate rapidly when drained.
Unit IIIws–1: Nearly level to gently sloping, strongly acid, wet soils that have a sandy or loamy surface soil and a slowly permeable, clayey subsoil.
Unit IIIws–2: Nearly level, very wet, black, acid, deep, sandy soils that are high in organic matter.

Class IV.—Soils that have very severe limitations that restrict the choice of plants, or that need very careful management, or both.
Subclass IVe: Well-drained soils that have a wide range of crop suitability but are subject to a severe hazard of erosion if cultivated.
Unit IVe–1: Sloping, severely eroded soils and strongly sloping, slightly to modertely eroded soils that are well drained and deep. They have a loamy surface soil and a moderately permeable, clayey subsoil.
Unit IVe–2: Sloping, severely eroded soils and strongly sloping, slightly to moderately eroded soils that are well drained and deep. They have a loamy surface soil and a moderately slowly permeable, clayey subsoil.
Subclass IVes: Well-drained soils that have a severe hazard of erosion if cultivated and are somewhat limited in crop suitability by a low available moisture-holding capacity and low inherent fertility.
Unit IVes–1: Strongly sloping, slightly to moderately eroded, well-drained, deep soils that have a thick, sandy surface soil and a friable, clayey subsoil.
Unit IVes–2: Sloping, slightly to moderately eroded, well-drained soils that have a loamy or sandy surface soil and a dense clay subsoil.
Subclass IVse: Well-drained soils that have severe limitations because of a low available moisture-holding capacity, low inherent fertility, and a severe hazard of erosion if cultivated.
Unit IVse–1: Sloping, slightly to moderately eroded, well-drained, deep, very rapidly permeable, loamy sands more than 30 inches thick.
Unit IVse–2: Nearly level to gently sloping, well-drained to excessively drained, strongly acid, very droughty, deep sands.
Unit IVse–3: Sloping, slightly to moderately wet, strongly acid, rapidly permeable, deep sands or loamy sands.
Subclass IVws: Poorly drained and very poorly drained soils that have a very low available moisture-holding capacity and very low fertility.
Unit IVws–1: Nearly level, moderately wet to wet soils that have sandy to loamy surface soil and a slowly permeable, clayey subsoil.
Unit IVsw–1: Nearly level to gently sloping, moderately wet to wet, strongly acid, rapidly permeable, deep, sandy soils.

Class V.—Soils that have little or no erosion hazard but have other limitations that are impractical to remove that limit their use largely to pasture, range, woodland, or wildlife food and cover.
Subclass Vws: Wet soils that can be used for pasture or woods.
Unit Vws–1: Nearly level, wet soils that have a thin, loamy surface soil and a plastic, slowly permeable clay subsoil.
Unit Vws–2: Nearly level and gently sloping, slightly wet to wet, deep sands.

Class VI.—Soils that have severe limitations that make them generally unsuited for cultivation and limit their use largely to pasture or range, woodland, or wildlife food and cover.
Subclass VIes: Sloping soils on which the hazard of erosion is great and use is somewhat limited by inherent soil characteristics.

Unit VIes–1: Strongly sloping, well-drained, deep, moderately to severely eroded soils that have a loamy surface soil and a moderately permeable, clayey subsoil.

Unit VIes–2: Strongly sloping, slightly to moderately eroded, well drained to moderately well drained soils that have a loamy surface soil and a very slowly permeable, clayey subsoil.

Subclass VIse: Soils that have severe limitations because of low available moisture-holding capacity, low inherent fertility, and a severe risk of erosion.

Unit VIse–1: Sloping or strongly sloping, slightly to moderately eroded, well-drained to excessively drained, strongly acid, deep sands.

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

Subclass VIIes: Steeply sloping soils with very low fertility and a very low available moisture-holding capacity.

Unit VIIes–1: Strongly sloping, severely eroded and steep, slightly or moderately eroded, well-drained soils that have a sandy to clayey surface soil and a clayey subsoil.

Unit VIIes–2: Steep, well drained to moderately well drained soils that have a sandy or loamy surface soil and a very slowly permeable, clayey subsoil.

CAPABILITY UNIT I-1

In this capability unit are nearly level, well-drained, deep soils that have a loamy fine sand surface layer, 12 to 18 inches thick. The subsoil is friable sandy loam to sandy clay loam, 30 to 48 inches thick. It is underlain by unconsolidated parent materials of moderately friable to firm sandy clay loam. Though it is not so high as in the soils of capability unit I–2, the available moisture-holding capacity of these soils is high. Aeration is good. These soils are low in most plant nutrients but retain fertilizer well, and in forms that plants can use. The soils in this unit are:

Kalmia loamy fine sand, 0 to 2 percent slopes.
Norfolk loamy fine sand, 0 to 2 percent slopes.
Norfolk loamy fine sand, pebbly, 0 to 2 percent slopes.
Orangeburg loamy fine sand, 0 to 2 percent slopes.
Red Bay loamy fine sand, 0 to 2 percent slopes.
Ruston loamy fine sand, 0 to 2 percent slopes.

Use and management.—These soils are among the most productive in the county. They are well suited to all crops grown in the area, including shade tobacco. Partly because of their high moisture-supplying capacity, these soils generally do not need irrigation, except for tobacco, truck crops, and other crops of high value. Apply large amounts of fertilizer regularly for high yields. Plant cover crops and use crop residues to maintain organic matter and good tilth.

These soils are well suited to most pasture grasses and legumes grown in the county. If fertilizer and lime are added, both cool-season and warm-season plants grow well. Cool-season plants that may be used are tall fescue, white clover, crimson clover, and sweet clover. White clover may be injured by drought more often than other cool-season plants. Warm-season plants that grow well are bahiagrass and improved bermudagrass. Pasture plants need large amounts of fertilizers.

These soils are not extensive. Most areas are cleared and cultivated or are in pasture. The native vegetation was a mixed growth of pines and hardwoods, which are well suited to these soils.

Odd corners and inaccessible areas of these soils can be managed so that they produce food and cover for wildlife.

CAPABILITY UNIT I-2

In this capability unit are nearly level, well-drained, deep, acid soils that have a loamy fine sand surface layer, 10 to 18 inches thick. The subsoil is friable sandy clay loam to sandy clay, 30 to 54 inches thick. It is underlain by unconsolidated parent materials of moderately friable to firm sandy clay loam and sandy clay. Permeability is moderately slow. The available moisture-holding capacity is high, and the soils are well aerated. They are low in most plant nutrients but retain fertilizer well, and in forms available to plants. Generally they are slightly more productive than soils of capability unit I–1. These soils are:

Carnegie loamy fine sand, 0 to 2 percent slopes.
Faceville loamy fine sand, 0 to 2 percent slopes.
Magnolia loamy fine sand, 0 to 2 percent slopes.
Tifton loamy fine sand, 0 to 2 percent slopes.

Use and management.—These are the most productive soils in the county for tilled crops. They are very well suited to all of the crops grown in the county, particularly shade tobacco. Partly because of their high capacity to retain available moisture, they generally do not need to be irrigated except where shade tobacco and truck crops are grown. Planting of cover crops and use of crop residue will maintain organic matter and keep production high.

These soils are well suited to most grasses and legumes grown in the county. If fertilizer is applied, tall fescue, white clover, crimson clover, sweet clover and other cool-season plants grow well. Warm-season grasses, particularly improved bermudagrass and bahiagrass, are well suited to soils of this unit. They produce large quantities of hay or pasture if the soils are fertilized and limed. To establish and maintain good pasture, prepare a firm seedbed, plant enough seed or sprigs, choose suitable plants, and apply enough lime and fertilizer.

The soils in this unit are inextensive. Most areas are cleared and are cultivated or in pasture. These cleared areas used to be covered with excellent stands of mixed pines and hardwoods. Most wooded areas of this unit are small and included with larger areas of wooded soils in capability units IIe–2 and IIIe–2. They need about the same woodland management as the soils in those units. Practices of wildlife management are also similar to those for the soils in capability units IIe–2 and IIIe–2.

CAPABILITY UNIT IIe-1

In this capability unit are gently sloping, well-drained, deep, acid soils that normally have a fine sandy loam or fine sandy clay loam subsoil. The surface layer is loamy fine sand or loamy sand, 4 to 18 inches thick. The subsoil is friable and normally is 30 to 48 inches thick. These soils are low in most plant nutrients but retain fertilizer in a form that plants can use. Though water moves freely through them, these soils have a high avail-

able moisture-holding capacity. The erosion hazard is slight to moderate. Some of the soils are moderately eroded. The soils in this unit are:

Norfolk loamy fine sand, 2 to 5 percent slopes.
Norfolk loamy fine sand, 2 to 5 percent slopes, eroded.
Norfolk loamy fine sand, pebbly, 2 to 5 percent slopes.
Norfolk loamy fine sand, pebbly, 2 to 5 percent slopes, eroded.
Orangeburg loamy fine sand, 2 to 5 percent slopes.
Orangeburg loamy fine sand, 2 to 5 percent slopes, eroded.
Red Bay loamy fine sand, 2 to 5 percent slopes.
Red Bay loamy fine sand, 2 to 5 percent slopes, eroded.
Ruston loamy fine sand, 2 to 5 percent slopes.
Ruston loamy fine sand, 2 to 5 percent slopes, eroded.
Zuber loamy sand, 2 to 5 percent slopes.

Use and management.—These soils are among the most productive in the county. They are very well suited to all crops grown in the area, including shade tobacco. Partly because the available water-holding capacity is high, most crops grow well without irrigation. Shade tobacco and truck crops should be irrigated by sprinklers. Though they are on gentle slopes and have good tilth, these soils erode if unprotected. The cropping systems should provide cover crops at least half of the time. These soils need a complete system of water disposal that includes terraces and vegetated outlets.

Plow cover crops and all residue into the soils to help to maintain organic matter and good tilth. When pasture and cultivated crops are alternated, pasture should be on these soils for at least 2 successive years, and tilled crops should not be grown more than 2 successive years.

These soils are well suited to most pasture grasses and legumes grown in the county. Both cool-season and warm-season plants grow well if the soils are fertilized and limed. Suitable cool-season plants are tall fescue, white clover, crimson clover, and sweet clover. White clover may be damaged by drought more often than other cool-season plants. Bahiagrass and improved bermudagrass are suitable warm-season plants. To produce high yields of pasture plants, apply fairly large amounts of fertilizer.

Most of the acreage of these soils is cleared and in cultivated crops or pasture. The native vegetation was a mixed growth of pines and hardwoods, which are trees well suited to these soils.

Odd corners and inaccessible areas of these soils may be managed so that they provide food and cover for wildlife.

CAPABILITY UNIT IIe-2

In this capability unit are deep, acid, well-drained soils that have a loamy fine sand surface layer measuring 3 to 18 inches in thickness. Most of these soils are gently sloping; some are moderately eroded. The surface layer grades to a friable sandy clay loam to sandy clay subsoil that is 30 to 48 inches thick. It is underlain by unconsolidated parent material of moderately friable to firm sandy clay loam and sandy clay. Permeability is moderately slow, and the available moisture-holding capacity is high. These soils are well aerated throughout. They are low in most plant nutrients but retain fertilizers well in a form that plants can use. They are moderately susceptible to erosion. The soils in this unit are:

Carnegie loamy fine sand, 2 to 5 percent slopes.
Carnegie loamy fine sand, 2 to 5 percent slopes, eroded.
Faceville loamy fine sand, 2 to 5 percent slopes.
Faceville loamy fine sand, 2 to 5 percent slopes, eroded.
Magnolia loamy fine sand, 0 to 2 percent slopes, eroded.
Magnolia loamy fine sand, 2 to 5 percent slopes.
Magnolia loamy fine sand, 2 to 5 percent slopes, eroded.
Tifton loamy fine sand, 2 to 5 percent slopes.
Tifton loamy fine sand, 2 to 5 percent slopes, eroded.

Use and management.—These soils are well suited to all crops grown in the county, including shade tobacco. Where cultivated, they need protection from erosion. Use a cropping system that provides for cover crops at least half the time and for a water-disposal system that has terraces and stabilized outlets. Keep the content of organic matter high by planting green-manure crops and conserving all crop residue. Alternate from pasture to crops to obtain high yields. Pasture should be on these soils at least 2 successive years, and cultivated crops not more than 2 successive years. Because of the capacity of these soils to retain moisture, irrigation generally is not needed. Sprinkler irrigation is desirable on soils planted to tobacco and truck crops, because sprinklers maintain uniform moisture and thus assure optimum growth.

The soils in this unit are well suited to most pasture grasses and legumes grown in the county. Both cool-season and warm-season pasture plants grow well if the soils are fertilized and limed. Tall fescue, white clover, crimson clover, and sweet clover are suitable cool-season plants. Bahiagrass and improved bermudagrass are suitable warm-season plants. Large applications of fertilizer are needed if yields are to be optimum. These soils need normal practices of good pasture management.

These are excellent soils for trees; both pines and hardwoods grow rapidly.

Wildlife management consists mostly of providing field borders and food strips for wildlife in areas where the soils in this unit are cultivated.

CAPABILITY UNIT IIse-1

In this capability unit are deep, well-drained, nearly level and gently sloping soils on uplands. These soils have a loamy sand surface layer, 18 to 30 inches thick. The subsoil is friable, porous, well-aerated sandy loam or sandy clay loam, 30 to 60 inches thick. It normally is underlain by sandy clay loam parent material. Permeability is rapid in the surface soil and moderate in the subsoil. The available moisture-holding capacity ranges from low in the surface soil to moderately high in the subsoil. These soils are strongly acid and are moderately low in organic matter. They have low natural fertility but respond well to fertilizer. The soils in this unit are:

Norfolk loamy sand, thick surface, 0 to 2 percent slopes.
Norfolk loamy sand, thick surface, 2 to 5 percent slopes.
Norfolk loamy sand, thick surface, pebbly, 0 to 2 percent slopes.
Norfolk loamy sand, thick surface, pebbly, 2 to 5 percent slopes.
Orangeburg loamy sand, thick surface, 0 to 2 percent slopes.
Orangeburg loamy sand, thick surface, 2 to 5 percent slopes.
Ruston loamy sand, thick surface, 0 to 2 percent slopes.
Ruston loamy sand, thick surface, 2 to 5 percent slopes.

Use and management.—If they are intensively managed, these soils produce high yields. Maintain their supply of organic matter by planting green-manure crops and conserving all crop residues. Keep cover crops on them at least half of the time. Alternate improved pasture and cultivated crops, and keep well-managed pasture with full sod on the soils at least 2 in every 4 years. Terraces are frequently needed, though these soils are not so susceptible to erosion as those in capability unit IIe–2. All terraces should drain into well-stabilized outlets. These soils are suited to shade tobacco. This crop and other crops of

high value need to be irrigated and highly fertilized if yields are to be high.

The soils in this unit are well-suited to most of the pasture grasses and legumes grown in the county. If they are well fertilized and limed, they produce satisfactory yields of suitable plants. Crimson clover and sweet clover are suitable cool-season plants, but these soils are too sandy and too droughty to be well suited to fescue and white clover. Bahiagrass and bermudagrass are suitable warm-season plants. Pasture plants need large amounts of fertilizer. They also need normal practices of good pasture management.

These soils are well suited to pine and hardwood trees. Wildlife management consists chiefly of providing field borders and food strips for wildlife in areas of these soils that are mostly in crops and pasture.

CAPABILITY UNIT IIsw-1

Hannahatchee soils, local alluvium, are the only soils in this capability unit. These soils are deep, acid, and moderately well drained. They consist of recently deposited alluvial-colluvial material and are in depressions and shallow drainageways. They generally occur in small areas surrounded by soils from which their soil material was transported. Normally, they are more fertile and have better moisture relations than the surrounding soils. Their surface layer is 18 to 23 inches thick in most places. It ranges from fine sandy loam to fine sandy clay loam. Their subsoil is normally fine sandy clay loam. These soils are flooded occasionally. They have high available moisture-holding capacity and are permeable to water, air, and roots. They respond well to fertilizer.

Use and management.—These soils are well suited to the general crops grown in the county. They are better suited to cultivation than their surrounding soils and respond better to similar management. Crops, however, are damaged occasionally by runoff from adjacent slopes. Where adequate outlets can be installed, excess water can be removed by simple artificial drainage. Clean-tilled crops should be alternated with green-manure crops and should not occupy these soils more than half of the time. All crops residue should be plowed under. In a cropping system that includes improved pasture, keep well-managed sod crops on these soils at least 2 in every 4 years. Yields are increased by large applications of fertilizer.

These soils are well suited to improved pasture of all locally grown plants. These plants do well if the soils are well fertilized and limed and if grazing is controlled. Suitable cool-season plants are crimson clover, sweet clover, white clover, and fescue. Pensacola bahiagrass and bermudagrass are the most widely grown warm-season grasses. Pasture on these soils needs normal practices of good soil management.

Because, normally, they are in small areas, these soils need to be considered with adjacent soils when woodland management is planned. Nevertheless, they are well suited to slash, loblolly, and longleaf pines and to various species of hardwoods.

Most of the acreage in these soils is in well-developed farming areas and is used for improved pasture and tilled crops. Small areas are suited to plants that supply food for wildlife.

CAPABILITY UNIT IIsw-2

This capability unit consists of moderately well drained, acid soils that are nearly level to gently sloping. They have a loamy sand to loamy fine sand surface layer, 10 to 30 inches thick. The surface layer grades to a friable fine sandy loam or fine sandy clay loam subsoil, 18 to 30 inches thick. The subsoil is underlain by moderately permeable to slowly permeable sandy clay loam. The root zone is moderately deep to deep. In some soils the restricted drainage is caused by the slowly permeable subsoil, and in others it is caused by a high water table that lies above impervious layers deep in the substratum. These soils have moderately high available moisture-holding capacity and low natural fertility. They are:

Goldsboro loamy fine sand, 0 to 2 percent slopes.
Goldsboro loamy fine sand, 2 to 5 percent slopes.
Goldsboro loamy sand, thick surface, 0 to 2 percent slopes.
Goldsboro loamy sand, thick surface, 2 to 5 percent slopes.
Izagora loamy fine sand.

Use and management.—If they are fertilized and otherwise well managed, these soils are well suited to crops that tolerate slight wetness. They are best suited to corn, small grains, and truck crops. If adequately drained, they are well suited to tobacco. Simple practices of surface drainage are generally enough to prevent damage to most crops, but tile drains are needed for tobacco. Where tile drains are used, sprinklers are needed to irrigate tobacco and other crops of high value.

Management on these soils should provide green-manure crops, the use of crop residue, fertilization, and liming. Many of the larger, steeper areas need terraces that have stabilized outlets. The cropping system should include cover crops at least half of the time or provide pasture alternating with tilled crops. The pasture ought to produce a full sod and be kept on these soils 2 in every 4 years. Before a tilled crop is planted, the sod crop should be worked into the soils. Grow cover crops between successive clean-tilled crops.

These soils are well suited to most pasture plants grown in the county. Suitable cool-season plants are fescue, crimson clover, white clover, and sweet clover. Suitable warm-season plants are bahiagrass and bermudagrass Pasture plants need large applications of fertilizer if yields are to be high. They also need normal practices of good pasture management.

These soils are well suited to pine trees. Undisturbed areas of these soils provide shelter and a small amount of food for many kinds of wildlife. If food plants are planted in the open areas, the undisturbed area will support more wildlife. Wildlife management in farmed areas provides field borders and food strips.

CAPABILITY UNIT IIIe-1

In this capability unit are well-drained, deep, acid soils that have a loamy fine sand or loamy sand surface layer, 4 to 18 inches thick. The subsoil is friable fine sandy loam or sandy clay loam, normally 30 to 48 inches thick. These soils are low in most plant nutrients, but retain fertilizers well in a form that plants can use. Though water moves freely through them, they have a high available moisture-holding capacity. These soils are highly susceptible to erosion. A few small areas are severely eroded. The soils in this unit are:

Norfolk loamy fine sand, 5 to 8 percent slopes.
Norfolk loamy fine sand, 5 to 8 percent slopes, eroded.
Orangeburg loamy fine sand, 5 to 8 percent slopes.
Orangeburg loamy fine sand, 5 to 8 percent slopes, eroded.
Red Bay fine sandy loam, 2 to 5 percent slopes, severely eroded.
Red Bay loamy fine sand, 5 to 8 percent slopes.

Red Bay loamy fine sand, 5 to 8 percent slopes, eroded.
Ruston loamy fine sand, 5 to 8 percent slopes.
Ruston loamy fine sand, 5 to 8 percent slopes, eroded.
Zuber loamy sand, 5 to 8 percent slopes.

Use and management.—These soils are well suited to most general crops and to shade tobacco, but strong slopes and the erosion hazard restrict their use. Because the available water-holding capacity is high, irrigation is not needed for most crops. Areas in shade tobacco and truck crops, however, need to be irrigated with sprinklers. Because they erode if unprotected, these soils need intensive management if they are cultivated. The cropping system should provide cover crops or pasture at least two-thirds of the time. Also needed is a complete system of water disposal that includes terraces and vegetated outlets. Plowing or disking cover crops and crop residue into the soils will help to maintain organic matter and good tilth.

These soils are well suited to most pasture grasses and legumes grown in the county. Both cool-season and warm-season plants grow well if the soils are fertilized and limed. Suitable cool-season plants are tall fescue, white clover, crimson clover, and sweet clover. White clover may be damaged by drought more often than other cool-season plants. Bahiagrass and improved bermudagrass are suitable warm-season plants. Because these soils are highly erodible, they need pasture plants that form a full sod soon after seeding. Pasture plants need fairly large additions of fertilizer.

Most of the acreage of these soils is cleared and in cultivated crops or pasture. These are excellent soils for pine and hardwood trees.

Small areas and odd corners of these soils can be managed to provide food and cover for wildlife.

CAPABILITY UNIT IIIe-2

In this capability unit are well-drained, deep, acid soils that have a loamy fine sand surface layer, 3 to 18 inches thick. The surface layer grades to a friable sandy clay loam to sandy clay subsoil, 30 to 48 inches thick. The subsoil is underlain by parent materials of moderately friable to firm sandy clay loam and sandy clay Permeability is moderately slow. The available moisture-holding capacity is high. These soils are well aerated throughout the profile. They are low in most plant nutrients but retain fertilizers well in a form that plants can use. Some of the soils are eroded or severely eroded, and all are highly susceptible to erosion. The soils in this unit are:

Carnegie loamy fine sand, 5 to 8 percent slopes.
Carnegie loamy fine sand, 5 to 8 percent slopes, eroded.
Faceville loamy fine sand, 5 to 8 percent slopes.
Faceville loamy fine sand, 5 to 8 percent slopes, eroded.
Magnolia fine sandy loam, 2 to 5 percent slopes, severely eroded.
Magnolia loamy fine sand, 5 to 8 percent slopes.
Magnolia loamy fine sand, 5 to 8 percent slopes, eroded.
Tifton loamy fine sand, 5 to 8 percent slopes, eroded.

Use and management.—Most of the acreage has been cleared and is in cultivated crops or pasture. The soils are suited to most general crops but, because of the erosion hazard, should be managed intensively. They are too erodible to be safely used for shade tobacco. If crops of high value are grown, they should be irrigated with sprinklers that are carefully controlled to prevent surface runoff. Normally, general crops receive enough moisture without irrigation. The cropping system should provide cover crops or pasture at least two-thirds of the time. Also needed is a complete system of water disposal that provides terraces and vegetated outlets. Plant crops in strips across the slope. To help maintain organic matter and tilth, plow or disk into the soils cover crops, green-manure crops, and all crop residues.

These soils are well suited to most locally grown pasture grasses and legumes. Both cool-season and warm-season plants grow well if the soils are fertilized and limed. Suitable cool-season plants are tall fescue, white clover, crimson clover, and sweet clover. Bahiagrass and bermudagrass are suitable warm-season plants. Because these soils are highly erodible, they need pasture plants that form a full sod soon after seeding. Large applications of fertilizer are practical because response to fertilizer is good.

These soils are excellent for pine and hardwood trees. Small areas and odd corners of these soils can be managed to provide cover and food for wildlife.

CAPABILITY UNIT IIIes-1

In this capability unit are sloping, deep, well-drained soils on uplands. These soils are slightly eroded and, if cultivated, are susceptible to moderately severe erosion. They are more susceptible than the soils in capability unit IIIse-1. They have a loamy sand surface layer, 18 to 30 inches thick. The subsoil is friable, porous, well-aerated sandy loam or sandy clay loam, 30 to 60 inches thick. It is underlain by sandy clay loam parent material. These soils are rapidly permeable in the surface layer and moderately permeable in the subsoil. The available moisture-holding capacity is low in the surface layer and moderately high in the subsoil. The reaction is strongly acid. The content of organic matter and natural fertility are low, but response to fertilizer is good. The soils in this unit are:

Norfolk loamy sand, thick surface, 5 to 8 percent slopes.
Norfolk loamy sand, thick surface, pebbly, 5 to 8 percent slopes.
Orangeburg loamy sand, thick surface, 5 to 8 percent slopes.
Ruston loamy sand, thick surface, 5 to 8 percent slopes.
Ruston-Orangeburg-Lakeland complex, 5 to 8 percent slopes.

Use and management.—Under good management these soils are suited to moderately intensive use for general crops. Good yields of most general crops can be obtained if the content of organic matter is maintained and the soils are liberally fertilized and limed. Cropping systems should provide cover crops at least two-thirds of the time or should provide pasture alternating with tilled crops. The soils should be in a full sod at least 4 in every 6 years. A complete system of terraces and protected outlets is needed. Cultivate on the contour, and plant rotation crops in contour strips. Though most crops can be grown without irrigation, crops of high value need sprinkler irrigation that will maintain uniform moisture.

These soils are well suited to pasture. Most warm-season and cool-season grasses and legumes grown in Florida are suitable. Crimson clover and sweet clover grow well, but the soils are too sandy and droughty for fescue and white clover. The most suitable warm-season plants are bahiagrass and improved strains of bermudagrass. Pasture plants need to be well fertilized and limed. Soon after seeding, pasture needs to form a full sod that will prevent erosion. Control grazing to prevent the stunting of the grasses.

These soils are well suited to pine and hardwood trees. Wildlife management consists mostly of planting odd cor-

ners and small areas to cover and food plants in areas that are used mostly for crops and pasture.

CAPABILITY UNIT IIIes-2

This capability unit consists of well-drained, acid soils. These soils are gently sloping and only slightly eroded, but they are very susceptible to erosion unless protected. The surface soil is loamy fine sand to fine sandy loam, 6 to 8 inches thick. The subsoil is fine sandy clay to fine sandy clay loam, 12 to 30 inches thick. In the lower part, the subsoil is slowly permeable and the rate of water intake is slow. These soils contain little organic matter and are low in natural plant nutrients. The soils in this unit are:

Cuthbert loamy fine sand, 2 to 5 percent slopes.
Sawyer loamy fine sand, 2 to 5 percent slopes.
Shubuta fine sandy loam, 2 to 5 percent slopes.

Use and management.—Most areas of these soils are well suited to cultivated crops. The choice of crops is fairly narrow because of the shallow to moderately shallow root zone. Yields are low unless these soils are well managed. Management should provide cover crops, the return of crop residue to the soils, and regular additions of lime and fertilizer. Cultivated crops should not be grown more than one-third of the time. If tilled crops are alternated with pasture, the pasture should be on these soils 4 in every 6 years. Where practical, establish a complete system of water control that has terraces and stabilized outlets. Keep a dense vegetative cover on areas not suited to terracing, such as small areas and areas that are dissected by natural draws and drainageways.

Moderately good improved pasture can be grown on these soils. Most tame grasses that grow in the county are suitable, but growth is stunted in dry seasons because roots do not penetrate the soils deeply. Most legumes are not well suited. The more drought-resistant ones, however, can be grown successfully on the deeper soils if management is good. Soon after seeding, a full sod needs to form to prevent severe erosion while the pasture is being established. Give special protection to active gullies by diverting water and establishing a good sod. Prepare the seedbed carefully. Use enough seed or sprigs, apply adequate fertilizer and lime, and control grazing.

These soils are well suited to pine and hardwood trees. Much of the acreage is cutover woodland of poor quality that can be improved by good management.

Wooded areas can be managed to provide food and cover for wildlife. Lespedeza and other plants that grow well on these soils will provide food for small wildlife. In addition, these plants protect the soils.

CAPABILITY UNIT IIIse-1

In this unit are deep, well-drained, sandy soils that are in high, broad areas on uplands. These soils are uneroded or slightly eroded and are moderately susceptible to erosion where cultivated. They have a deep, fine sand to loamy sand surface layer. They are porous and rapidly permeable to water and air. The available-moisture-holding capacity is low, and the soils are somewhat droughty in dry periods. The natural fertility is low, and added plant nutrients leach rapidly. In most places these soils are underlain by fine sandy loam to sandy clay loam at depths of 30 to 60 inches. They are medium to strongly acid and are low in organic matter. The soils in this unit are:

Arredondo fine sand, 0 to 5 percent slopes.
Eustis loamy sand, 0 to 5 percent slopes.
Eustis loamy sand, shallow, 0 to 2 percent slopes.
Eustis loamy sand, shallow, 2 to 5 percent slopes.
Lakeland loamy sand, 0 to 5 percent slopes.
Lakeland loamy sand, shallow, 0 to 2 percent slopes.
Lakeland loamy sand, shallow, 2 to 5 percent slopes.

Use and management.—These soils are moderately well suited to most general crops but are not well suited to shade tobacco. Yields are fair if management is intense. Maintain organic matter and fertility by returning all crop residues to the soils, planting green-manure crops, and applying adequate fertilizer and lime. The cropping system should provide cover crops that occupy the soils at least two-thirds of the time, or it should provide improved pasture alternated with clean-tilled crops. The pasture needs to be in full sod on these soils at least 4 in every 6 years. Before planting the clean-tilled crops, plow under the sod. Plant annual cover crops after the tilled crops are harvested. Terraces are needed on the long slopes and should drain into stabilized outlets.

These soils are suited to improved pasture of grass. Planting clover is risky because the soils are sandy and somewhat droughty. Deep-rooting bahiagrass and improved strains of bermudagrass grow well if these soils are well fertilized and limed and are otherwise well managed. Management should provide a firm seedbed, enough sprigs or seed, adequate fertilizer and lime, and controlled grazing.

These soils are well suited to pine trees. Longleaf and slash pines, as well as various species of hardwoods, grow naturally on these soils.

In areas that are mostly in improved pasture and crops, odd corners and small areas are planted to supply cover and food for wildlife. Undeveloped woods are well suited to wildlife and can be managed to support more animals than they do. Lespedeza and other plants provide food and cover, and they protect the soils as well.

CAPABILITY UNIT IIIse-2

In this unit are deep to very deep, well-drained, sandy soils that occur in high, broad areas on uplands and on high stream terraces. These soils are nearly level to gently sloping and are only moderately susceptible to erosion. They have a surface layer of deep fine sand or sand more than 30 inches thick. They are very porous, are rapidly permeable to water and air, and are low in available moisture-holding capacity. Consequently, these soils are droughty. They are low in natural fertility and organic matter and are strongly acid. Plant nutrients leach rapidly. The soils in this unit are:

Huckabee fine sand, 0 to 5 percent slopes.
Lakeland sand, 0 to 5 percent slopes.

Use and management.—These soils need intensive management if they are cultivated. They are suited to watermelons, bright tobacco, and other specialized crops, as well as to general crops. Cultivated crops need to be grown in a cropping system providing well-managed pasture or with crops that improve the soils. Keep pasture or other cover crops on these soils at least two-thirds of the time. In extensive fields, plant cultivated crops and cover crops in alternate strips so that the soil is protected

against wind erosion. Partly because these soils are very porous, cover crops provide adequate protection against water erosion if cultivation is across the slope. Irrigation is desirable for special crops of high value.

These soils are moderately well suited to improved pasture. Bahiagrass, lovegrass, and improved strains of bermudagrass grow well. Grass-legume pastures are difficult to establish and maintain. Indigo, crotalaria, lupine, and other upright growing legumes are suitable for improving the soils before grass is planted. These legumes can be grown periodically with grass if the sod is scarified and grazing is closely regulated. Pasture management should provide a firm seedbed, enough seed or sprigs, adequate fertilizer and lime, and controlled grazing.

The native vegetation on these soils consists of open stands of longleaf pine, scrub oaks, a few small shrubs, and a ground cover of grasses and forbs.

Pine trees grow moderately well on these soils, but good stands are obtained only by planting seedlings and protecting them from fire and grazing.

Many kinds of native birds and animals live on undeveloped areas of these soils. This wildlife can be increased by growing food plants and following other good practices of wildlife management.

CAPABILITY UNIT IIIse-3

This capability unit consists of nearly level to gently sloping, moderately well drained, deep, sandy soils that have a sand or loamy sand texture to depths of more than 30 inches. The available moisture-holding capacity, natural fertility, and the amount of organic matter are low. Reaction is strongly acid. Aeration is good. These soils are porous and permeable. The depth to the water table varies greatly but normally it is high enough to affect the amount of moisture in the subsoil above 42 inches. Some areas of these soils are in isolated areas surrounded by areas of wetter or dryer soils. The soils in this unit are:

Blanton fine sand, terrace, 0 to 5 percent slopes.
Blanton fine sand, 0 to 5 percent slopes.
Blanton coarse sand, 0 to 5 percent slopes.
Klej loamy sand, shallow, 0 to 2 percent slopes.
Klej loamy sand, shallow, 2 to 5 percent slopes.
Klej sand, 0 to 5 percent slopes.
Klej coarse sand, 0 to 5 percent slopes.

Use and management.—These soils are only moderately well suited to most general crops. They need intensive practices of soil improvement for good yields. Maintain fertility and organic matter by returning all crop residue to the soils, planting green-manure crops, and applying adequate fertilizer and lime. The cropping system should provide cover crops, green-manure crops, or pasture at least two-thirds of the time. Before planting cultivated crops, plow under crop residue; after cultivated crops are harvested, plant cover crops. Wetter soils that surround areas of these soils need surface drainage in wet seasons.

These soils are suited to improved pasture of grass. Deep-rooting grasses grow well if these soils are fertilized and limed and otherwise well managed. The roots of these grasses penetrate the moist zone above the water table.

These soils are well suited to pine trees, which grow rapidly. Undeveloped areas of these soils are well suited to wildlife. These areas will support more wildlife than they do now if food plants are grown and other practices of wildlife management are followed.

CAPABILITY UNIT IIIws-1

In this capability unit are somewhat poorly drained soils that have a high water table. These soils are wet part of the time unless they are artificially drained. Their surface layer consists of loamy sand, 7 to 18 inches thick. It is underlain by a fine sandy clay loam subsoil, 16 to 24 inches thick. These soils have a moderate amount of organic matter and moderately low fertility. They have a high available moisture-holding capacity. The slopes are normally less than 2 percent, but in a few places they range from 2 to 5 percent. The soils in this unit are:

Lynchburg loamy fine sand, 0 to 2 percent slopes.
Lynchburg loamy fine sand, 2 to 5 percent slopes.
Lynchburg loamy sand, thick surface, 0 to 2 percent slopes.
Lynchburg loamy sand, thick surface, 2 to 5 percent slopes.

Use and management.—If they are fertilized and otherwise well managed, these soils are well suited to crops that tolerate wetness. Truck crops, potatoes, corn, small grains, and soybeans grow well. Maintain high fertility and organic matter by returning all crop residue to the soils, planting green-manure crops, and applying adequate lime and fertilizer. Provide bedding of the soil and open ditches to drain surface water away quickly. The cropping system should provide cover crops that occupy the soils at least half the time. If cultivated crops are alternated with improved pasture, the soils should be kept in pasture at least 2 years after each cultivation.

The soils of this unit are suited to most pasture grasses and legumes grown in the county, but drains are needed to remove water quickly in wet seasons. Both cool-season and warm-season plants grow well if the soils are fertilized and limed. Tall fescue, white clover, crimson clover, and sweet clover are suitable cool-season plants; bahiagrass and improved bermudagrass are suitable warm-season plants. These soils need normal practices of good pasture management.

These soils are well suited to pine trees. Undisturbed areas of these soils provide shelter and a small amount of food for many kinds of wildlife. If food plants are planted in the open areas, the undisturbed areas will support more wildlife than they do now. Wildlife management in farmed areas provides field borders and food strips.

CAPABILITY UNIT IIIws-2

This capability unit consists of poorly drained to very poorly drained, dark-colored, acid soils. These soils are very wet most of the time unless they are artificially drained. They have a black to very dark gray fine sand and fine sandy loam surface layer, 8 to 18 inches thick. The surface layer contains a large amount of organic matter and nitrogen. The Rutlege soils have a sandy subsoil, and the Portsmouth soil has a fine sandy clay loam subsoil below depths of 10 to 18 inches. These soils are very low in all plant nutrients except nitrogen. They have a medium to high available moisture-holding capacity. The slopes are normally less than 2 percent, but in a few places they are slightly more than 5 percent. The soils in this unit are:

Portsmouth fine sandy loam.
Rutlege fine sand, 0 to 2 percent slopes.
Rutlege fine sand, 2 to 5 percent slopes.

Use and management.—The soils in this unit are inextensive. They are not well suited to general crops. If

drained and otherwise well managed, they can be cultivated. They are suited to truck crops, but these crops may be damaged by frost. Maintain fertility and increase yields by applying lime and fertilizer. The cropping system should provide cover crops of grasses and legumes at least two-thirds of the time. Tilled crops should not be grown more than 1 in every 3 years.

If they are intensively managed, these soils are well suited to improved pasture. They need drains that remove excess water after heavy rains. If they are adequately limed and fertilized, these soils provide good winter pasture of grass and clover. They are also well suited to pasture of warm-season grasses.

The native vegetation consists of cypress and water-tolerant hardwoods. Undisturbed areas of these soils provide shelter and nesting places for many kinds of wildlife. Many uncleared areas are best used as wildlife habitats. These areas can be managed to support more wildlife than they do now.

CAPABILITY UNIT IVe-1

This capability unit consists of well-drained, deep, acid soils that have a loamy fine sand or fine sandy loam surface layer and a fine sandy loam to fine sandy clay loam subsoil. These soils are slightly eroded to severely eroded and are highly susceptible to further erosion. The slightly eroded soils have a surface layer that is 10 to 18 inches thick, but very little of the surface layer remains on the severely eroded areas. The subsoil is generally 30 to 48 inches thick. These soils are low in most plant nutrients, but they retain fertilizers well in a form that plants can use. Though water moves rapidly through them, they have a high available moisture-holding capacity. Aeration is good. The soils in this unit are:

Norfolk loamy fine sand, 8 to 12 percent slopes.
Orangeburg loamy fine sand, 8 to 12 percent slopes.
Red Bay loamy fine sand, 8 to 12 percent slopes.
Red Bay fine sandy loam, 5 to 8 percent slopes, severely eroded.
Ruston loamy fine sand, 8 to 12 percent slopes.
Ruston fine sandy loam, 5 to 8 percent slopes, severely eroded.

Use and management.—Much of the acreage has been cleared and is cultivated or is in pasture. The soils need intensive management if they are cultivated. They are suited to a wide choice of crops but need large amounts of fertilizer to produce good yields. Because they are sloping and susceptible to erosion, these soils should be in close-growing crops most of the time. Cultivated crops need to be grown in a cropping system that includes a full grass sod or other effective cover and green-manure crops at least three-fourths of the time. All natural draws and waterways should be kept in close-growing, perennial vegetation. Cultivated fields that have slopes less than 8 percent should be terraced. To control erosion, plant cultivated crops and close-growing crops in alternate strips across the slope.

These soils are well suited to most pasture grasses and legumes grown in the county. If fertilizer and lime are added, both cool-season and warm-season plants grow well. Cool-season plants that may be used are tall fescue, white clover, crimson clover, and sweet clover. White clover may be damaged by drought more often than other cool-season plants. Warm-season plants that grow well are bahiagrass and improved bermudagrass. Pasture plants need large additions of fertilizer. Grazing should be controlled. These soils are well suited to pine and hardwood trees.

Undisturbed areas of these soils provide shelter for many kinds of wildlife. If food plants are planted in open areas, the undisturbed areas will support more wildlife than they do now. Wildlife management in farmed areas provides food strips and protection of the area from fire.

CAPABILITY UNIT IVe-2

This capability unit consists of well-drained, deep, acid soils that have a loamy fine sand or fine sandy loam surface layer and a fine sandy clay loam to fine sandy clay subsoil. These soils are slightly eroded to severely eroded and are highly susceptible to further erosion. The slightly eroded soils have a surface layer that is 6 to 18 inches thick, but very little of the surface layer remains on the severely eroded areas. The subsoil is generally 30 to 48 inches thick. These soils are low in most plant nutrients but retain fertilizers well in a form that plants can use. Though permeability is moderately slow, the available moisture-holding capacity is high. Aeration is good. The soils in this unit are:

Carnegie loamy fine sand, 8 to 12 percent slopes.
Carnegie fine sandy loam, 5 to 8 percent slopes, severely eroded.
Faceville loamy fine sand, 8 to 12 percent slopes.
Faceville fine sandy loam, 5 to 8 percent slopes, severely eroded.
Magnolia loamy fine sand, 8 to 12 percent slopes.
Magnolia fine sandy loam, 5 to 8 percent slopes, severely eroded.

Use and management.—Much of the acreage of these soils has been cleared and is cultivated or in pasture. These soils need intensive management if they are cultivated. They are suited to a wide choice of crops but need large amounts of fertilizer to produce good yields. Because these soils are sloping and susceptible to erosion, they should be used mainly for pasture. Tilled crops should not be grown more than 1 in every 4 years. Partly because of their high water-holding capacity, these soils do not need irrigation for most crops. All natural draws and waterways where water accumulates should be kept in close-growing, perennial vegetation. Planting cultivated crops and close-growing crops in alternate strips across the slope will control erosion.

These soils are well suited to most pasture grasses and legumes grown in the county. If fertilizer and lime are added, both cool-season and warm-season plants grow well. Cool-season plants that may be used are tall fescue, white clover, crimson clover, and sweet clover. Warm-season plants that grow well are bahiagrass and improved bermudagrass. To produce high yields of pasture plants, apply fairly large amounts of fertilizer. These soils need normal practices of good pasture management.

These soils are well suited to pine and hardwood trees. Undeveloped areas of these soils provide shelter for many kinds of wildlife. If food plants are planted in open areas, the undeveloped areas will support more wildlife than they do now. Wildlife management in farmed areas provides food strips and protection of the area from fire.

CAPABILITY UNIT IVes-1

In this capability unit are well-drained, deep soils that normally have a loamy sand surface layer, 18 to 30 inches

thick. The subsoil is friable, porous, well-aerated sandy loam or sandy clay loam; it is underlain by sandy clay loam parent material. The surface layer is rapidly permeable, and the subsoil is moderately permeable. The available moisture-holding capacity ranges from low in the surface layer to moderately high in the subsoil. These soils are strongly acid, moderately low in organic matter, and low in natural fertility. They respond well to fertilizers. The soils in this unit are:

Norfolk loamy sand, thick surface, 8 to 12 percent slopes.
Orangeburg loamy sand, thick surface, 8 to 12 percent slopes.
Ruston loamy sand, thick surface, 8 to 12 percent slopes.
Ruston-Orangeburg-Lakeland complex, 8 to 12 percent slopes.

Use and management.—If they are cultivated, these soils need intensive management to control erosion. They are suited to a wide choice of crops but need large additions of lime and fertilizer to produce good yields. Maintain organic matter by returning crop residue to the soils and by planting green-manure crops and cover crops. Cultivated crops ought to be grown in a cropping system that provides a full grass sod at least 6 in every 8 years. Plant cultivated crops and improved pasture in alternate strips across the slope. Use the sod strips, which have been accurately located, as guides for contour cultivation. All natural draws and waterways should be kept in close-growing, perennial vegetation.

These soils are well suited to most grasses and legumes grown in the county. If adequate fertilizer and lime are added, most warm-season plants and some cool-season plants grow well. Suitable cool-season plants are crimson clover and sweet clover, but these soils are too sandy and too droughty to grow fescue or white clover. Bahiagrass and improved bermudagrass are the warm-season grasses generally used. Apply fairly large amounts of fertilizer to pasture. These soils need normal practices of pasture management.

Soils in this capability unit are well suited to pine and hardwood trees. Undisturbed areas of these soils are well suited to wildlife production. Lespedeza and other wildlife food plants grow well under normal practices of wildlife management. They provide protection to the soil.

CAPABILITY UNIT IVes-2

In this capability unit are the well-drained to moderately well drained, gently sloping and sloping soils that have a loamy fine sand surface layer, 6 to 14 inches thick. The subsoil is compact, slowly permeable sandy clay to clay. The parent material is moderately fine textured, compact, and very slowly permeable. These soils have a shallow root zone. The available moisture-holding capacity is low. Permeability is slow, runoff is excessive, and the soils erode easily. They contain little organic matter and have low natural fertility. They have poor aeration. The soils in this unit are:

Cuthbert loamy fine sand, 5 to 8 percent slopes.
Lakeland-Eustis-Cuthbert complex, 5 to 8 percent slopes.
Sawyer loamy fine sand, 5 to 8 percent slopes.
Susquehanna loamy fine sand, 2 to 5 percent slopes.

Use and management.—Partly because these soils have a shallow root zone, the range of suitable crops is narrow. Cultivated crops are only moderately well suited. Yields are low unless the soils are well managed. Maintain fertility and increase crop yields by returning all crop residue to the soil, planting green-manure crops, and applying adequate fertilizer and lime. Cultivated crops should not occupy these soils more than one-fourth of the time. Keep these soils in well-managed pasture or close-growing cover crops 6 in every 8 years.

These soils are moderately well suited to most locally grown pasture plants. Bahiagrass and bermudagrass are suitable, but growth is retarded in dry seasons because the roots do not penetrate deeply. Some of the more drought resistant legumes can be grown on the deeper soils if they are managed well. Because these soils are highly erodible, pasture needs large additions of fertilizer and lime, diversion of water from active gullies until a full sod is formed, and other good management.

The native vegetation was a mixed growth of longleaf pine, hickory, and oaks. These soils are well suited to pine trees.

Undisturbed areas of these soils are suited to wildlife range. Lespedeza and other wildlife food plants produce well with good management. In farmed areas conditions for wildlife can be improved by providing borders and strips where they can feed.

CAPABILITY UNIT IVse-1

This capability unit consists of well-drained, deep, sloping and strongly sloping fine sands and loamy sands. These soils have a surface layer more than 30 inches thick. Their subsoil is sandy loam to sandy clay loam. They are porous and well aerated throughout the profile. The available moisture-holding capacity is low, and the soils are somewhat droughty in dry seasons. Natural fertility is low and plant nutrients leach rapidly. The reaction is strongly acid, and the content of organic matter is low. The soils in this unit are:

Arredondo fine sand, 5 to 8 percent slopes.
Eustis loamy sand, 5 to 8 percent slopes.
Eustis loamy sand, shallow, 5 to 8 percent slopes.
Lakeland loamy sand, 5 to 12 percent slopes.
Lakeland loamy sand, shallow, 5 to 8 percent slopes.

Use and management.—If managed intensely to control erosion, these soils can be cultivated occasionally. To maintain organic matter and produce good yields, plant green-manure crops, return all crop residue to the soil, and apply adequate fertilizer and lime. Cultivated crops need to be in a cropping system that provides improved pasture at least three-fourths of the time, or 6 in every 8 years. Plant cultivated crops and pasture in alternate strips across the slope. After cultivated crops are harvested, plant annual cover crops. All natural draws and waterways should be kept in close-growing perennial vegetation.

These soils are well suited to improved pasture. If well fertilized and limed, bahiagrass and improved bermudagrass grow well. White clover and other clovers may be damaged by drought because these soils are somewhat droughty. Pasture plants need fairly large additions of fertilizer for high yields. Apply normal practices of good pasture management.

The native vegetation was scattered slash and longleaf pines and hardwoods, which are well suited to these soils.

Undeveloped woods are well suited to wildlife. If lespedeza and other food plants are planted in open spaces, the undisturbed areas will produce more wildlife than they do now. These plants will provide some protection against erosion.

CAPABILITY UNIT IVse-2

This capability unit consists of well drained to excessively drained, very deep coarse sands in nearly level and gently sloping areas. The coarse sand texture extends to depths more than 60 inches. The soils are very porous, rapidly permeable, and well aerated throughout the profile. The available moisture-holding capacity is very low. Natural fertility is very low, and plant nutrients leach rapidly. These soils are strongly acid and are very low in organic matter. The soils in this unit are:

Eustis coarse sand, 0 to 5 percent slopes.
Eustis coarse sand, excessively drained, 0 to 5 percent slopes.
Lakeland coarse sand, 0 to 5 percent slopes.
Lakeland coarse sand, excessively drained, 0 to 5 percent slopes.

Use and management.—Even under intense management, these soils are suited to only a few special crops. If well fertilized, watermelons grow well, but corn and small grains produce only fair yields. Cover crops or improved pasture of perennial grass should occupy the soil at least three-fourths of the time. Maintain organic matter by returning all crop residue to the soil, planting green-manure crops, and applying adequate fertilizer and lime. Partly because these soils are porous and droughty, cover crops provide adequate protection from water and wind erosion if cultivation is across the slope.

These soils are moderately well suited to improved pasture. Bahiagrass and lovegrass are best suited, but some strains of improved bermudagrass can be grown. Grass-legume pasture is difficult to establish and maintain. Indigo, crotolaria, lupine, and other upright growing legumes can be grown to improve the soil before planting grass. These legumes can be grown with the grass from time to time if the sod is scarified and the grazing is regulated. These pastures make a good supplement to other pastures but need to be fertilized several days before they are used. To establish and maintain good pasture, prepare a firm seedbed, choose suitable plants, plant enough seed or sprigs, apply enough lime and fertilizer, and control grazing.

The native vegetation was longleaf pine, scrub oaks, grasses, and forbs. These soils are suited to pines, but good stands can be obtained only by planting seedlings.

Undeveloped areas provide shelter and a small amount of food for many kinds of wildlife. Population can be increased by planting food plants and following good practices of wildlife management.

CAPABILITY UNIT IVse-3

This capability unit consists of sloping, moderately well drained, deep sand and loamy sand. Most areas are on long, narrow slopes adjacent to similar soils on more gentle slopes. The surface layer is sand, fine sand, or loamy sand more than 30 inches thick. It is underlain by a moderately fine textured subsoil. Partly because of seepage and partly because of a high water table, these soils are wet most of the time. They are low in organic matter. They have low available moisture-holding capacity and low natural fertility. The soils in this unit are:

Blanton fine sand, 5 to 8 percent slopes.
Goldsboro loamy sand, thick surface, 5 to 8 percent slopes.
Klej sand, 5 to 8 percent slopes.

Use and management.—These soils are not well suited to cultivated crops. Under intensive management, general crops can be grown but yields are low. Large additions of lime and fertilizer, applied regularly, will increase yields. Plant cover crops and use plant residue to maintain organic matter. Clean-tilled crops should not be grown more than one-fourth of the time. The rest of the time, green-manure crops or pasture should be on these soils.

These soils are well suited to improved pasture. Bahiagrass and other deep-rooting grasses grow well because their roots penetrate to the moist layer above the water table.

These soils are well suited to pine trees. If woodlands are well managed, trees make moderately rapid growth.

Undeveloped woods provide shelter and a small amount of food for many kinds of wildlife. They can be managed to support more wildlife than they do now by planting food plants and following good practices of wildlife management.

CAPABILITY UNIT IVws-1

In this capability unit are nearly level, deep, acid soils that are poorly drained. These soils have a fine sandy loam or loamy fine sand surface soil, 6 to 18 inches thick. The subsoil is fine sandy clay loam and fine sandy clay. These soils have a moderate available moisture-holding capacity. The water table fluctuates between a level near the surface and a depth of about 24 inches. The content of organic matter and natural fertility are low. The subsoil is slowly permeable. Aeration is poor. The soils in this unit are:

Myatt loamy fine sand, 0 to 5 percent slopes.
Rains fine sandy loam.

Use and management.—These soils generally are not suited to cultivated crops. If drained, however, and otherwise well managed, some areas can be used for general crops. Apply large amounts of lime and fertilizer regularly to increase yields. Plant cover crops and use plant residue to maintain organic matter. Clean-tilled crops should not be grown more than one-fourth of the time. The rest of the time, cover crops or perennial sod should occupy the soils.

These soils are well suited to pasture of warm-season grasses, but simple drains are needed to remove excess water in rainy periods. If adequate fertilizer and lime are added, yields are high. Clovers can be grown with grasses for winter pasture, but irrigation is needed for successful growth.

The native vegetation is a dense growth of water-tolerant hardwoods and cypress trees. If adequately drained, these soils are suited to pine trees.

Most of these soils are still in native vegetation. These undeveloped woods are important nesting places and shelter areas for many kinds of wildlife, and this is their best use.

CAPABILITY UNIT IVsw-1

In this capability unit are nearly level, deep, acid, sandy soils that are somewhat poorly drained. These soils are wet nearly all of the time. Their surface layer is sand, 2 to 5 inches thick. Their subsoil is sand or coarse sand. These soils have a low available moisture-holding capacity and a low content of organic matter. They are low in natural fertility. Aeration is poor. The soils in this unit are:

Leon sand.
Plummer sand, high, 0 to 2 percent slopes.
Plummer sand, high, 2 to 5 percent slopes.

Use and management.—Under intense management, these soils are suited to crops that tolerate wetness. Because of a fluctuating water table, the soils are droughty in dry periods and wet in rainy periods. In areas where the height of the water table is controlled by shallow ditches, yields are higher than elsewhere. Apply large amounts of lime and fertilizer regularly for good yields. Plant cover crops and use plant residue to maintain organic matter. Cover crops and improved pasture should occupy the soils at least three-fourths of the time, or 6 in every 8 years. Sod should be plowed under before planting a clean-tilled crop, and cover crops should be planted after the tilled crops are harvested.

These soils are well suited to improved pasture. Bahiagrass and other deep-rooting grasses grow well on these soils if they are fertilized and otherwise well managed. Partly because of a low moisture-holding capacity, these soils need irrigation to produce legume pasture.

These soils are well suited to slash and longleaf pines. If woodlands are well managed, trees grow moderately well.

Undeveloped woods are well suited to many kinds of wildlife. If food plants are planted in open spaces, these areas can be managed to support more wildlife than they do now. In farmed areas wildlife management consists mostly in providing wildlife borders and food strips.

CAPABILITY UNIT Vws-1

In this capability unit are nearly level, moderately well drained to very poorly drained soils on stream terraces and nearly level, moderately well drained to poorly drained soils on first bottoms or low uplands. These soils have excessive wetness. The soils on stream terraces are difficult to drain; those on first bottoms and low uplands are frequently flooded. The surface layer of these soils ranges from fine sandy loam to silt loam, and it is less than 18 inches thick. The subsoil is fine sandy clay to silty clay. These soils have a moderately high to high capacity to hold available moisture and contain a moderate amount of organic matter. They are poorly aerated. The soils in this unit are:

Congaree silt loam.
Grady fine sandy loam.
Leaf very fine sandy loam.

Use and management.—Partly because they flood frequently, these soils are not suited to cultivated crops. If they could be drained and protected from floods, a few areas would be suited to truck crops and other crops of high value. Reclamation of these areas, however, is not feasible; the cost of protecting them against floods is too high.

If they are intensely managed, these soils are suited to improved pasture. Simple drains are needed to remove excess water in rainy periods. If adequate fertilizer and lime are added, both cool-season and warm-season plants grow well. Tall fescue, crimson clover, white clover, and sweet clover are suitable cool-season plants; bahiagrass and improved bermudagrass are suitable warm-season plants. Because they are puddled by trampling animals, these soils should be grazed only in drier periods.

The native vegetation consists chiefly of hardwoods, which are well suited to these soils. Undeveloped woods are well suited to wildlife. These areas furnish nesting places and shelter for many kinds of wildlife.

CAPABILITY UNIT Vws-2

In this capability unit are nearly level to gently sloping, poorly drained to somewhat poorly drained, deep, sandy soils. These soils have a low content of organic matter and a low capacity for holding available moisture. Natural fertility is low and tilth is poor. The soils in this unit are:

Plummer sand, 0 to 2 percent slopes.
Plummer sand, 2 to 5 percent slopes.
Plummer coarse sand, high, 0 to 2 percent slopes.

Use and management.—Most of the acreage in these soils is still in native vegetation; a few acres are in pasture. Partly because they are wet, these soils are not suited to cultivated crops.

Under intensive management, some areas of these soils can be used for pasture. The choice of plants, however, is very narrow. Use simple drains to remove excess water in rainy periods. If adequate fertilizer and lime are added, yields are moderately high. Bahiagrass grows well, but bermudagrass does not. Clovers can be grown with grass for winter pasture, but irrigation is needed for successful growth.

The native vegetation varies from dense hardwoods in swamp areas to scattered longleaf pine in better drained areas. If drained, these soils are suited to pine trees.

Undisturbed areas of these soils are important nesting places and shelter areas for many kinds of wildlife. If food plants are planted in better drained areas, these soils will support more wildlife than they do now.

CAPABILITY UNIT VIes-1

In this capability unit are strongly sloping, well drained to moderately well drained, deep soils. Their surface layer ranges from loamy sand to sandy loam and is less than 18 inches thick. The subsoil is normally moderately fine textured, but a few areas have a deep sand subsoil. These soils are slightly to severely eroded. The soils in this unit are:

Arredondo-Fellowship-Gainesville soils, 8 to 12 percent slopes.
Faceville-Shubuta-Ruston complex, 8 to 12 percent slopes.
Faceville fine sandy loam, 8 to 12 percent slopes, severely eroded.
Lakeland-Eustis-Cuthbert complex, 8 to 12 percent slopes.
Magnolia fine sandy loam, 8 to 12 percent slopes, severely eroded.
Red Bay fine sandy loam, 8 to 12 percent slopes, severely eroded.

Use and management.—Because they have strong slopes and a serious hazard of erosion, these soils are not suited to cultivated crops. If they are cultivated, they need very intensive management to control erosion. A cultivated crop should be followed by several years of pasture. Divert excess water by ditches and stabilized gullies. Plant alternate strips across the slope in different years. The moderately eroded soils in this unit are well suited to pasture. If adequate fertilizer and lime are added, pasture plants grow well. Severely eroded soils need large additions of organic matter, as well as fertilizer and lime, before pasture is seeded. These soils need a pasture crop that forms a full sod soon after seeding. Keep plant growth strong by regulating grazing.

Most areas of these soils are in cutover woodland. They are suited to both pines and hardwoods.

Undeveloped woods are well suited to wildlife. Lespedeza and other food plants grow well under normal practices of wildlife management. These plants also provide protection for the soils.

CAPABILITY UNIT VIes-2

This capability unit consists of nearly level to strongly sloping, well drained to moderately well drained soils. They have a loamy fine sand surface layer and sandy clay or clay subsoil. Partly because they have a very slowly permeable, clayey subsoil, these soils are highly susceptible to erosion. They have a low content of organic matter and a low available moisture-holding capacity. They are strongly acid, except for the widely scattered areas of Binnsville soils, which are neutral in reaction. In some places the substratum within a depth of about 20 inches consists of marly clay. The soils in this unit are:

Binnsville soils, 2 to 12 percent slopes.
Cuthbert, Boswell, and Susquehanna soils, 5 to 12 percent slopes.
Susquehanna loamy fine sand, 5 to 8 percent slopes.
Susquehanna-Boswell-Binnsville complex, marly substratum, 5 to 12 percent slopes.
Susquehanna-Sawyer complex, 5 to 12 percent slopes.

Use and management.—Because they have a shallow root zone and are strongly sloping, these soils are not suited to cultivated crops. Some areas are suited to pasture but need intensive management to control erosion while the pasture is being established. A full sod should form soon after the time of seeding. If adequately fertilized and limed, these areas produce good yields of improved bermudagrass and bahiagrass. Most clovers grow well late in winter and in spring. Keep plant growth strong by rigidly regulating grazing. Steep areas and limestone outcrops should be left in native vegetation.

These soils are suited to both hardwoods and pines. These soils are well suited to wildlife. Many food plants grow as part of the native vegetation. Normal practices of wildlife management are needed to encourage the growth of these plants.

CAPABILITY UNIT VIse-1

This capability unit consists of well-drained to excessively drained, deep, acid soils that are sloping to strongly sloping. The surface layer and subsoil are sand or coarse sand. These soils are porous, rapidly permeable, and very low in available moisture-holding capacity. Plant nutrients leach rapidly. These soils have a very low content of organic matter and low natural fertility. The soils in this unit are:

Eustis coarse sand, 5 to 12 percent slopes.
Lakeland sand, 5 to 12 percent slopes.
Lakeland coarse sand, 5 to 12 percent slopes.
Lakeland coarse sand, excessively drained, 5 to 12 percent slopes.

Use and management.—Because they are sandy and low in natural fertility, these soils are not suited to most cultivated crops. If, however, adequate fertilizer and lime are added, watermelons grow fairly well. This crop should be grown only on mild slopes and for not more than 1 in every 4 years. Maintain organic matter by growing large amounts of vegetation and plowing it under. If they are cultivated, these soils should be in pasture several successive years after each cultivation.

These soils are only fairly well suited to pasture. If they are limed and fertilized and otherwise well managed, bahiagrass, lovegrass, and other deep-rooted grasses grow fairly well. Indigo, crotalaria, lupines, and other upright growing legumes may be grown for soil improvement before planting grass. If the sod is scarified and grazing is closely regulated, some of these legumes may be grown with the grasses. These soils are suited to supplemental pasture, but they need a heavy application of fertilizer several days before grazing is started. The normal practices of good pasture management should be followed.

These soils are only moderately well suited to woodland. The native vegetation is chiefly scrub oaks and scattered pine.

Undeveloped areas provide shelter and a small amount of food for many kinds of wildlife. Population can be increased by planting food plants and following good practices of wildlife management.

CAPABILITY UNIT VIIes-1

In this capability unit are strongly sloping to steep, well-drained soils. Although they differ widely in many characteristics, they are similar in steepness of slopes. The soils range from deep, porous sands to those having a sandy surface layer less than 18 inches thick that is underlain by a fine sandy clay loam or a fine sandy clay subsoil. A few of these soils are severely eroded. The soils in this unit are:

Arredondo-Fellowship-Gainesville soils, 12 to 40 percent slopes.
Faceville-Shubuta-Ruston complex, 8 to 12 percent slopes, severely eroded.
Faceville-Shubuta-Ruston complex, 12 to 35 percent slopes.
Faceville-Shubuta-Ruston complex, 12 to 35 percent slopes, severely eroded.
Lakeland and Eustis sands, 12 to 50 percent slopes.
Lakeland-Eustis-Cuthbert complex, 12 to 45 percent slopes.
Ruston-Orangeburg-Lakeland complex, 12 to 50 percent slopes.
Ruston-Orangeburg-Lakeland complex, 12 to 50 percent slopes, severely eroded.

Use and management.—These soils are not suited to cultivated crops or to pasture. Because they are strongly sloping and highly susceptible to erosion, they should be kept under continuous cover. They produce a moderate to good growth of pines and hardwoods, and they are best used for growing trees.

Most of these soils are on slopes adjacent to streams or branches. Many kinds of plants that supply food for wildlife can be planted. In addition, these soils provide a natural feeding area for many kinds of wildlife that live in the dense growth of the stream swamps. The soils need normal practices of wildlife management.

CAPABILITY UNIT VIIes-2

This capability unit consists of steep, well drained to moderately well drained soils that have fine and very fine textured, thin subsoil. They are underlain by sandy clay, clay, and marly clay. The soils are strongly acid except in a few places where they are neutral. The slopes range from 12 to 60 percent. These soils generally are only slightly eroded, but they are susceptible to further erosion. The soils in this unit are:

Cuthbert, Boswell, and Susquehanna soils, 12 to 60 percent slopes.
Susquehanna-Boswell-Binnsville complex, marly substratum, 12 to 50 percent slopes.
Susquehanna-Sawyer complex, 12 to 50 percent slopes.

Use and management.—These soils are not suited to cultivated crops and are only moderately well suited to pasture. Many areas are too steep for good pasture management. If farm needs demand the use of these soils for pasture, use the best practices possible for fertilizing, liming, seeding, and water control Apply adequate

lime and fertilizer, and try to get a full sod soon after seeding. Plant in contour strips, stabilize gullies, and dig diversion ditches to control erosion. Grazing should be rigidly controlled to prevent overgrazing and unnecessary trampling.

These soils are well suited to pines and hardwoods. Much of the area is cutover woodland. Natural reforestation should be encouraged in these areas.

Most of these soils are on slopes adjacent to streams and branches. Many kinds of plants that supply food for wildlife can be planted. In addition, these soils provide a natural feeding area for many kinds of wildlife that live in the dense growth of the stream swamps. The soils need normal practices of wildlife management.

Estimated Yields

Table 1 lists estimated average acre yields for the principal crops grown in the county. In columns A are yields to be expected under the management generally practiced in the county, and in columns B are yields to be expected under improved management. Only one yield level is given for shade tobacco, because soils used for this crop normally receive only the best management.

Estimated yields are not given for some crops on some soils, because the expected yields are too low or the needed management is too exacting to warrant growing the crop on these soils.

The yield data for crops are based on information obtained from many farmers of the county, from the district soil conservationist, from the county agricultural agent, and from other agricultural leaders, as well as information gained from observations made by members of the soil survey party, from research data compiled by the North Florida Agricultural Experiment Station, and from records of other crop yields. For many soils, however, accurate records on crop yields were not available, and yield estimates for these, therefore, are based on yields on similar soils.

Except for shade tobacco, the yields in columns B are those expected under good management, without irrigation. The yields of shade tobacco are those expected with supplemental irrigation.

Improved management provides:

1. Proper selection of crops and cropping systems.
2. Additions of commercial fertilizer, lime, and other amendments according to the results of soil tests.
3. Study of the cropping history of the soil.
4. Maintenance of organic matter at a high level.
5. Planting and seeding of high-yielding varieties and hybrids.
6. Planting and seeding at recommended rates and at proper time.
7. Control of weeds, insects, and plant disease.
8. Control of excess water by artificial drainage.
9. Conservation of soil material, plant nutrients, and moisture.

The level of management needed to get the yields in columns B is about equivalent to that described for the capability units in the subsection "Capability Groups of Soils."

The miscellaneous land types are not listed in table 1, because they are not suited to crops. These land types are Alluvial land; Gullied land; Mines, pits, and dumps; and Swamp.

TABLE 1.—*Estimated acre yields of principal crops and carrying capacity of pasture under two levels of management*

[In columns A are estimated yields of crops and pasture under common management; in columns B are those under the highest level of management feasible. Estimates for only one level of management are listed for shade tobacco because this specialized crop generally receives only the highest level of management. Dashed lines indicate that the crop is not generally grown on the soil]

Soil	Corn		Peanuts		Shade tobacco	Oats		Pasture	
	A	B	A	B	B	A	B	A	B
	Bu.	*Bu.*	*Lb.*	*Lb.*	*Lb.*	*Bu.*	*Bu.*	*Cow-days* [1]	*Cow-days* [1]
Arredondo fine sand, 0 to 5 percent slopes	25	45	1,000	1,250		20	40	140	240
Arredondo fine sand, 5 to 8 percent slopes	15	30	800	1,000		15	35	120	220
Arredondo-Fellowship-Gainesville soils, 8 to 12 percent slopes								120	240
Arredondo-Fellowship-Gainesville soils, 12 to 40 percent slopes									
Binnsville soils, 2 to 12 percent slopes									
Blanton fine sand, 0 to 5 percent slopes	20	40				20	40	150	250
Blanton fine sand, 5 to 8 percent slopes	20	35				20	40	150	250
Blanton coarse sand, 0 to 5 percent slopes	15	25				15	25	140	240
Blanton fine sand, terrace, 0 to 5 percent slopes	20	35				15	35	150	250
Carnegie fine sandy loam, 5 to 8 percent slopes, severely eroded						15	30	140	290
Carnegie loamy fine sand, 0 to 2 percent slopes	45	75	1,350	1,650	1,700	40	60	170	320
Carnegie loamy fine sand, 2 to 5 percent slopes	45	75	1,350	1,650	1,600	40	60	170	320
Carnegie loamy fine sand, 2 to 5 percent slopes, eroded	40	65	1,200	1,500	1,600	35	55	150	300
Carnegie loamy fine sand, 5 to 8 percent slopes	30	55	1,050	1,300	1,450	30	50	170	300
Carnegie loamy fine sand, 5 to 8 percent slopes, eroded	25	45	900	1,150	1,300	25	45	145	295
Carnegie loamy fine sand, 8 to 12 percent slopes								140	290
Congaree silt loam									

See footnote at end of table.

TABLE 1.—*Estimated acre yields of principal crops and carrying capacity of pasture under two levels of management*—Con.

Soil	Corn		Peanuts		Shade tobacco	Oats		Pasture	
	A	B	A	B	B	A	B	A	B
	Bu.	*Bu.*	*Lb.*	*Lb.*	*Lb.*	*Bu.*	*Bu.*	*Cow-days* [1]	*Cow-days* [1]
Cuthbert loamy fine sand, 2 to 5 percent slopes	20	40				20	40	160	220
Cuthbert loamy fine sand, 5 to 8 percent slopes								130	210
Cuthbert, Boswell, and Susquehanna soils, 5 to 12 percent slopes								130	210
Cuthbert, Boswell, and Susquehanna soils, 12 to 60 percent slopes									
Eustis loamy sand, 0 to 5 percent slopes	20	40	900	1, 200	850	20	40	140	240
Eustis loamy sand, 5 to 8 percent slopes	15	30	600	1, 000	600	15	35	120	220
Eustis loamy sand, shallow, 0 to 2 percent slopes	25	45	1, 000	1, 300	1, 000	25	45	140	250
Eustis loamy sand, shallow, 2 to 5 percent slopes	25	45	1, 000	1, 300	900	25	45	140	250
Eustis loamy sand, shallow, 5 to 8 percent slopes	20	20	900	1 150	800	15	35	120	230
Eustis coarse sand, 0 to 5 percent slopes								120	180
Eustis coarse sand, 5 to 12 percent slopes								120	170
Eustis coarse sand, excessively drained, 0 to 5 percent slopes								100	150
Faceville loamy fine sand, 0 to 2 percent slopes	45	75	1, 300	1, 650	1, 600	40	60	170	320
Faceville loamy fine sand, 2 to 5 percent slopes	45	75	1, 300	1, 650	1, 500	40	60	170	320
Faceville loamy fine sand, 2 to 5 percent slopes, eroded	40	65	1, 200	1, 500	1, 500	35	55	150	300
Faceville loamy fine sand, 5 to 8 percent slopes	30	55	1, 050	1, 300	1, 350	30	50	150	300
Faceville loamy fine sand, 5 to 8 percent slopes, eroded	25	45	900	1, 150	1, 300	25	45	145	295
Faceville loamy fine sand, 8 to 12 percent slopes								140	290
Faceville fine sandy loam, 5 to 8 percent slopes, severely eroded						15	30	140	290
Faceville fine sandy loam, 8 to 12 percent slopes, severely eroded								130	260
Faceville, Shubuta-Ruston complex, 8 to 12 percent slopes								140	290
Faceville-Shubuta-Ruston complex, 8 to 12 percent slopes, severely eroded									
Faceville-Shubuta-Ruston complex, 12 to 35 percent slopes									
Faceville-Shubuta-Ruston complex, 12 to 35 percent slopes, severely eroded									
Goldsboro loamy fine sand, 0 to 2 percent slopes	35	60			1, 400	30	50	160	300
Goldsboro loamy fine sand, 2 to 5 percent slopes	40	65			1, 500	30	50	160	300
Goldsboro loamy sand, thick surface, 0 to 2 percent slopes	30	55			1, 300	30	50	150	280
Goldsboro loamy sand, thick surface, 2 to 5 percent slopes	30	55			1, 400	25	45	150	280
Goldsboro loamy sand, thick surface, 5 to 8 percent slopes	30	55				25	45	150	280
Grady fine sandy loam								170	320
Hannahatchee soils, local alluvium	45	75				40	60	200	320
Huckabee fine sand, 0 to 5 percent slopes	20	35	800	1, 100		20	40	140	230
Izagora loamy fine sand	35	60				30	50	160	300
Kalmia loamy fine sand, 0 to 2 percent slopes	40	65	1, 200	1, 550		35	55	160	300
Klej loamy sand, shallow, 0 to 2 percent slopes	25	40			1, 100	15	25	150	280
Klej loamy sand, shallow, 2 to 5 percent slopes	20	40			1, 100	15	25	150	280
Klej sand, 0 to 5 percent slopes	20	40				20	40	150	250
Klej sand, 5 to 8 percent slopes	18	35				20	40	150	250
Klej coarse sand, 0 to 5 percent slopes						10	20	100	200
Lakeland loamy sand, 0 to 5 percent slopes	20	40	900	1, 200		20	40	140	240
Lakeland loamy sand, 5 to 12 percent slopes	15	30	600	1, 000		15	35	120	220
Lakeland loamy sand, shallow, 0 to 2 percent slopes	25	45	1, 000	1, 300	1, 300	25	45	140	250
Lakeland loamy sand, shallow, 2 to 5 percent slopes	25	45	1, 000	1, 300	1, 200	25	45	140	250
Lakeland loamy sand, shallow, 5 to 8 percent slopes	20	35	900	1, 150	1, 200	15	35	120	230
Lakeland sand, 0 to 5 percent slopes	15	35	600	800		10	20	140	230
Lakeland sand, 5 to 12 percent slopes	15	30				10	20	120	210
Lakeland coarse sand, 0 to 5 percent slopes								120	180
Lakeland coarse sand, 5 to 12 percent slopes								120	170
Lakeland coarse sand, excessively drained, 0 to 5 percent slopes									
Lakeland coarse sand, excessively drained, 5 to 12 percent slopes									

See footnote at end of table.

TABLE 1.—*Estimated acre yields of principal crops and carrying capacity of pasture under two levels of management*—Con.

Soil	Corn		Peanuts		Shade tobacco	Oats		Pasture	
	A	B	A	B	B	A	B	A	B
	Bu.	*Bu.*	*Lb.*	*Lb.*	*Lb.*	*Bu.*	*Bu.*	*Cow-days* [1]	*Cow-days* [1]
Lakeland and Eustis sand, 12 to 50 percent slopes									
Lakeland-Eustis-Cuthbert complex, 5 to 8 percent slopes	15	30				15	25	120	170
Lakeland-Eustis-Cuthbert complex, 8 to 12 percent slopes									
Lakeland-Eustis-Cuthbert complex, 12 to 45 percent slopes									
Leaf very fine sandy loam								180	320
Leon sand								100	200
Lynchburg loamy fine sand, 0 to 2 percent slopes								175	300
Lynchburg loamy fine sand, 2 to 5 percent slopes								175	300
Lynchburg loamy sand, thick surface, 0 to 2 percent slopes								165	290
Lynchburg loamy sand, thick surface, 2 to 5 percent slopes								165	290
Magnolia loamy fine sand, 0 to 2 percent slopes	45	75	1, 300	1, 650	1, 600	40	60	170	320
Magnolia loamy fine sand, 0 to 2 percent slopes, eroded	40	70	1, 250	1, 650	1, 600	35	55	150	300
Magnolia loamy fine sand, 2 to 5 percent slopes	45	75	1, 300	1, 650	1, 500	40	60	170	320
Magnolia loamy fine sand, 2 to 5 percent slopes, eroded	40	65	1, 200	1, 500	1, 500	35	55	150	300
Magnolia loamy fine sand, 5 to 8 percent slopes	30	55	1, 050	1, 300	1, 350	30	50	150	300
Magnolia loamy fine sand, 5 to 8 percent slopes, eroded	25	45	900	1, 150	1, 300	25	45	145	295
Magnolia loamy fine sand, 8 to 12 percent slopes								140	290
Magnolia fine sandy loam, 2 to 5 percent slopes, severely eroded	30	35	1, 050	1, 400	1, 400	30	50	140	290
Magnolia fine sandy loam, 5 to 8 percent slopes, severely eroded						15	30	140	290
Magnolia fine sandy loam, 8 to 12 percent slopes, severely eroded								130	260
Myatt loamy fine sand, 0 to 5 percent slopes								160	300
Norfolk loamy fine sand, pebbly, 0 to 2 percent slopes	45	70	1, 200	1, 550	1, 500	40	60	160	300
Norfolk loamy fine sand, pebbly, 2 to 5 percent slopes	45	70	1, 200	1, 550	1, 450	40	60	160	300
Norfolk loamy fine sand, pebbly, 2 to 5 percent slopes, eroded	40	65	1, 050	1, 400	1, 450	35	55	140	280
Norfolk loamy fine sand, 0 to 2 percent slopes	45	70	1, 200	1, 550	1, 400	40	60	160	300
Norfolk loamy fine sand, 2 to 5 percent slopes	40	70	1, 200	1, 550	1, 300	40	60	160	300
Norfolk loamy fine sand, 2 to 5 percent slopes, eroded	40	65	1, 050	1, 400	1, 300	35	55	140	280
Norfolk loamy fine sand, 5 to 8 percent slopes	30	55	950	1, 250	1, 200	30	50	140	280
Norfolk loamy fine sand, 5 to 8 percent slopes, eroded	25	45	800	1, 100	1, 100	25	45	135	275
Norfolk loamy fine sand, 8 to 12 percent slopes								130	270
Norfolk loamy sand, thick surface, 0 to 2 percent slopes	40	65	1, 100	1, 450	1, 400	35	55	150	280
Norfolk loamy sand, thick surface, 2 to 5 percent slopes	35	65	1, 100	1, 450	1, 300	35	55	150	280
Norfolk loamy sand, thick surface, 5 to 8 percent slopes	25	50	850	1, 200	1, 200	25	45	130	260
Norfolk loamy sand, thick surface, 8 to 12 percent slopes								120	250
Norfolk loamy sand, thick surface, pebbly, 0 to 2 percent slopes	40	65	1, 100	1, 450	1, 400	35	55	150	280
Norfolk loamy sand, thick surface, pebbly, 2 to 5 percent slopes	35	65	1, 100	1, 450	1, 300	35	55	150	280
Norfolk loamy sand, thick surface, pebbly, 5 to 8 percent slopes	25	50	850	1, 200	1, 200	25	45	130	260
Orangeburg loamy fine sand, 0 to 2 percent slopes	45	70	1, 200	1, 550	1, 400	40	60	160	300
Orangeburg loamy fine sand, 2 to 5 percent slopes	40	70	1, 200	1, 550	1, 300	40	60	160	300
Orangeburg loamy fine sand, 2 to 5 percent slopes, eroded	40	65	1, 050	1, 400	1, 300	35	55	140	280
Orangeburg loamy fine sand, 5 to 8 percent slopes	30	55	950	1, 250	1, 200	30	50	140	280
Orangeburg loamy fine sand, 5 to 8 percent slopes, eroded	25	45	800	1, 100	1, 100	25	45	135	275

See footnote at end of table.

TABLE 1.—*Estimated acre yields of principal crops and carrying capacity of pasture under two levels of management*—Con.

Soil	Corn		Peanuts		Shade tobacco	Oats		Pasture	
	A	B	A	B	B	A	B	A	B
	Bu.	*Bu.*	*Lb.*	*Lb.*	*Lb.*	*Bu.*	*Bu.*	*Cow-days* [1]	*Cow-days* [1]
Orangeburg loamy fine sand, 8 to 12 percent slopes								130	170
Orangeburg loamy sand, thick surface, 0 to 2 percent slopes	40	65	1, 100	1, 450	1, 400	35	55	150	280
Orangeburg loamy sand, thick surface, 2 to 5 percent slopes	35	65	1, 100	1, 450	1, 300	35	55	150	280
Orangeburg loamy sand, thick surface, 5 to 8 percent slopes	25	50	850	1, 200	1, 200	25	45	130	260
Orangeburg loamy sand, thick surface, 8 to 12 percent slopes								120	250
Plummer coarse sand, high, 0 to 2 percent slopes								160	280
Plummer sand, high, 0 to 2 percent slopes								150	250
Plummer sand, high, 2 to 5 percent slopes								160	280
Plummer sand, 0 to 2 percent slopes								150	200
Plummer sand, 2 to 5 percent slopes								150	200
Portsmouth fine sandy loam								160	300
Rains fine sandy loam								160	300
Red Bay fine sandy loam, 2 to 5 percent slopes, severely eroded	20	35	950	1, 300	1, 000	30	50	130	270
Red Bay fine sandy loam, 5 to 8 percent slopes, severely eroded								130	270
Red Bay fine sandy loam, 8 to 12 percent slopes, severely eroded								120	240
Red Bay loamy fine sand, 0 to 2 percent slopes	40	60	1, 200	1, 550	1, 200	40	60	160	300
Red Bay loamy fine sand, 2 to 5 percent slopes	35	60	1, 150	1, 550	1, 100	40	60	160	300
Red Bay loamy fine sand, 2 to 5 percent slopes, eroded	35	55	1, 050	1, 400	1, 100	35	55	140	280
Red Bay loamy fine sand, 5 to 8 percent slopes	28	50	950	1, 250	1, 100	30	50	140	280
Red Bay loamy fine sand, 5 to 8 percent slopes, eroded	25	40	800	1, 100	1, 000	25	45	135	275
Red Bay loamy fine sand, 8 to 12 percent slopes								130	170
Ruston fine sandy loam, 5 to 8 percent slopes, severely eroded								130	270
Ruston loamy fine sand, 0 to 2 percent slopes	45	70	1, 200	1, 550	1, 400	40	60	160	300
Ruston loamy fine sand, 2 to 5 percent slopes	40	70	1, 200	1, 550	1, 300	40	60	160	300
Ruston loamy fine sand, 2 to 5 percent slopes, eroded	40	65	1, 050	1, 400	1, 300	35	55	140	280
Ruston loamy fine sand, 5 to 8 percent slopes	30	55	950	1, 250	1, 200	30	50	140	280
Ruston loamy fine sand, 5 to 8 percent slopes, eroded	25	45	800	1, 100	1, 100	25	45	135	275
Ruston loamy fine sand, 8 to 12 percent slopes								130	170
Ruston loamy sand, thick surface, 0 to 2 percent slopes	40	65	1, 100	1, 450	1, 400	35	55	150	280
Ruston loamy sand, thick surface, 2 to 5 percent slopes	35	65	1, 100	1, 450	1, 300	35	55	150	280
Ruston loamy sand, thick surface, 5 to 8 percent slopes	25	50	850	1, 200	1, 200	25	45	130	260
Ruston loamy sand, thick surface, 8 to 12 percent slopes								120	250
Ruston-Orangeburg-Lakeland complex, 5 to 8 percent slopes	30	55	900	1, 100	1, 200	30	50	140	280
Ruston-Orangeburg-Lakeland complex, 8 to 12 percent slopes								130	170
Ruston-Orangeburg-Lakeland complex, 12 to 50 percent slopes									
Ruston-Orangeburg-Lakeland complex, 12 to 50 percent slopes, severely eroded									
Rutlege fine sand, 0 to 2 percent slopes								160	220
Rutlege fine sand, 2 to 5 percent slopes								160	220
Sawyer loamy fine sand, 2 to 5 percent slopes	30	45	900	1, 100		30	50	160	220
Sawyer loamy fine sand, 5 to 8 percent slopes								140	200
Shubuta fine sandy loam, 2 to 5 percent slopes	35	45	1, 000	1, 200		35	45	160	220
Susquehanna loamy fine sand, 2 to 5 percent slopes			800	1, 000				160	220
Susquehanna loamy fine sand, 5 to 8 percent slopes								140	200
Susquehanna-Boswell-Binnsville complex, marly substratum, 5 to 12 percent slopes								160	300
Susquehanna-Boswell-Binnsville complex, marly substratum, 12 to 50 percent slopes									
Susquehanna-Sawyer complex, 5 to 12 percent slopes								160	220

See footnote at end of table.

TABLE 1.—*Estimated acre yields of principal crops and carrying capacity of pasture under two levels of management*—Con.

Soil	Corn		Peanuts		Shade tobacco	Oats		Pasture	
	A	B	A	B	B	A	B	A	B
	Bu.	*Bu.*	*Lb.*	*Lb.*	*Lb.*	*Bu.*	*Bu.*	*Cow-days* [1]	*Cow-days* [1]
Susquehanna-Sawyer complex, 12 to 50 percent slopes									
Tifton loamy fine sand, 0 to 2 percent slopes	45	75	1, 350	1, 650	1, 700	40	60	170	320
Tifton loamy fine sand, 2 to 5 percent slopes	45	75	1, 350	1, 650	1, 600	40	60	170	320
Tifton loamy fine sand, 2 to 5 percent slopes, eroded	40	65	1, 200	1, 500	1, 600	35	55	150	300
Tifton loamy fine sand, 5 to 8 percent slopes, eroded	22	45	900	1, 150	1, 400	25	45	145	295
Zuber loamy sand, 2 to 5 percent slopes	35	60	1, 200	1, 550	----	35	55	160	300
Zuber loamy sand, 5 to 8 percent slopes	30	50	950	1, 250	----	30	50	140	280

[1] Number of days a year that 1 acre of pasture will graze a cow without injury to the pasture.

Woodland Use of Soils [5]

The management of woodlands in Gadsden County is important because 230,866 acres of the 325,120 acres in the county is woodland,[6] and this woodland is an important source of income. A large part of this income is from lumber. The county has three large lumber companies and many small sawmills. In addition to lumber, posts, pulpwood, poles, piling, veneer and other wood products are produced. Crates, baskets, and furniture are manufactured. Both pine and hardwood are marketed. Although much of the hardwood is used for veneer, some is used for lumber.

Oaks are the dominant trees in the county. Loblolly is the most plentiful pine in natural stands. Longleaf and loblolly pines dominate over slash pine on most of the well-drained soils of the county. During the last 50 years, however, slash pine has increased on the well-drained soils because more areas have been planted to pine trees (fig. 10). The earliest record of pine being planted in the county was in 1928. In 1959, the planted areas in pines consisted of about 21,000 acres.

***Figure 10.*—Plantation of slash pine, 12 years old, on soils of woodland suitability group I.**

Longleaf pine used to be dominant in the sand-hills area of the county, but by 1900 most of the large longleaf pine trees had been cut for timber. At present the natural vegetation on these sandy areas is predominantly scrub oak and a scattering of longleaf pine (fig. 11).

***Figure 11.*—Scrub oak and scattered pine cover large areas of woodland in woodland group II. Here a good stand of 2-year old slash pine has been established after the scrub oaks were killed by chemicals.**

Yields of unmanaged, natural stands

Table 2 gives the normal yield for fully stocked, unmanaged, naturally occurring stands of slash, longleaf, and loblolly pines. The yields of these stands are listed by site indexes 70, 80, and 90. For stands 20, 30, 40, 50, and 60 years old, yields are given in board feet, in cords per acre, by height, by average diameter, and by total trees in the stand.

The site index is the average height, in feet, of the dominant trees in the stand at 50 years of age. It varies very little for certain trees on similar, uneroded soils with different degrees of slope, but on eroded slopes the site index decreases.

[5] This subsection was written by B. P. THOMAS and H. H. WEEKS, Soil Conservation Service.

[6] From Conservation Needs Inventory, U.S. Dept. Agr., 1959.

TABLE 2.—*Normal yield for fully stocked, managed, naturally occurring even-aged stands of slash, loblolly, and longleaf pines*

[Data from Florida Forest Service]

Tree	Site index[1]	Age[2]	Total volume[3]	Volume per acre[4]	Height of dominants and co-dominants[5]	Average diameter[6]	Total trees per acre
		Years	*Board feet*	*Cords*	*Feet*	*Inches*	*Number*
Slash pine	70	20	(7)	28	42	5. 1	840
		30	3, 500	40	56	6. 4	685
		40	9, 300	49	64	7. 7	475
		50	14, 250	55	70	8. 8	375
		60	17, 400	59	74	9. 4	325
	80	20	(7)	34	48	5. 6	750
		30	7, 900	47	63	7. 3	565
		40	14, 950	57	73	8. 9	380
		50	20, 075	64	80	10. 1	295
		60	23, 500	68	84	10. 9	260
	90	20	2, 750	41	54	6. 1	665
		30	12, 300	54	71	8. 2	450
		40	20, 600	66	83	10. 1	290
		50	25, 900	73	90	11. 4	220
		60	29, 600	78	95	12. 5	195
Loblolly pine	70	20	100	17	38	5. 2	675
		30	3, 500	31	52	6. 8	575
		40	9, 400	42	63	8. 2	430
		50	15, 200	50	70	9. 5	325
		60	19, 600	55	75	10. 6	270
	80	20	800	22	43	5. 6	650
		30	7, 100	38	59	7. 5	495
		40	14, 975	51	72	9. 2	360
		50	21, 725	60	80	10. 7	270
		60	26, 350	66	85	12. 0	220
	90	20	1, 600	27	48	6. 1	630
		30	10, 700	46	67	8. 2	415
		40	20, 550	61	81	10. 2	290
		50	28, 250	71	90	12. 0	220
		60	33, 100	78	96	13. 4	175
Longleaf pine	70	20	200	14	36	5. 2	500
		30	2, 000	28	52	6. 2	540
		40	6, 100	39	62	7. 2	450
		50	11, 400	48	70	8. 1	380
		60	16, 400	55	77	8. 9	330
	80	20	600	20	41	5. 4	540
		30	4, 250	35	59	6. 6	515
		40	10, 950	49	71	7. 8	405
		50	17, 750	60	80	8. 8	350
		60	23, 700	69	87	9. 8	300
	90	20	1, 000	26	46	5. 7	580
		30	6, 500	43	66	7. 1	495
		40	15, 800	59	80	8. 4	380
		50	24, 100	72	90	9. 6	320
		60	31, 000	84	98	10. 7	275

[1] Height in feet of the dominant and codominant trees at age of 50 years.
[2] Average age of dominants and codominants.
[3] Scribner Decimal C Log Rule.
[4] In cords: 1 cord equals 128 cubic feet of wood, bark, and air in a pile of stacked cordwood 4 feet wide, 4 feet high, and 8 feet long.
[5] Average height of dominants and codominants.
[6] Diameter of the average-sized tree at breast height.
[7] Volume not calculated.

Woodland suitability groups of soils

A woodland suitability group of soils consists of soils that produce similar kinds of wood crops, need similar woodland management, and have about the same productivity under similar management. In table 3, the soils of Gadsden County have been placed in four groups and the site index of loblolly, slash, and longleaf pines is listed for each soil. The data in table 3 were compiled on the basis of soil productivity for southern pines and soil characteristics affecting pine growth, as reported by T. S. Coile, considered with the site indexes listed in the Dale County, Alabama, soil survey.

TABLE 3.—*Woodland suitability groups of soils and estimated productivity, by site indexes, for loblolly, slash, and longleaf pines*

Woodland suitability group and soils	Site index		
	Loblolly	Slash	Longleaf
Group I			
Well-drained soils that have a loamy fine sand to fine sandy loam surface layer and clayey material at depths less than 14 inches; permeability is slow to very slow and the available moisture-holding capacity is moderately low to low:			
Cuthbert loamy fine sand, 2 to 5 percent slopes	90	90	70
Cuthbert loamy fine sand, 5 to 8 percent slopes	85	90	70
Cuthbert, Boswell, and Susquehanna soils, 5 to 12 percent slopes	85	90	70
Cuthbert, Boswell, and Susquehanna soils, 12 to 60 percent slopes	85	85	70
Shubuta fine sandy loam, 2 to 5 percent slopes	90	85	70
Deep, well-drained soils that have a loamy fine sand to fine sandy loam surface layer underlain by fine sandy clay loam or fine sandy clay at depths less than 18 inches; permeability is moderately slow and the available moisture-holding capacity is high:			
Carnegie loamy fine sand, 0 to 2 percent slopes	90	85	70
Carnegie loamy fine sand, 2 to 5 percent slopes	90	85	70
Carnegie loamy fine sand, 2 to 5 percent slopes, eroded	85	80	65
Carnegie loamy fine sand, 5 to 8 percent slopes	90	85	70
Carnegie loamy fine sand, 5 to 8 percent slopes, eroded	85	80	65
Carnegie loamy fine sand, 8 to 12 percent slopes	90	85	70
Carnegie fine sandy loam, 5 to 8 percent slopes, severely eroded	85	75	65
Faceville loamy fine sand, 0 to 2 percent slopes	90	85	70
Faceville loamy fine sand, 2 to 5 percent slopes	90	85	70
Faceville loamy fine sand, 2 to 5 percent slopes, eroded	85	80	70
Faceville loamy fine sand, 5 to 8 percent slopes	90	85	70
Faceville loamy fine sand, 5 to 8 percent slopes, eroded	85	80	65
Faceville loamy fine sand, 8 to 12 percent slopes	90	85	70
Faceville fine sandy loam, 5 to 8 percent slopes, severely eroded	80	75	65
Faceville fine sandy loam, 8 to 12 percent slopes, severely eroded	80	70	60
Faceville-Shubuta-Ruston complex, 8 to 12 percent slopes	90	85	70
Faceville-Shubuta-Ruston complex, 8 to 12 percent slopes, severely eroded	80	70	60
Faceville-Shubuta-Ruston complex, 12 to 35 percent slopes	90	85	70
Faceville-Shubuta-Ruston complex, 12 to 35 percent slopes, severely eroded	80	70	60
Magnolia loamy fine sand, 0 to 2 percent slopes	90	85	70
Magnolia loamy fine sand, 0 to 2 percent slopes, eroded	85	80	70
Magnolia loamy fine sand, 2 to 5 percent slopes	90	85	70
Magnolia loamy fine sand, 2 to 5 percent slopes, eroded	85	80	70
Magnolia loamy fine sand, 5 to 8 percent slopes	90	85	70
Magnolia loamy fine sand, 5 to 8 percent slopes, eroded	85	80	65
Magnolia loamy fine sand, 8 to 12 percent slopes	90	85	70
Magnolia fine sandy loam, 2 to 5 percent slopes, severely eroded	80	75	65
Magnolia fine sandy loam, 5 to 8 percent slopes, severely eroded	80	75	65
Magnolia fine sandy loam, 8 to 12 percent slopes, severely eroded	80	70	65
Tifton loamy fine sand, 0 to 2 percent slopes	90	85	70
Tifton loamy fine sand, 2 to 5 percent slopes	90	85	70
Tifton loamy fine sand, 2 to 5 percent slopes, eroded	85	80	65
Tifton loamy fine sand, 5 to 8 percent slopes, eroded	85	80	65
Deep, well-drained soils that have a loamy sand to fine sandy loam surface layer underlain by fine sandy clay loam at depths of less than 30 inches; permeability is moderate and available moisture-holding capacity is high:			
Kalmia loamy fine sand, 0 to 2 percent slopes	85	80	70
Norfolk loamy fine sand, 0 to 2 percent slopes	90	80	70
Norfolk loamy fine sand, 2 to 5 percent slopes	90	80	70
Norfolk loamy fine sand, 2 to 5 percent slopes, eroded	85	75	65
Norfolk loamy fine sand, 5 to 8 percent slopes	90	80	70
Norfolk loamy fine sand, 5 to 8 percent slopes, eroded	85	75	65
Norfolk loamy fine sand, 8 to 12 percent slopes	85	80	70
Norfolk loamy fine sand, pebbly, 0 to 2 percent slopes	90	80	70
Norfolk loamy fine sand, pebbly, 2 to 5 percent slopes	90	80	70
Norfolk loamy fine sand, pebbly, 2 to 5 percent slopes, eroded	85	75	65
Norfolk loamy sand, thick surface, 0 to 2 percent slopes	90	80	70
Norfolk loamy sand, thick surface, 2 to 5 percent slopes	90	80	70
Norfolk loamy sand, thick surface, 5 to 8 percent slopes	90	80	70
Norfolk loamy sand, thick surface, 8 to 12 percent slopes	90	80	70
Norfolk loamy sand, thick surface, pebbly, 0 to 2 percent slopes	90	80	70
Norfolk loamy sand, thick surface, pebbly, 2 to 5 percent slopes	90	80	70
Norfolk loamy sand, thick surface, pebbly, 5 to 8 percent slopes	90	80	70
Orangeburg loamy fine sand, 0 to 2 percent slopes	90	80	70

TABLE 3.—*Woodland suitability groups of soils and estimated productivity, by site indexes, for loblolly, slash, and longleaf pines*—Continued

Woodland suitability group and soils	Site index		
	Loblolly	Slash	Longleaf
Group I—Continued			
Deep, well-drained soils that have a loamy sand to fine sandy loam surface layer underlain by fine sandy clay loam at depths of less than 30 inches; permeability is moderate and available moisture-holding capacity is high—Continued			
Orangeburg loamy fine sand, 2 to 5 percent slopes	90	80	70
Orangeburg loamy fine sand, 2 to 5 percent slopes, eroded	85	75	65
Orangeburg loamy fine sand, 5 to 8 percent slopes	90	80	70
Orangeburg loamy fine sand, 5 to 8 percent slopes, eroded	85	75	65
Orangeburg loamy fine sand, 8 to 12 percent slopes	85	80	70
Orangeburg loamy sand, thick surface, 0 to 2 percent slopes	90	80	70
Orangeburg loamy sand, thick surface, 2 to 5 percent slopes	90	80	70
Orangeburg loamy sand, thick surface, 5 to 8 percent slopes	90	80	70
Orangeburg loamy sand, thick surface, 8 to 12 percent slopes	90	80	70
Red Bay loamy fine sand, 0 to 2 percent slopes	90	80	70
Red Bay loamy fine sand, 2 to 5 percent slopes	90	80	70
Red Bay loamy fine sand, 2 to 5 percent slopes, eroded	85	75	65
Red Bay loamy fine sand, 5 to 8 percent slopes	90	80	70
Red Bay loamy fine sand, 5 to 8 percent slopes, eroded	85	75	65
Red Bay loamy fine sand, 8 to 12 percent slopes	85	80	70
Red Bay fine sandy loam, 2 to 5 percent slopes, severely eroded	80	70	65
Red Bay fine sandy loam, 5 to 8 percent slopes, severely eroded	80	70	65
Red Bay fine sandy loam, 8 to 12 percent slopes, severely eroded	80	65	65
Ruston loamy fine sand, 0 to 2 percent slopes	90	80	70
Ruston loamy fine sand, 2 to 5 percent slopes	90	80	70
Ruston loamy fine sand, 2 to 5 percent slopes, eroded	85	75	65
Ruston loamy fine sand, 5 to 8 percent slopes	90	80	70
Ruston loamy fine sand, 5 to 8 percent slopes, eroded	85	75	65
Ruston loamy fine sand, 8 to 12 percent slopes	85	80	70
Ruston fine sandy loam, 5 to 8 percent slopes, severely eroded	80	70	65
Ruston loamy sand, thick surface, 0 to 2 percent slopes	90	80	70
Ruston loamy sand, thick surface, 2 to 5 percent slopes	90	80	70
Ruston loamy sand, thick surface, 5 to 8 percent slopes	90	80	70
Ruston loamy sand, thick surface, 8 to 12 percent slopes	90	80	70
Ruston-Orangeburg-Lakeland complex, 5 to 8 percent slopes	90	80	70
Ruston-Orangeburg-Lakeland complex, 8 to 12 percent slopes	85	80	65
Ruston-Orangeburg-Lakeland complex, 12 to 50 percent slopes	85	80	65
Ruston-Orangeburg-Lakeland complex, 12 to 50 percent slopes, severely eroded	80	70	65
Zuber loamy sand, 2 to 5 percent slopes	90	80	70
Zuber loamy sand, 5 to 8 percent slopes	90	80	70
Group II			
Deep, well-drained, lightly leached soils that have sand, fine sand, or loamy sand extending to depths of more than 42 inches, or shallow, well-drained, highly leached soils that have finer textured materials at depths of 30 to 42 inches; all soils in group have a low available moisture-holding capacity and very rapid permeability:			
Arredondo fine sand, 0 to 5 percent slopes	90	70	65
Arredondo fine sand, 5 to 8 percent slopes	90	70	65
Arredondo-Fellowship-Gainesville soils, 8 to 12 percent slopes	85	75	65
Arredondo-Fellowship-Gainesville soils, 12 to 40 percent slopes	80	70	65
Eustis loamy sand, 0 to 5 percent slopes	90	75	70
Eustis loamy sand, 5 to 8 percent slopes	90	75	70
Eustis loamy sand, shallow, 0 to 2 percent slopes	90	80	70
Eustis loamy sand, shallow, 2 to 5 percent slopes	90	80	70
Eustis loamy sand, shallow, 5 to 8 percent slopes	90	80	70
Huckabee fine sand, 0 to 5 percent slopes	90	80	70
Lakeland loamy sand, 0 to 5 percent slopes	90	75	70
Lakeland loamy sand, 5 to 12 percent slopes	90	75	70
Lakeland loamy sand, shallow, 0 to 2 percent slopes	90	80	70
Lakeland loamy sand, shallow, 2 to 5 percent slopes	90	80	70
Lakeland loamy sand, shallow, 5 to 8 percent slopes	90	80	70
Lakeland sand, 0 to 5 percent slopes	85	70	65
Lakeland sand, 5 to 12 percent slopes	85	70	65
Lakeland and Eustis sands, 12 to 50 percent slopes			
Lakeland-Eustis-Cuthbert complex, 5 to 8 percent slopes	85	70	70
Lakeland-Eustis-Cuthbert complex, 8 to 12 percent slopes	80	70	70
Lakeland-Eustis-Cuthbert complex, 12 to 45 percent slopes	80	70	70

TABLE 3.—*Woodland suitability groups of soils and estimated productivity, by site indexes, for loblolly, slash, and longleaf pines*—Continued

Woodland suitability group and soils	Site index		
	Loblolly	Slash	Longleaf
Group II—Continued			
Very deep, well-drained to excessively drained, highly leached soils that have a coarse sand texture, very low available moisture-holding capacity, and very rapid permeability:			
Eustis coarse sand, 0 to 5 percent slopes	80	70	65
Eustis coarse sand, 5 to 12 percent slopes	80	70	65
Eustis coarse sand, excessively drained, 0 to 5 percent slopes	80	65	60
Lakeland coarse sand, 0 to 5 percent slopes	80	70	65
Lakeland coarse sand, 5 to 12 percent slopes	80	70	65
Lakeland coarse sand, excessively drained, 0 to 5 percent slopes	80	65	60
Lakeland coarse sand, excessively drained, 5 to 12 percent slopes	80	65	60
Group III			
Moderately well drained soils that have a fine sandy loam to loamy fine sand surface layer; clayey material is at depths of less than 18 inches in the Sawyer soils and less than 12 inches in all other soils; permeability is slow to very slow and available moisture-holding capacity is high:			
Binnsville soils, 2 to 12 percent slopes	90	90	70
Sawyer loamy fine sand, 2 to 5 percent slopes	95	90	70
Sawyer loamy fine sand, 5 to 8 percent slopes	95	90	70
Susquehanna loamy fine sand, 2 to 5 percent slopes	90	90	70
Susquehanna loamy fine sand, 5 to 8 percent slopes	90	90	70
Susquehanna-Boswell-Binnsville complex, marly substratum, 5 to 12 percent slopes	90	85	70
Susquehanna-Boswell-Binnsville complex, marly substratum, 12 to 50 percent slopes	90	85	70
Susquehanna-Sawyer complex, 5 to 12 percent slopes	90	90	70
Susquehanna-Sawyer complex, 12 to 50 percent slopes	90	85	70
Deep, moderately well drained to somewhat poorly drained soils that have a loamy sand to silt loam surface layer and mostly a fine sandy clay loam subsoil; permeability and available moisture-holding capacity are moderate:			
Congaree silt loam [1]			
Goldsboro loamy fine sand, 0 to 2 percent slopes	90	90	65
Goldsboro loamy fine sand, 2 to 5 percent slopes	90	90	65
Goldsboro loamy sand, thick surface, 0 to 2 percent slopes	90	90	65
Goldsboro loamy sand, thick surface, 2 to 5 percent slopes	90	90	65
Goldsboro loamy sand, thick surface, 5 to 8 percent slopes	90	85	65
Hannahatchee soils, local alluvium	100	100	70
Izagora loamy fine sand	90	90	65
Lynchburg loamy fine sand, 0 to 2 percent slopes	90	85	65
Lynchburg loamy fine sand, 2 to 5 percent slopes	90	85	65
Lynchburg loamy sand, thick surface, 0 to 2 percent slopes	90	80	65
Lynchburg loamy sand, thick surface, 2 to 5 percent slopes	90	80	65
Deep, moderately well drained to somewhat poorly drained soils that, except in the shallow Klej soils, are coarse sand to loamy sand to depths greater than 42 inches; shallow Klej soils have finer textured material at depths of 30 to 42 inches; permeability is rapid to very rapid and the available moisture-holding capacity is low:			
Blanton fine sand, terrace, 0 to 5 percent slopes	90	75	60
Blanton fine sand, 0 to 5 percent slopes	90	75	60
Blanton fine sand, 5 to 8 percent slopes	90	75	60
Blanton coarse sand, 0 to 5 percent slopes	85	70	60
Klej loamy sand, shallow, 0 to 2 percent slopes	90	80	60
Klej loamy sand, shallow, 2 to 5 percent slopes	90	80	60
Klej sand, 0 to 5 percent slopes	90	75	60
Klej sand, 5 to 8 percent slopes	90	75	60
Klej coarse sand, 0 to 5 percent slopes	85	70	60
Leon sand	85	70	65
Plummer coarse sand, high, 0 to 2 percent slopes	95	75	60
Plummer sand, high, 0 to 2 percent slopes	95	75	60
Plummer sand, high, 2 to 5 percent slopes	95	75	60

See footnote at end of table.

TABLE 3.—*Woodland suitability groups of soils and estimated productivity, by site indexes, for loblolly, slash, and longleaf pines*—Continued

Woodland suitability group and soils	Site index		
	Loblolly	Slash	Longleaf
Group IV[2]			
Poorly drained to very poorly drained, very slowly permeable soils that have a fine sandy loam to very fine sandy loam surface layer; fine sandy clay to clay material is at depths of about 6 to 10 inches:			
Grady fine sandy loam	95	90	70
Leaf very fine sandy loam	95	90	70
Deep, poorly to very poorly drained, moderately slowly to slowly permeable soils that have a fine sandy loam to loamy fine sand surface layer; fine sandy loam to fine sandy clay loam material is at depths of less than 18 inches:			
Myatt loamy fine sand, 0 to 5 percent slopes	90	85	----------
Portsmouth fine sandy loam	95	80	65
Rains fine sandy loam	90	80	65
Deep, poorly to very poorly drained soils that have a fine sand or sand texture to a depth greater than 42 inches; permeability is rapid and available moisture-holding capacity is low:			
Plummer sand, 0 to 2 percent slopes	100	70	60
Plummer sand, 2 to 5 percent slopes	100	70	60
Rutlege fine sand, 0 to 2 percent slopes	95	70	60
Rutlege fine sand, 2 to 5 percent slopes	95	70	60

[1] This soil is on a first bottom susceptible to flooding and supports hardwoods.

[2] The site index of this woodland group is the estimated growth with adequate drainage.

WOODLAND SUITABILITY GROUP I

This group consists of well-drained, medium acid to strongly acid, sandy soils that are underlain by fine sandy clay loam or fine sandy clay at a depth less than 30 inches. These soils have a site index of 80 to 90 for loblolly pine, 65 to 85 for slash pine, and 65 to 70 for longleaf pine.

They normally do not have a special problem of seedling mortality. They are suited to planting and natural reseeding, but natural restocking of pine is sometimes prevented by fires, wiregrass and other undergrowth, hardwoods, birds, and lack of seed trees. Competing vegetation may delay the stand or slow its early growth, but the soils in this group generally are not prepared before they are planted.

Limitations to the use of equipment range from slight to moderate. Wetness is not a limiting factor. The greatest hazard is the steep slopes of some of the soils. Fire lanes should be plowed across the slopes to minimize hazard of gullying.

The hazards of disease or insects to trees on the soils in woodland group I generally are about the same as those on the soils in the other woodland groups of the county. Cronartium fusiform, commonly called Southern fusiform rust, is the most common disease. Because of their faster growth, slash and loblolly pines are more susceptible to this disease than longleaf pine. Although this disease is a problem in the county, its effect on the trees is not serious. Insects do not cause widespread damage. But there are scattered small losses caused by insects on trees that have been weakened by fires and poor logging and cutting practices.

Windthrow is not a problem, and trees can be cut and thinned without losses from windthrow.

The hazard of erosion varies for the different soils of this group. It ranges from slight on most soils with slopes 0 to 5 percent to severe on some of the more strongly sloping soils. Roads should be located and maintained with care, particularly on slopes where there is a hazard of erosion.

WOODLAND SUITABILITY GROUP II

This group consists of deep or very deep, well-drained to excessively drained, highly leached, strongly acid, sandy soils. These soils have a site index of 80 to 90 for loblolly pine, 65 to 80 for slash pine, and 60 to 70 for longleaf pine.

The native vegetation consists principally of longleaf pine, turkey oak, and blackjack oak. Most of the forest has been severely cut over. The natural restocking of pine is prevented by a lack of seed trees, fires, wiregrass, and scrub oaks. Some longleaf pine will restock where there are seed trees and the land is protected from fire, but this kind of restocking is slow. Trees grow more slowly on these soils than on those that contain more moisture. If pine seedlings are to survive on the excessively drained soils of this group, they must be almost free of competition for moisture from other plants.

Limitations to the use of equipment range from slight to moderate. Competing vegetation, poor soil qualities, droughtiness, and steep slopes limit tree growth on some soils in this group. To minimize gullying, fire lanes should be plowed as nearly across the slopes as possible.

This woodland suitability group has no special problems of disease or insects. Its problems are similar to those of woodland group I.

Windthrow is not a special problem, and trees can be cut and thinned without appreciable losses from windthrow.

The erosion hazard is not serious, except on the steep slopes. Roads and trails, however, should be maintained with care, especially on the steep slopes.

WOODLAND SUITABILITY GROUP III

This group consists of moderately well drained to somewhat poorly drained soils. All these soils, except the Binnsville, are strongly acid. The Binnsville soils are neutral. The soils of this group have a site index of 85 to 100 for loblolly pine, 70 to 100 for slash pine, and 60 to 70 for longleaf pine.

The native vegetation consists of mixed stands of slash pine, longleaf pine, white oak, live oak, hickory, bay, and magnolia. Moisture is sufficient for these trees because the soils in this group are next to moist areas and are on slopes above the flood level where the water table is near the surface or where seepage water is adequate. Although longleaf pine and slash pine grow in mixed stands in many places, the slash pine is better suited to the somewhat poorly drained soils of this group. Normally, there are no special problems of seedling mortality on these soils. Most trees generally restock satisfactorily by planting, or by natural reseeding if a suitable source of seed is available. On moderately steep to steep, eroded slopes, however, reforestation of the shallow to very shallow soils is difficult by either natural reproduction or artificial means.

Competition from undesired plants on the soils of this group is moderate. Some invasion of various hardwoods and other plants can be expected, but not enough to prevent adequate growth of the desired species. Competing vegetation may delay natural regeneration of the stand or may slow its early growth, but special preparation of the site or other special management is not essential. Slash pine is especially well suited to most of the soils of this group because it is well suited to moist sites and because fires occur less frequently in moist locations.

Limitations to the use of equipment range from slight to severe. Heavy rains on some of the deep soils in this group may delay the use of equipment for several days. If equipment is used early in spring when soils are usually wet, tree roots may be damaged. The use of equipment is severely limited on the shallow, moderately steep and steep soils of this group.

These soils do not have a serious problem of disease or insects, but Cronartium fusiform, or Southern fusiform rust, does cause some damage. This disease attacks fast-growing species of pine, such as loblolly and slash, more than it does longleaf. It is more prevalent on trees growing in this group, but it does not appreciably damage the woodland economy of the county. Insects are not epidemic in the county, but they cause some damage by attacking trees that have been weakened by fires and by poor logging and cutting practices.

Windthrow is not a special problem on the deep soils of this group, but it does occur on the soils that have shallow and very shallow root zones. Losses from windthrow can be decreased by good cutting and logging practices.

Erosion hazards vary on the different soils. The hazard ranges from slight on the nearly level, deep soils to very severe on the steep soils with shallow root zones. The management of woodland, including erosion control, ought to be intense on eroded areas. Special care is needed in locating and maintaining roads and trails on all of the shallow soils of this group.

WOODLAND SUITABILITY GROUP IV

This group consists of poorly drained to very poorly drained, strongly acid to very strongly acid soils. These soils have a site index of 90 to 100 for loblolly pine, 70 to 90 for slash pine, and 60 to 70 for longleaf pine.

The native vegetation consists of mixed stands of blackgum, sweetgum, cypress, water oak, and other hardwoods, as well as scattered areas of slash and loblolly pines. The species of trees on this woodland group vary according to the amount of water on the soil or the nearness of the water table to the surface. On the very poorly drained soils, the trees are primarily hardwoods, whereas on the poorly drained soils, mixtures of hardwoods and scattered pines occur. Reseeding is difficult in areas susceptible to flooding. Because of the poor surface drainage and the high water table, reforestation either by natural or mechanical means is a problem.

Competition from undesirable plants is moderate. Undesirable hardwoods and water-tolerant shrubs and grasses invade to some extent, but they do not prevent adequate growth of the more desirable species. Competing vegetation may delay natural regeneration of the stand or slow its early growth, but planting sites are not specially prepared.

Limitations to the use of equipment range from moderate to extreme. During wet seasons the use of equipment on the soils of this group is extremely limited.

There are no special disease, insect, or pest problems on the soils in this group. These problems are similar to those of woodland group III.

Where cutting and logging is poorly done, there is some windthrow. If cutting and logging is improved, losses from windthrow can be lessened.

There is no erosion problem on the soils of this group, but drainage is a serious problem.

Engineering Interpretations [7]

Soil engineering is well established today. It is, in a broad sense, a subdivision of structural engineering, for it deals with soil as foundation material and with soil as a structural material. To the engineer, soils are natural materials that occur in a wide variety over the earth. The engineering properties of these materials may vary widely within the boundaries of a single project. Generally, soil is used in the locality and in the condition in which it is found. A large part of soil engineering deals with the location of the various soils, the determination of their engineering properties, the correlation of those properties with the requirements of the job, and the selection of the very best possible material for each job.

This soil survey report contains information about the soils of Gadsden County that will be helpful to engineers. Special emphasis has been placed on engineering properties as related to agriculture, especially those that affect

[7] This subsection was written by DAVID P. POWELL, assistant State soil scientist, O. E. SMITH and L. E. STRICKLAND, engineering specialists, and B. P. THOMAS, soil scientist, Soil Conservation Service; and by T. L. BRANSFORD, engineer of research, Florida State Road Department.

irrigation structures, farm ponds, and structures to control and conserve soil and water.

The information in this report will be helpful in:

1. Selecting and developing sites for industry, business, homes, and recreation.
2. Selecting locations for highways, pipelines, and airports.
3. Locating sand that is used in construction.
4. Correlating pavement performance with kinds of soils and thus developing information that will be useful in designing and maintaining pavements.
5. Determining the suitability of soils for cross-country movement of vehicles and construction equipment.
6. Supplementing information obtained from published maps and reports and aerial photographs for the purpose of presenting information that can be used readily by engineers.
7. Making preliminary estimates of the engineering properties of soils in the planning of agricultural drainage systems, farm ponds, irrigation systems, and diversion terraces.

Engineers of the Florida State Road Department, the United States Bureau of Public Roads, and the Soil Conservation Service collaborated with soil scientists of the Soil Conservation Service in preparing this part of the report. These engineers used their knowledge of soils to interpret laboratory tests and field experiences and to determine how the soils in the county will affect engineering.

The interpretations are necessarily generalized. *Without further tests and sampling, the information in this report is not adequate for the design and construction of specific engineering works.*

At many construction sites, the soil material varies greatly within the depth of proposed excavations. Also, several different soils may be found within short distances. The maps, soil descriptions, and other data in this report should be used in planning detailed surveys of the soils at construction sites. By using the information in this soil survey report, the engineer can concentrate on the most suitable soil units. Then, a minimum number of soil samples will be needed for laboratory testing. After testing the soil materials and observing their behavior in place, under varying conditions, the engineer should be able to anticipate, to some extent, the properties of individual soil units wherever they are mapped.

Soil science terminology

The terminology in this report is that used by agriculturalists. Many of the terms have a special meaning to soil scientists and should, therefore, be defined for the engineer. Some of the more common terms are defined in the Glossary at the back of the report. The engineer should refer to the sections "Soil Survey Methods and Definitions," "Descriptions of Soils," and "Formation and Classification of Soils." In these sections there is much information that will be of value in planning engineering work.

Soil test data

Samples of the principal soil types in 10 extensive soil series were tested in accordance with standard procedures to help evaluate the soils for engineering purposes. The test data are given in table 4. Each soil series was sampled in three localities, and the test data from different locations show some variation in physical characteristics. The data, however, probably do not show the maximum variations of the B and C horizons of each of the soil series. All samples were obtained at depths of less than 5 feet. The test data, therefore, may not be adequate for estimating the characteristics of soil materials in deep cuts that may be made in areas of rolling or hilly topography.

The engineering soil classifications in table 4 are based on data obtained by mechanical analyses and by tests made to determine liquid limits and plastic limits. Mechanical analyses were made by combined sieve and hydrometer methods. In the procedure of the American Association of State Highway Officials (AASHO), the fine material is analyzed by the hydrometer method and the various grain-size fractions are calculated on the basis of all the material in the soil sample, including that coarser than 2 millimeters in diameter. The Soil Conservation Service uses the pipette method and excludes material coarser than 2 millimeters in diameter from the calculations. Percentages of clay obtained by the hydrometer method are not used in naming soil textural classes.

The liquid-limit and plastic-limit tests measure 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 solid to a semisolid or plastic state. As the moisture content is further increased, the material changes from the plastic to a liquid state. The plastic limit is the moisture content at which the soil material passes from a solid to a plastic state. The liquid limit is the moisture content at which the material passes from a plastic to a liquid state. The plasticity index is the numerical difference between the liquid limit and the plastic limit. It indicates the range of moisture content within which a soil material is in a plastic condition.

Table 4 also gives compaction (moisture-density) data for the tested soils. If a soil material is compacted at successively higher moisture content, assuming that the compactive effort remains constant, the density of the compacted material will increase until the optimum moisture content is reached. After that, the density decreases with increase in moisture content. The highest dry density obtained in the compaction test is termed maximum dry density. Moisture-density data are important in earthwork, for as a rule, optimum stability is obtained if the soil is compacted to about the maximum dry density, when it is at approximately the optimum moisture content.

Engineering classification systems

The engineering classifications of the soil materials in the soil samples tested are given in table 4 for the system approved by the American Association of State Highway Officials (AASHO) and for the Unified system. Most highway engineers classify soil materials according to the AASHO system. In this system soil materials are classified in seven principal groups. The groups range from A–1, consisting of gravelly soils of high bearing capacity, to A–7, consisting of clay soils having low strength when wet. Within each group, the relative engineering value of the soil material is indicated by a

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TABLE 4.—*Engineering test data* [1] *for soil*

Soil name and location	Bureau of Public Roads report No.	Depth	Horizon	Moisture-density [2]		Mechanical analysis [3]				
				Maximum dry density	Optimum moisture	Percentage passing sieve				
						2 in.	1½-in.	1-in.	¾-in.	⅜-in.
		Inches		*Lb. per cu. ft.*	*Percent*					
Carnegie loamy fine sand:										
NW¼SE¼, sec. 26, R. 5 W., T. 3 N. (Modal profile).	S 33221	5–9	A_2	122	10	100	99	95	92	88
	S 33222	18–35	B_2	115	15	100	99	96	94	91
	S 33223	56–65+	C	101	22			100	99	98
NW¼SE¼, sec. 28, R. 4 W., T. 3 N. (Coarse texture).	S 33224	0–7	A_p	112	12		100	99	98	96
	S 33225	13–36	B_2	110	17		100	99	98	97
	S 33226	51–65+	C	103	20					
NE¼NE¼, sec. 22, R. 2 W., T. 3 N. (Finer texture).	S 33227	0–3	A_p	118	12				100	96
	S 33228	9–22	B_2	99	23				100	99
	S 33229	36–46+	C	92	27					
Eustis loamy sand:										
SE¼SE¼, sec. 31, R. 2 W., T. 3 N. (Modal profile).	S 33230	0–11	A_p	114	10					
	S 33231	46–63	C_1	117	10					
	S 33232	71–77+	D_3	123	11					
Eustis loamy sand, shallow:										
SE¼NE¼, sec. 16, R. 2 W., T. 2 N. (Modal profile).	S 33233	0–6	A_p	116	10					
	S 33234	24–39	B_2	119	9					
	S 33235	44–55+	D_2	116	14					
Eustis coarse sand:										
NW¼NW¼, sec. 28, R. 4 W., T. 1 N. (Deeper profile).	S 33236	3–12	A_3	114	10					
	S 33237	12–60	C_1	113	13					
	S 33238	90–104+	C_3	108	15					
Faceville loamy fine sand:										
SE¼NW¼, sec. 29, R. 2 W., T. 3 N. (Modal profile).	S 33239	7–14	A_3	117	13					100
	S 33240	17–35	B_2	109	19					
	S 33241	61–79	C	113	17					
NW¼SW¼, sec. 33, R. 2 W., T. 2 N. (Coarser texture).	S 33242	0–6	A_p	120	11		100	99	98	96
	S 33243	9–43	B_2	112	16				100	98
	S 33244	54–65+	C	94	27					
SW¼NE¼, sec. 33, R. 2 W., T. 2 N. (Finer texture).	S 33245	3–6	A_{12}	121	11				100	98
	S 33246	11–29	B_2	108	18				100	98
	S 33247	47–58+	C	98	25					
Lakeland coarse sand:										
NE¼NE¼, sec. 13, R. 6 W., T. 2 N. (Modal profile).	S 33248	2–5	A_2	114	10					
	S 33249	11–31	C_{21}	113	12					
	S 33250	55–74	C_{32}	114	12					
	S 33251	74–82+	D	124	10					
SW¼SW¼, sec. 28, R. 4 W., T. 1 N. (Deeper profile).	S 33252	2–8	A_3	105	13					
	S 33253	60–86	C_2	106	14					
	S 33254	86–110	C_3	102	16					
Lakeland loamy sand:										
SE¼SE¼, sec. 3, R. 5 W., T. 3 N. (Finer textured).	S 33255	0–4	A_1	120	11					
	S 33256	14–39	C_2	125	9					
	S 33257	39–68+	D_1	125	10				100	98
Magnolia loamy fine sand:										
NW¼NE¼, sec. 8, R. 2 W., T. 2 N. (Modal profile).	S 33258	0–6	A_p	120	10					
	S 33259	12–48	B_{21}	114	15					
	S 33260	128–168+	C_2	111	17					
SE¼NW¼, sec. 34, R. 4 W., T. 3 N. (Coarser texture).	S 33261	0–4	A_p	121	11					
	S 33262	12–49	B_2	114	15					
	S 33263	63–72+	C_1	113	16					
NE¼NE¼, sec. 34, R. 4 W., T. 3 N. (Finer texture).	S 33264	0–7	A_p	117	13					
	S 33265	9–38	B_2	106	19					
	S 33266	48–65+	C	114	15					

See footnotes at the end of table.

samples taken from thirty soil profiles

Mechanical analysis [3]—Con.									Liquid limit	Plasticity index	Classification	
Percentage passing sieve—Con.					Percentage smaller than—							
No. 4 (4.76 mm.)	No. 10 (2.0 mm.)	No. 40 (0.42 mm.)	No. 60 (0.250 mm.)	No. 200 (0.074 mm.)	0.05 mm.	0.02 mm.	0.005 mm.	0.002 mm.			AASHO [4]	Unified [5]
85	84	76	66	27	20	17	13	9	(6)	(6)	A-2-4(0)	SM.
88	87	80	73	41	38	34	31	30	36	17	A-6(3)	SC.
98	97	93	90	64	58	52	49	48	55	25	A-7-5(14)	MH-CH.
95	94	91	86	30	18	8	7	5	(6)	(6)	A-2-4(0)	SM.
96	95	93	90	50	44	37	36	34	36	16	A-6(5)	SC.
----	----	100	99	62	53	47	45	44	49	24	A-7-6(12)	CL.
91	89	86	79	32	25	20	18	16	19	5	A-2-4(0)	SM-SC.
98	98	97	93	70	66	63	61	60	48	25	A-7-6(14)	CL.
----	100	99	96	78	75	71	69	69	64	30	A-7-5(20)	MH.
----	100	93	73	16	13	9	6	4	(6)	(6)	A-2-4(0)	SM.
----	100	94	79	21	15	8	7	6	(6)	(6)	A-2-4(0)	SM.
----	100	96	84	36	31	26	23	22	24	10	A-4(0)	SC.
----	100	95	80	18	14	9	6	4	(6)	(6)	A-2-4(0)	SM.
----	100	96	82	20	16	11	9	9	(6)	(6)	A-2-4(0)	SM.
----	100	96	85	39	35	31	29	26	29	12	A-6(1)	SC.
----	100	48	27	10	8	5	5	4	(6)	(6)	A-1-b(0)	SP-SM.
----	100	49	25	9	8	5	4	3	(6)	(6)	A-1-b(0)	SP-SM.
----	100	45	18	4	4	3	2	2	(6)	(6)	A-1-b(0)	SP.
99	98	92	78	31	26	22	19	17	20	5	A-2-4(0)	SM-SC.
----	100	95	84	50	47	43	42	40	35	17	A-6(6)	SC.
----	100	91	74	38	36	34	32	31	39	20	A-6(3)	SC.
95	95	92	84	34	28	20	16	13	19	4	A-2-4(0)	SM-SC.
96	95	92	84	54	49	42	38	36	35	17	A-6(6)	CL.
----	100	99	95	77	74	71	69	68	53	21	A-7-5(15)	MH.
95	94	90	81	29	23	15	13	11	18	3	A-2-4(0)	SM.
97	96	93	87	55	52	48	46	46	37	19	A-6(8)	CL.
----	100	98	93	71	69	65	62	62	50	22	A-7-6(14)	ML-CL.
----	100	64	33	9	8	6	5	4	(6)	(6)	A-3(0)	SP-SM.
----	100	64	34	9	8	5	5	4	(6)	(6)	A-3(0)	SP-SM.
----	100	68	43	9	7	5	5	4	(6)	(6)	A-3(0)	SP-SM.
----	100	68	46	24	22	19	16	15	23	8	A-2-4(0)	SC.
----	100	78	47	7	6	5	4	3	(6)	(6)	A-3(0)	SP-SM.
----	100	76	45	7	6	4	3	2	(6)	(6)	A-3(0)	SP-SM.
----	100	74	47	4	3	2	2	2	(6)	(6)	A-3(0)	SP.
----	100	80	60	32	28	21	13	11	(6)	(6)	A-2-4(0)	SM.
----	100	68	45	18	16	14	12	10	(6)	(6)	A-2-4(0)	SM.
94	88	54	37	20	18	14	12	11	23	5	A-2-4(0)	SM-SC.
----	100	96	86	26	20	15	11	10	(6)	(6)	A-2-4(0)	SM.
----	100	97	89	51	46	40	38	35	37	20	A-6(7)	CL.
----	100	97	79	46	45	43	41	39	44	23	A-7-6(6)	SC.
----	100	97	88	33	25	19	15	12	(6)	(6)	A-2-4(0)	SM.
----	100	98	94	55	44	39	36	34	35	15	A-6(6)	CL.
----	100	98	95	37	31	27	25	22	34	13	A-6(1)	SC.
----	100	97	89	34	29	25	21	18	22	7	A-2-4(0)	SM-SC.
----	100	98	92	54	51	47	46	43	40	19	A-6(7)	CL.
----	100	98	94	32	28	27	25	23	34	13	A-2-6(1)	SC.

TABLE 4.—*Engineering test data* [1] *for soil*

Soil name and location	Bureau of Public Roads report No.	Depth	Horizon	Moisture-density [2]		Mechanical analysis [3]				
				Maximum dry density	Optimum moisture	Percentage passing sieve				
						2 in.	1½-in.	1-in.	¾-in.	⅜-in.
		Inches		*Lb. per cu. ft.*	*Percent*					
Norfolk loamy fine sand:										
SE¼NW¼, sec. 14, R. 2 W., T. 3 N. (Modal profile).	S 33267	2–8	A_2	114	11					
	S 33268	16–47	B_2	114	15					
	S 33269	64–85+	C	112	16					
SE¼SE¼, sec. 22, R. 2 W., T. 3 N. (Finer texture).	S 33270	0–3	A_p	117	11					
	S 33271	9–29	B_{21}	111	17					
	S 33272	55–67+	C	103	21				100	99
SE¼SE¼, sec. 8, R. 2 W., T. 2 N. (Deeper profile).	S 33273	2–10	A_2	119	9					
	S 33274	27–43	B_2	115	14					
	S 33275	65–76+	C	109	18					
Orangeburg loamy fine sand:										
NW¼NE¼, sec. 22, R. 2 W., T. 3 N. (Model profile).	S 33276	0–6	A_1	118	11					
	S 33277	16–38	B_{21}	116	15					
SE¼SE¼, sec. 16, R. 2 W., T. 2 N. (Finer texture).	S 33278	3–7	A_3	119	11				100	98
	S 33279	10–36	B_2	106	20				100	99
	S 32280	52–62+	C_1	101	22					
SE¼NE¼, sec. 26, R. 2 W., T. 3 N. (Deeper profile).	S 33281	0–7	A_p and A_3	119	9					
	S 33282	21–57	B_2	117	14					
	S 33283	57–86+	C	110	18					
Red Bay loamy fine sand:										
SW¼SW¼, sec. 10, R. 4 W., T. 2 N. (Model profile).	S 33284	0–5	A_p	121	9					
	S 33285	10–24	B_{21}	119	13					
SE¼SE¼, sec. 17, R. 2 W., T. 3 N. (Finer texture).	S 33286	0–9	A_p	120	8					
	S 33287	19–68	B_{21}	118	13					
	S 33288	110–150+	C	123	11					
SE¼SE¼, sec. 17, R. 2 W., T. 3 N. (Deeper profile).	S 33289	0–8	A_1	122	10					
	S 33290	24–72	B_2	116	14					
	S 33291	72–122+	C	120	13					
Ruston loamy fine sand:										
SW¼NE¼, sec. 21, R. 2 W., T. 3 N. (Modal profile).	S 33292	0–9	A_p	118	11					
	S 33293	15–32	B_2	111	17					
	S 33294	68–90+	C	100	24					100
SW¼SW¼, sec. 27, R. 2 W., T. 3 N. (Mottling closer to surface).	S 33295	4–9	A_2	120	10					
	S 33296	22–31	B_{21}	108	19					
	S 33297	47–55+	C	102	22					
NE¼NE¼, sec. 2, R. 4 W., T. 2 N. (Thick surface).	S 33298	0–5	A_p	120	9				100	99
	S 33299	31–38	B_2	116	15					
	S 33300	47–60+	C	112	16					
Tifton loamy fine sand:										
SW¼NW¼, sec. 1, R. 5 W., T. 2 N. (Modal profile).	S 33301	3–6	A_{12}	121	10				100	99
	S 33302	13–40	B_2	112	17		100	99	97	89
	S 33303	60–72+	C	119	8			100	99	93
SW¼NW¼, sec. 16, R. 5 W., T 2 N. (Coarse texture).	S 33304	0–6	A_p	121	11				100	96
	S 33305	12–32	B_2	118	13				100	93
	S 33306	47–74	C	113	16				100	97
SE¼SE¼, sec. 16, R. 4 W., T. 3 N. (Mottling closer to surface).	S 33307	0–5	A_1	109	14			100	99	96
	S 33308	16–30	B_2	109	18			100	99	95
	S 33309	42–49+	C	99	24				100	99

[1] Tests performed by the Bureau of Public Roads in accordance with standard procedures of the American Association of State Highway Officials (AASHO).

[2] Based on the compaction and density of soils, AASHO Designation: T 99–57, Method A.

[3] Mechanical analyses according to the American Association of State Highway Officials Designation T 88. Results by this procedure frequently may differ somewhat from results that would have been obtained by the soil survey procedure of the Soil Conservation Service (SCS). In the AASHO procedure, the fine material is analyzed by the hydrometer method and the various grain-size fractions are calculated on the basis of all the material, including that coarser than 2 millimeters in diameter. In the SCS soil survey procedure, the fine material is analyzed by the pipette method

samples taken from thirty soil profiles—Continued

Mechanical analysis [3]—Continued									Liquid limit	Plasticity index	Classification	
Percentage passing sieve—Continued					Percentage smaller than—						AASHO [4]	Unified [5]
No. 4 (4.76 mm.)	No. 10 (2.0 mm.)	No. 40 (0.42 mm.)	No. 60 (0.250 mm.)	No. 200 (0.074 mm.)	0.05 mm.	0.02 mm.	0.005 mm.	0.002 mm.				
	100	95	85	57	19	13	9	6	(6)	(6)	A-4(4)	ML.
	100	97	90	49	44	37	35	33	33	14	A-6(4)	SC.
	100	98	92	52	46	38	38	37	36	16	A-6(6)	CL.
	100	97	87	33	24	17	12	10	(6)	(6)	A-2-4(0)	SM.
	100	97	91	53	47	43	40	38	34	15	A-6(6)	CL.
98	96	93	87	56	50	45	42	41	42	17	A-7-6(7)	ML-CL.
	100	96	86	26	19	12	9	7	(6)	(6)	A-2-4(0)	SM.
	100	97	90	44	37	30	28	26	32	15	A-6(3)	SC.
	100	98	93	51	46	40	37	36	40	17	A-6(6)	CL.
	100	93	76	26	21	14	10	8	(6)	(6)	A-2-4(0)	SM.
	100	96	87	27	20	15	12	10	34	16	A-2-6(1)	SC.
97	96	92	82	46	40	36	33	32	(6)	(6)	A-4(0)	SM.
98	98	95	90	58	54	52	50	49	44	19	A-7-6(9)	ML-CL.
	100	97	90	60	57	53	50	50	46	18	A-7-6(9)	ML-CL.
	100	86	65	17	14	11	8	6	(6)	(6)	A-2-4(0)	SM.
	100	88	73	42	38	36	34	33	35	19	A-6(4)	SC.
	100	91	79	50	47	43	42	42	43	17	A-7-6(6)	SM-SC.
	100	93	80	26	21	15	11	10	(6)	(6)	A-2-4(0)	SM.
	100	96	87	45	40	36	32	30	30	15	A-6(4)	SC.
	100	81	54	17	14	10	8	8	(6)	(6)	A-2-4(0)	SM.
	100	86	69	39	37	33	31	31	30	16	A-6(2)	SC.
	100	84	59	25	23	21	20	18	24	8	A-2-4(0)	SC.
	100	85	60	21	18	15	11	9	(6)	(6)	A-2-4(0)	SM.
	100	86	66	40	38	35	34	32	33	17	A-6(3)	SC.
	100	79	59	33	26	23	23	22	30	13	A-2-6(0)	SC.
	100	95	81	29	24	17	12	11	(6)	(6)	A-2-4(0)	SM.
	100	97	88	53	48	42	38	37	33	17	A-6(6)	CL.
99	99	97	91	66	61	58	54	53	50	22	A-7-6(13)	ML-CL.
	100	95	85	29	20	16	11	10	(6)	(6)	A-2-4(0)	SM.
	100	97	90	53	49	42	41	40	40	17	A-6(6)	CL.
	100	99	94	66	61	57	55	54	51	24	A-7-6(14)	MH-CH.
98	97	80	67	36	14	11	8	7	(6)	(6)	A-4(0)	SM.
	100	90	76	36	34	32	31	30	32	14	A-6(1)	SC.
	100	94	70	33	32	29	29	28	31	14	A-2-6(1)	SC.
98	98	90	78	28	22	17	11	9	(6)	(6)	A-2-4(0)	SM.
84	82	77	71	40	36	31	28	28	36	14	A-6(2)	SC.
88	86	79	72	43	39	34	32	29	39	15	A-6(3)	SM-SC.
92	91	77	60	26	23	18	14	10	20	6	A-2-4(0)	SM-SC.
85	84	74	60	34	29	27	24	21	26	11	A-2-6(0)	SC.
95	94	80	68	54	38	33	30	27	36	16	A-6(6)	CL.
94	94	86	73	31	22	11	7	5	(6)	(6)	A-2-4(0)	SM.
91	89	84	76	50	44	36	33	32	37	14	A-6(4)	SM-SC.
99	98	93	88	70	65	59	55	53	54	24	A-7-5(15)	MH-CH.

and the material coarser than 2 millimeters in diameter is excluded from calculations of grain-size fractions. The mechanical analyses used in this table are not suitable for use in naming textural classes for soils.

[4] Based on Standard Specifications for Highway Materials and Methods of Sampling and Testing (Pt. 1, Ed. 7): The Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes. AASHO Designation: M 145-49.

[5] Based on the Unified Soil Classification System, Technical Memorandum No. 3-357, Volume 1, Waterways Experiment Station, Corps of Engineers, March 1953.

[6] Nonplastic.

group index number. Group indexes range from 0 for the best materials to 20 for the poorest. The group index number is shown in parentheses following the soil group symbol.

Some engineers prefer to use the Unified system. In this system soil materials are identified as coarse grained (8 classes), fine grained (6 classes), or highly organic.

Soil properties significant to engineering

Table 5 briefly describes the profile of each soil in the county and lists physical properties that are significant in engineering. These physical properties are estimates based on field observations and, for some soils, on laboratory tests. They apply only to the soils in Gadsden County. Terms such as dispersion and shrink-swell

TABLE 5.—*Estimated physical properties*

[Dashed lines indicate that soil has variable

Symbol on map	Soil	Depth to seasonally high water table [2]	Description of soil	Depth from surface [3]	Classification	
					USDA Texture	Unified
		Feet		*Inches*		
Ab	Alluvial land		Alluvial material with variable characteristics.			
AdB	Arredondo fine sand, 0 to 5 percent slopes.	6+	Well-drained fine sand overlying stratified sandy loams; fine sand generally extends to depths of 2½ to 6 feet but may extend to depths of more than 6 feet in small local areas. A finer textured sandy clay loam is at a depth of 4½ to 6 feet in most places.	0–43	Fine sand	SP–SM or SP.
AdC	Arredondo fine sand, 5 to 8 percent slopes.	6+		43–66	Loamy fine sand	SM
				51–66	Sandy clay loam	SM–SC, SC
AfD	Arredondo-Fellowship-Gainesville soils, 8 to 12 percent slopes.[10]	6+	Well-drained fine sand to fine sandy clay loam underlain by sandy clay loams and clay; surface layer ranges in thickness from 0 to 6 feet; underlying material is of variable consistence and permeability and is at depths that vary within short distances; some outcrops of plastic clay in seepage areas on hillsides; fragments of limestone in substratum.	0–6	Loamy fine sand	SM–SC
				6–42	Sandy clay loam to clay.	CH or MH
AfF	Arredondo-Fellowship-Gainesville soils, 12 to 40 percent slopes.[10]	6+				
BaC	Binnsville soils, 2 to 12 percent slopes.	2	0 inch to 6 inches of fine sandy loam to fine sandy clay loam underlain by 0 inch to 6 inches of plastic clay on marly clay containing limestone. Soils underlain by limestone at a very shallow depth. In places the limestone outcrops at the surface. Occurs on uplands.	0–4	Very fine sandy loam.	ML or OL
				4–10	Clay	CH or MH
				10–42	Marly clay	CH or MH
BfB	Blanton fine sand, 0 to 5 slopes.	2	Fine sand, 2½ to 6 feet thick, over fine sandy loam or fine sandy clay loam. Occur on uplands.	0–64	Fine sand	SP–SM or SP.
BfC	Blanton fine sand, 5 to 8 percent slopes.	2				
BcB	Blanton coarse sand, 0 to 5 percent slopes.	2		0–42+	Coarse sand	SP–SM or SP.
BtB	Blanton fine sand, terrace, 0 to 5 percent slopes.	1	Fine sand, 2½ to 3½ feet thick, over sand, loamy sand, or finer textured material. Occurs in terraces along the large rivers.	0–58+	Fine sand	SP–SM to SP.
CaC3	Carnegie fine sandy loam, 5 to 8 percent slopes, severely eroded.	6+	Loamy fine sand or fine sandy loam, 0 to 1½ feet thick, over fine sandy clay loam or sandy clay; small concretions of iron in upper part of profile. Occur on uplands.	0–11	Loamy fine sand	SM
				11–16	Light fine sandy clay loam.	SC
CnA	Carnegie loamy fine sand, 0 to 2 percent slopes.	6+		16–65	Fine sandy clay loam.	MH–CH, CL.
CnB	Carnegie loamy fine sand, 2 to 5 percent slopes.	6+				
CnB2	Carnegie loamy fine sand, 2 to 5 percent slopes, eroded.	6+				
CnC	Carnegie loamy fine sand, 5 to 8 percent slopes.	6+				

See footnotes at end of table.

potential, which may be unfamiliar to some readers, are defined in footnotes at the end of table 5.

Suitability of soils for engineering uses

In table 6 the soils of Gadsden County are evaluated from the standpoint of their suitability for engineering uses, and some of the soil features that affect these uses are given. As a rule, the soil series are named and, after the series name, are the symbols of the evaluated soils in the series. Soil complexes and groups of undifferentiated soils are not given in table 6. Their properties vary according to the component soils. For an interpretation of the properties of the soils in a complex, see the soil series that make up the complex.

significant to engineering [1]

characteristics and that property is not estimated]

Classification—Continued	Percentage Passing		Permeability [4]	Structure [5]	Available water [6]	Reaction [7]	Dispersion [8]	Shrink-swell potential [9]
AASHO	#200 sieve	#10 sieve	*Inches per hour*		*Inches per foot of depth*	*pH*		
A–2	15	100	10+	Fine crumb	0. 8	5–1–6. 0	Low	Low.
A–2	25	100	5–10	Fine crumb	. 9	5–1–5. 5	Low	Low.
A–4	40	100						
A–2	15	100	0. 2–0. 8	Fine, crumb	1. 1	5. 6–6. 0	Medium	Moderate.
A–7–5 or A–7–6	65	100	<0. 05	Angular blocky	1. 3	5. 6–6. 0	High	High.
A–4 or A–6	70	100	0. 2–0. 8	Crumb	1. 1	6. 6–7. 3	Low	Moderate.
A–7–5 or A–7–6	80	100	<0. 05	Angular blocky	1. 3	6. 6–7. 3	High	Moderate to high.
A–7–5 or A–7–6	90	100	0. 01–0. 2	Angular blocky	1. 1	6. 6–7. 3	High	Moderate to high.
A–3	10	100	10+	Single grain	. 8	5. 1–5. 5		Low.
A–3	8	100	10+	Single grain	. 4	5. 1–5. 5		Low.
A–3	10	100	5–10	Single grain	. 8	5. 1–5. 5		Low.
A–2	30	85	2. 5–5. 0	Crumb	1. 1	5. 1–5. 5	Low	Low.
A–6	40	90	0. 8–2. 5	Crumb	1. 3	5. 1–5. 5	Low	Low.
A–7	65	95	0. 2–0. 8	Subangular blocky	1. 4	5. 1–5. 5	Medium	Moderate.

TABLE 5.—*Estimated physical properties*

[Dashed lines indicate that soil has variable

Symbol on map	Soil	Depth to seasonally high water table [2]	Description of soil	Depth from surface [3]	Classification	
					USDA Texture	Unified
		Feet		*Inches*		
CnC2	Carnegie loamy fine sand, 5 to 8 percent slopes, eroded.	6+				
CnD	Carnegie loamy fine sand, 8 to 12 percent slopes.	6+				
Co	Congaree silt loam	(11)	Silty alluvial materials, 3 feet thick or more, underlain by materials of variable texture. Occurs in irregularly shaped areas along Appalachicola River.	0–12 12–42	Silt loam Silty clay loam	ML–CL CL
CrB	Cuthbert loamy fine sand, 2 to 5 percent slopes.	6+	Loamy fine sand, 3 to 14 inches thick, over dense, slowly permeable stratified clays and sandy clays; depth to slowly permeable material variable within short distances; a few seepage areas on hillsides.	0–6	Loamy fine sand to sandy loam.	SM
CrC	Cuthbert loamy fine sand, 5 to 8 percent slopes.	6+		6–54	Fine sandy clay	CL or CH
CsD	Cuthbert, Boswell, and Susquehanna soils, 5 to 12 percent slopes.	6+	Soils of variable texture, generally on steep slopes on uplands.		Variable	
CsF	Cuthbert, Boswell, and Susquehanna soils, 12 to 60 percent slopes.	6+				
EmB	Eustis loamy sand, 0 to 5 percent slopes.	6+	Well-drained sandy material, 2½ to 6 feet thick over sandy loam.	0–39 39–55	Loamy sand Fine sandy loam	SM SC
EmC	Eustis loamy sand, 5 to 8 percent slopes.	6+				
EsA	Eustis loamy sand, shallow, 0 to 2 percent slopes.	6+				
EsB	Eustis loamy sand, shallow, 2 to 5 percent slopes.	6+				
EsC	Eustis loamy sand, shallow, 5 to 8 percent slopes.	6+				
EcB	Eustis coarse sand, 0 to 5 percent slopes.	6+	Well-drained sands, 2½ to 6 feet thick, overlying stratified sand and loamy sand; coarse-textured material extends more than 10 feet in the excessively drained phase.	0–63	Coarse sand	SP–SM
EcD	Eustis coarse sand, 5 to 12 percent slopes.	6+				
EdB	Eustis coarse sand, excessively drained, 0 to 5 percent slopes.	6+				
FmA	Faceville loamy fine sand, 0 to 2 percent slopes.	6+	Loamy fine sand or fine sandy loam, 0 to 1½ feet thick, over fine sandy clay loam or sandy clay. Occur on uplands.	0–7 7–14 14–79	Loamy fine sand Fine sandy loam Fine sandy clay loam.	SM SM–SC or SC SC
FmB	Faceville loamy fine sand, 2 to 5 percent slopes.	6+				
FmB2	Faceville loamy fine sand, 2 to 5 percent slopes, eroded.	6+				
FmC	Faceville loamy fine sand, 5 to 8 percent slopes.	6+				
FmC2	Faceville loamy fine sand, 5 to 8 percent slopes, eroded.	6+				
FmD	Faceville loamy fine sand, 8 to 12 percent slopes.	6+				
FaC3	Faceville fine sandy loam, 5 to 8 percent slopes, severely eroded.	6+				
FaD3	Faceville fine sandy loam, 8 to 12 percent slopes, severely eroded.	6+				

See footnotes at end of table.

significant to engineering [1]—Continued

characteristics and that property is not estimated]

Classification—Continued	Percentage Passing		Permeability [4]	Structure [5]	Available water [6]	Reaction [7]	Dispersion [8]	Shrink-swell potential [9]
AASHO	#200 sieve	#10 sieve						
			Inches per hour		*Inches per foot of depth*	*pH*		
A–4 or A–6	90	100	0. 8–2. 5	Crumb	1. 1	5. 1–5. 5	Low	Moderate.
A–6 or A–7–6	95	100	0. 2–0. 8	Crumb	1. 3	5. 1–5. 5	Medium	Moderate to high.
A–4	30	100	2. 5–5. 0	Crumb	1. 1	5. 1–5. 5	Low	Low.
A–7–5 or A–7–6	70	100	0. 05–0. 2	Angular and subangular blocky.	1. 4	5. 1–5. 5	High	Moderate.
A–2	21	100	5–10	Single grain	. 9	5. 1–5. 5		Low.
A–4 or A–6	48	100	2. 5–5. 0	Crumb	1. 2	5. 1–5. 5	Low	Low.
A–1–b	8	100	10+	Single grain	. 6	5. 1–5. 5		Low.
A–2	35	100	2. 5–5. 0	Crumb	1. 1	5. 1–5. 5	Low	Low.
A–2	30	100	0. 8–2. 5	Crumb	1. 3	5. 1–5. 5	Low	Low.
A–6	45	100	0. 2–0. 8	Subangular blocky	1. 4	5. 1–5. 5	Medium	Moderate.

TABLE 5.—*Estimated physical properties*

[Dashed lines indicate that soil has variable

Symbol on map	Soil	Depth to seasonally high water table[2]	Description of soil	Depth from surface[3]	Classification	
					USDA Texture	Unified
		Feet		*Inches*		
FsD	Faceville-Shubuta-Ruston complex, 8 to 12 percent slopes.	6+				
FsD3	Faceville-Shubuta-Ruston complex, 8 to 12 percent slopes, severely eroded.	6+				
FsF	Faceville-Shubuta-Ruston complex, 12 to 35 percent slopes.	6+				
FsF3	Faceville-Shubuta-Ruston complex, 12 to 35 percent slopes, severely eroded.	6+				
GoA	Goldsboro loamy fine sand, 0 to 2 percent slopes.	2	Loamy fine sand or loamy sand, 1½ to 2½ feet thick, over sandy loam to sandy clay loam; in some places dense sandy clay is within 6 feet of surface. Occur in low positions on uplands.	0–11	Loamy fine sand	SM
GoB	Goldsboro loamy fine sand, 2 to 5 percent slopes.	2		11–20	Fine sandy loam	SM–SC or SC
GmA	Goldsboro loamy sand, thick surface, 0 to 2 percent slopes.	2		20–59	Fine sandy clay loam.	CL
GmB	Goldsboro loamy sand, thick surface, 2 to 5 percent slopes.	2				
GmC	Goldsboro loamy sand, thick surface, 5 to 8 percent slopes.	2				
Gr	Grady fine sandy loam	0	Fine sandy loam, 6 to 12 inches thick, over sandy clay and clay. Occurs in wet depressions on uplands.	0–4	Fine sandy loam	SM–SC or SC
				4–9	Fine sandy clay loam.	CL
				9–44	Fine sandy clay	CH or MH
Gu	Gullied land	6+	Severely eroded areas of various soil types; deep gullies.			
Ha	Hannahatchee soils, local alluvium.	(11)	Alluvial materials in depressions on uplands; thickness and texture variable.	0–23	Very fine sandy loam.	ML
				23–48	Fine sandy clay loam.	CL
HcB	Huckabee fine sand, 0 to 5 percent slopes.	12 6+	Fine sand, 5 feet thick, over substrata of variable texture that were derived from sediments deposited by streams. Occurs on old stream terraces.	0–64	Fine sand	SM
Iq	Izagora loamy fine sand	1	Loamy fine sand, ½ to 1½ feet thick, over sandy clay loams; substrata of variable thickness and texture were derived from sediments deposited by streams.	0–8	Loamy fine sand	SM
				8–15	Fine sandy loam	SM–SC or SC
				15–50	Fine sandy clay loam.	CL
KaA	Kalmia loamy fine sand, 0 to 2 percent slopes.	6+	Loamy fine sand, ½ foot to 1½ feet thick, over permeable fine sandy clay loam derived from sediments that streams deposited. Occurs on terraces.	0–15	Loamy fine sand	SM
				15–21	Fine sandy loam	SM–SC or SC
				21–39	Fine sandy clay loam.	CL
				39–49	Fine sandy loam	SM–SC or SC
				49–64	Fine sand	SP–SM or SP–SW.

See footnotes at end of table.

significant to engineering [1]—Continued

characteristics and that property is not estimated]

Classification—Continued	Percentage Passing		Permeability [4]	Structure [5]	Available water [6]	Reaction [7]	Dispersion [8]	Shrink-swell potential [9]
AASHO	#200 sieve	#10 sieve						
			Inches per hour		*Inches per foot of depth*	*pH*		
A–2	35	100	5–10	Crumb	1. 1	5. 1–5. 5	Low	Low.
A–4	45	100	2. 5–5. 0	Crumb	1. 2	5. 1–5. 5	Low	Low.
A–6	55	100	0. 8–2. 5	Subangular blocky	1. 4	5. 1–5. 5	Medium	Moderate.
A–4	50	100	0. 2–0. 8	Crumb	1. 1	5. 1–5. 5	Low	Moderate.
A–6	63	100	0. 05–0. 05	Subangular blocky	1. 3	5. 1–5. 5	Medium	Moderate.
A–7–5 or A–7–6	70	100	<0. 05	Massive	1. 3	5. 1–5. 5	High	Moderate to high.
A–4	55	100	2. 5–5. 0	Crumb	1. 1	5. 1–5. 5	Low	Moderate.
A–6	65	100	0. 2–0. 8	Subangular blocky	1. 2	5. 1–5. 5	Medium	Moderate.
A–2	27	100	5–10	Single grain	. 8	5. 1–5. 5		Low.
A–2	35	100	5–10	Crumb	1. 1	5. 1–5. 5		Low.
A–4	45	100	2. 5–5. 0	Crumb	1. 2	5. 1–5. 5		Low.
A–6	55	100	0. 8–2. 5	Crumb and subangular blocky.	1. 3	5. 1–5. 5		Moderate.
A–2	35	100	5–10	Crumb	1. 1	5. 1–5. 5		Low.
A–4	45	100	2. 5–5. 0	Crumb	1. 2	5. 1–5. 5		Low.
A–6	55	100	0. 8–2. 5	Subangular blocky	1. 4	5. 1–5. 5	Medium	Moderate.
A–4	45	100	2. 5–5. 0	Subangular blocky	1. 2	5. 1–5. 5	Low	Low.
A–2	26	100	5–10	Single grain	. 9	5. 1–5. 5		Low.

TABLE 5.—*Estimated physical properties*

[Dashed lines indicate that soil has variable

Symbol on map	Soil	Depth to seasonally high water table[2]	Description of soil	Depth from surface[3]	Classification	
					USDA Texture	Unified
		Feet		*Inches*		
KbA	Klej loamy sand, shallow, 0 to 2 percent slopes.	1½	Mainly loamy sand, sand, and coarse sand 3 to 6 feet thick overlying sandy clay loam and sandy clays. Occur on uplands.	0–56	Sand	SP–SM or SP
KbB	Klej loamy sand, shallow, 2 to 5 percent slopes.	1½				
KsB	Klej sand, 0 to 5 percent slopes.	1½				
KsC	Klej sand, 5 to 8 percent slopes.	1½				
KcB	Klej coarse sand, 0 to 5 percent slopes.	1½				
LdB	Lakeland loamy sand, 0 to 5 percent slopes.	6+	Loamy fine sand to coarse sand, 3½ to 6 feet thick, over finer textured material; finer textured material may be at depths as shallow as 2½ to 3 feet or as deep as 10 feet. Occur on uplands.	0–37	Loamy sand	SM
LdD	Lakeland loamy sand, 5 to 12 percent slopes.	6+		37–72+	Sandy loam to fine sandy clay loam.	SM–SC
LeA	Lakeland loamy sand, shallow, 0 to 2 percent slopes.	6+				
LeB	Lakeland loamy sand, shallow, 2 to 5 percent slopes.	6+				
LmC	Lakeland loamy sand, shallow, 5 to 8 percent slopes.	6+				
LnB	Lakeland sand, 0 to 5 percent slopes.	6+				
LnD	Lakeland sand, 5 to 12 percent slopes.	6+				
LaB	Lakeland coarse sand, 0 to 5 percent slopes.	6+				
LaD	Lakeland coarse sand, 5 to 12 percent slopes.	6+				
LcB	Lakeland coarse sand, excessively drained, 0 to 5 percent slopes.	6+	Loamy fine sand to coarse sand, 3½ to 6 feet thick, over finer textured material; finer textured material may be at depths as shallow as 2 ½ to 3 feet or as deep as 10 feet. Occur on uplands.	0–74	Coarse sand	SP–SM
LcD	Lakeland coarse sand, excessively drained, 5 to 12 percent slopes.	6+		74–82+	Light sandy clay loam.	SC
LsF	Lakeland and Eustis sands, 12 to 50 percent slopes.	6+	Mixture of areas of Lakeland and Eustis soils.			
LtC	Lakeland-Eustis-Cuthbert complex, 5 to 8 percent slopes.	6+	Mixture of small areas of Lakeland, Eustis, and Cuthbert soils.			
LtD	Lakeland-Eustis-Cuthbert complex, 8 to 12 percent slopes.	6+				
LtF	Lakeland-Eustis-Cuthbert complex, 12 to 45 percent slopes.	6+				
Lv	Leaf very fine sandy loam	2	Very fine sandy loam, ½ foot to 1 foot thick on sandy clay or clay. Occurs on river terraces.	0–10	Very fine sandy loam.	SM-SC or SC
				10–40	Fine sandy clay	CH or MH
				40–58	Sandy clay loam	CL
Lw	Leon sand	1	Thick beds of sand that have a pan 3 to 6 inches thick that is stained with organic matter and is at depths of 1 foot to 2½ feet.	0–48	Sand	SP–SM or SP–SW.

See footnotes at end of table.

significant to engineering [1]—Continued

characteristics and that property is not estimated]

Clasification—Continued	Percentage Passing		Permeability [4]	Structure [5]	Available water [6]	Reaction [7]	Dispersion [8]	Shrink-swell potential [9]
AASHO	#200 sieve	#10 sieve						
			Inches per hour		*Inches per foot of depth*	*pH*		
A–2	10	100	10+	Single grain	0. 7	5. 1–5. 5		Low.
A–2	20	100	5–10	Single grain	. 9	5. 1–5. 5		Low.
A–2	20	90	2. 5–5. 0	Crumb	1. 2	5. 1–5. 5		Low.
A–3	8	100	10+	Single grain	. 6	5. 1–5. 5		Low.
A–2	25	100	10+	Crumb	. 9	5. 1–5. 5		Low.
A–4 or A–6	52	100	0. 8–2. 5	Crumb	1. 0	5. 1–5. 5	Medium	Moderate.
A–7–5 or A–7–6	70	100	<0. 05	Massive	1. 3	5. 1–5. 5	High	Moderate to high.
A–6	55	100	0. 05–0. 2	Subangular blocky	1. 1	5. 1–5. 5	Medium	Moderate.
A–3	10	100	10+	Single grain	. 4	4. 5–5. 5		Low.

TABLE 5.—*Estimated physical properties*

[Dashed lines indicate that soil has variable

Symbol on map	Soil	Depth to seasonally high water table [2]	Description of soil	Depth from surface [3]	Classification	
					USDA Texture	Unified
		Feet		*Inches*		
LyA	Lynchburg loamy fine sand, 0 to 2 percent slopes.	1	Loamy fine sand to loamy sand overlying stratified materials. Occur in low positions on uplands.	0–7	Loamy fine sand	SM
LyB	Lynchburg loamy fine sand, 2 to 5 percent slopes.	1		7–15	Fine sandy loam.	SM–SC or SC.
LzA	Lynchburg loamy sand, thick surface, 0 to 2 percent slopes.	1		15–32	Light fine sandy clay loam.	SC
LzB	Lynchburg loamy sand, thick surface, 2 to 5 percent slopes.	1		32–54	Fine sandy clay loam.	CL
Ma	Made land		Artificial fills of varied material			
MgA	Magnolia loamy fine sand, 0 to 2 percent slopes.	6+	Loamy fine sand or fine sandy loam over sandy clay. Occur on uplands.	0–8	Loamy fine sand.	SM
MgA2	Magnolia loamy fine sand, 0 to 2 percent slopes, eroded.	6+		8–12	Fine sandy clay loam.	SM–SC or SC
MgB	Magnolia loamy fine sand, 2 to 5 percent slopes.	6+		12–100	Fine sandy clay loam.	SC or CL
MgB2	Magnolia loamy fine sand, 2 to 5 percent slopes, eroded.	6+		100–168+	Fine sandy clay loam.	SC
MgC	Magnolia loamy fine sand, 5 to 8 percent slopes.	6+				
MgC2	Magnolia loamy fine sand, 5 to 8 percent slopes, eroded.	6+				
MgD	Magnolia loamy fine sand, 8 to 12 percent slopes.	6+				
MfB3	Magnolia fine sandy loam, 2 to 5 percent slopes, severely eroded.	6+				
MfC3	Magnolia fine sandy loam, 5 to 8 percent slopes, severely eroded.	6+				
MfD3	Magnolia fine sandy loam, 8 to 12 percent slopes, severely eroded.	6+				
Mp	Mines, pits, and dumps		Open excavations and waste material from the excavations that have been made for removal of sand, gravel, or fuller's earth.			
MyB	Myatt loamy fine sand, 0 to 5 percent slopes.	0	Stratified alluvial material ranging from loamy fine sand to fine sandy clay loam. Occurs in low positions on river terraces, and some areas are flooded each year.	0–8	Loamy fine sand.	SM
				8–16	Light fine sandy clay loam.	SC
				16–46	Fine sandy clay loam.	CL
Nfa	Norfolk loamy fine sand, 0 to 2 percent slopes.	6+	Well-graded loamy fine sand or loamy sand, ½ foot to 2½ feet thick, on sandy loam to sandy clay loam; small concretions of iron in upper part of profile of pebbly phases. Occur in large areas on uplands.	0–13	Loamy fine sand	ML
NfB	Norfolk loamy fine sand, 2 to 5 percent slopes.	6+		13–16	Fine sandy loam	SC or CL
NfB2	Norfolk loamy fine sand, 2 to 5 percent slopes, eroded.	6+		16–85+	Fine sandy clay loam.	SC or CL
NfC	Norfolk loamy fine sand, 5 to 8 percent slopes.	6+				
NfC2	Norfolk loamy fine sand, 5 to 8 percent slopes, eroded.	6+				

See footnotes at end of table.

significant to engineering [1]—Continued

characteristics and that property is not estimated]

Classification—Continued	Percentage Passing		Permeability [4]	Structure [5]	Available water [6]	Reaction [7]	Dispersion [8]	Shrink-swell potential [9]
AASHO	#200 sieve	#10 sieve						
			Inches per hour		*Inches per foot of depth*	*pH*		
A–2	35	100	5–10	Crumb	1. 0	5. 1–5. 5	Low	Low.
A–4	45	100	2. 5–5. 0	Crumb	1. 2	5. 1–5. 5	Low	Low.
A–6	50	100	2. 5–5. 0	Subangular blocky	1. 2	5. 1–5. 5	Low	Low.
A–6	55	100	0. 8–2. 5	Subangular blocky	1. 3	5. 1–5. 5	Medium	Moderate.
A–2	35	100	2. 5–5. 0	Crumb	1. 1	5. 1–5. 5	Low	Low.
A–4	45	100	0. 8–2. 5	Crumb	1. 3	5. 1–5. 5	Low	Low.
A–7	50	100	0. 2–0. 8	Angular and subangular blocky.	1. 4	5. 1–5. 5	Medium	Moderate.
A–7	45	100						
A–2	35	100	5–10	Crumb	1. 1	5. 1–5. 5	Low	Low.
A–4 or A–6	45	100	2. 5–5. 0	Crumb	1. 1	5. 1–5. 5	Low	Low.
A–6	55	100	0. 8–2. 5	Angular blocky	1. 2	5. 1–5. 5	Medium	Moderate.
A–4	60	100	5–10	Crumb	1. 1	5. 1–5. 5	Low	Low.
A–4	50	100	2. 5–5. 0	Crumb and subangular blocky.	1. 3	5. 1–5. 5	Low	Low.
A–6	50	100	0. 8–2. 5	Subangular blocky	1. 4	5. 1–5. 5	Medium	Moderate.

TABLE 5.—*Estimated physical properties*

[Dashed lines indicate that soil has variable

Symbol on map	Soil	Depth to seasonally high water table [2]	Description of soil	Depth from surface [3]	Classification	
					USDA Texture	Unified
		Feet		*Inches*		
NfD	Norfolk loamy fine sand, 8 to 12 percent slopes.	6+				
NpA	Norfolk loamy fine sand, pebbly, 0 to 2 percent slopes.	6+				
NpB	Norfolk loamy fine sand, pebbly, 2 to 5 percent slopes.	6+				
NpB2	Norfolk loamy fine sand, pebbly, 2 to 5 percent slopes, eroded.	6+				
NsA	Norfolk loamy sand, thick surface, 0 to 2 percent slopes.	6+				
NsB	Norfolk loamy sand, thick surface, 2 to 5 percent slopes.	6+				
NsC	Norfolk loamy sand, thick surface, 5 to 8 percent slopes.	6+				
NsD	Norfolk loamy sand, thick surface, 8 to 12 percent slopes.	6+				
NtA	Norfolk loamy sand, thick surface, pebbly, 0 to 2 percent slopes.	6+	Well-graded loamy fine sand or loamy sand ½ foot to 2½ feet thick, on sandy loam to sandy clay loam; small concretions of iron in upper part of profile of pebbly phases. Occur in large areas on uplands.	0–20 20–27 27–76	Loamy sand Fine sandy loam Fine sandy clay loam.	SM SM–SC or SC CL
NtB	Norfolk loamy sand, thick surface, pebbly, 2 to 5 percent slopes.	6+				
NtC	Norfolk loamy sand, thick surface, pebbly, 5 to 8 percent slopes.	6+				
OfA	Orangeburg loamy fine sand, 0 to 2 percent slopes.	6+	Well-graded loamy fine sand or loamy sand, ½ foot to 2½ feet thick, on sandy loam to sandy clay loam. Occur in large areas on uplands.	0–13 13–18 18–82	Loamy fine sand Light fine sandy clay loam. Fine sandy clay loam.	SM SM–SC or SC SC
OfB	Orangeburg loamy fine sand, 2 to 5 percent slopes.	6+				
OfB2	Orangeburg loamy fine sand, 2 to 5 percent slopes, eroded.	6+				
OfC	Orangeburg loamy fine sand, 5 to 8 percent slopes.	6+				
OfC2	Orangeburg loamy fine sand, 5 to 8 percent slopes, eroded.	6+				
OfD	Orangeburg loamy fine sand, 8 to 12 percent slopes.	6+				
OtA	Orangeburg loamy sand, thick surface, 0 to 2 percent slopes.	6+	Well-graded loamy sand or loamy fine sand, ½ foot to 2½ feet thick, overlying sandy loam to sandy clay loam. Occur in large areas on uplands.	0–19 19–24 24–53	Loamy sand Fine sandy loam Fine sandy clay loam.	SM SM–SC or SC SC
OtB	Orangeburg loamy sand, thick surface, 2 to 5 percent slopes.	6+				
OtC	Orangeburg loamy sand, thick surface, 5 to 8 percent slopes.	6+				
OtD	Orangeburg loamy sand, thick surface, 8 to 12 percent slopes.	6+				

See footnotes at end of table.

significant to engineering [1]—Continued

characteristics and that property is not estimated]

Classification—Continued	Percentage Passing		Permeability [4]	Structure [5]	Available water [6]	Reaction [7]	Dispersion [8]	Shrink-swell potential [9]
AASHO	#200 sieve	#10 sieve	*Inches per hour*		*Inches per foot of depth*	*pH*		
A–2	28	100	5–10	Crumb	1. 1	5. 1–5. 5	Low	Low.
A–4	40	100	2. 5–5. 0	Crumb	1. 2	5. 1–5. 5	Low	Low.
A–6	55	100	0. 8–2. 5	Subangular blocky	1. 4	5. 1–5. 5	Medium	Moderate.
A–2	35	100	5–10	Crumb	1. 1	5. 1–5. 5	Low	Low.
A–2	30	100	2. 5–5. 0	Crumb	1. 3	5. 1–5. 5	Low	Low.
A–2	30	100	0. 8–2. 5	Subangular blocky	1. 4	5. 1–5. 5	Medium	Moderate.
A–2	20	100	5–10	Crumb	1. 1	5. 1–5. 5	Low	Low.
A–4	40	100	2. 5–5. 0	Crumb	1. 2	5. 1–5. 5	Low	Low.
A–6	45	100	0. 8–2. 5	Subangular blocky	1. 4	5. 1–5. 5	Medium	Moderate.

TABLE 5.—*Estimated physical properties*

[Dashed lines indicate that soil has variable

Symbol on map	Soil	Depth to seasonally high water table [2]	Description of soil	Depth from surface [3]	Classification	
					USDA Texture	Unified
		Feet		*Inches*		
PsA	Plummer sand, 0 to 2 percent slopes.	0	Thick beds of sands; low areas are flooded in wet seasons. Occur in low positions on uplands.	0–60	Sands	SP–SM or SP–SW.
PsB	Plummer sand, 2 to 5 percent slopes.	0				
PhA	Plummer sand, high, 0 to 2 percent slopes.	0				
PhB	Plummer sand, high, 2 to 5 percent slopes.					
PcA	Plummer coarse sand, high, 0 to 2 percent slopes.	0	Thick beds of coarse sands	0–60	Coarse sand	SP–SM or SP.
Pt	Portsmouth fine sandy loam.	0	Fine sandy loam, high in organic matter and ½ foot to 1½ feet thick, on fine sandy clay loam or sandy clay. Occurs in ponds and narrow drainageways.	0–15 15–44	Fine sandy loam Fine sandy clay loam.	SM CL
Ra	Rains fine sandy loam	0	Fine sandy loam, ½ foot to 1½ feet thick, on fine sandy clay loam or sandy clay. Occurs in depressions and narrow drainageways.	0–8 8–44	Fine sandy loam Fine sandy clay loam.	SM CL
ReA	Red Bay loamy fine sand, 0 to 2 percent slopes.	6+	Loamy fine sand or fine sandy loam, 1½ feet to 2½ feet thick, on sandy loam to sandy clay loam. Occur in large areas of uplands.	0–13 13–16 16–144	Loamy fine sand Fine sandy loam Fine sandy clay loam.	SM SM–SC or SC SC
ReB	Red Bay loamy fine sand, 2 to 5 percent slopes.	6+				
ReB2	Red Bay loamy fine sand, 2 to 5 percent slopes, eroded.	6+				
ReC	Red Bay loamy fine sand, 5 to 8 percent slopes.	6+				
ReC2	Red Bay loamy fine sand, 5 to 8 percent slopes, eroded.	6+				
ReD	Red Bay loamy fine sand, 8 to 12 percent slopes.	6+				
RbB3	Red Bay fine sandy loam, 2 to 5 percent slopes, severely eroded.	6+				
RbC3	Red Bay fine sandy loam, 5 to 8 percent slopes, severely eroded.	6+				
RbD3	Red Bay fine sandy loam, 8 to 12 percent slopes, severely eroded.	6+				
RmA	Ruston loamy fine sand, 0 to 2 percent slopes.	6+	Loamy fine sand or fine sandy loam, ½ foot to 1½ feet thick, on sandy loam to sandy clay loam. Occur in broad areas on uplands.	0–10 10–18 18–56	Loamy fine sand Fine sandy loam Fine sandy clay loam.	SM SM–SC or SC CL
RmB	Ruston loamy fine sand, 2 to 5 percent slopes.	6+				
RmB2	Ruston loamy fine sand, 2 to 5 percent slopes, eroded.	6+				
RmC	Ruston loamy fine sand, 5 to 8 percent slopes.	6+				
RmC2	Ruston loamy fine sand, 5 to 8 percent slopes, eroded.	6+				
RmD	Ruston loamy fine sand, 8 to 12 percent slopes.	6+				
RfC3	Ruston fine sandy loam, 5 to 8 percent slopes, severely eroded.	6+				

See footnotes at end of table.

significant to engineering [1]—Continued

characteristics and that property is not estimated]

Classification—Continued	Percentage Passing		Permeability [4]	Structure [5]	Available water [6]	Reaction [7]	Dispersion [8]	Shrink-swell potential [9]
AASHO	#200 sieve	#10 sieve						
			Inches per hour		*Inches per foot of depth*	*pH*		
A–2	11	100	10+	Single grain	0. 5	4. 5–5. 5		Low.
A–3	5	100	10+	Single grain	. 5	4. 5–5. 5		Low.
A–4	40	100	2. 5–5. 0	Crumb	1. 1	4. 5–5. 0	Low	Low.
A–6	55	100	0. 8–2. 5	Angular blocky	1. 2	4. 5–5. 0	Medium	Moderate.
A–4	40	100	2. 5–5. 0	Crumb	1. 1	5. 1–5. 5	Low	Low to moderate.
A–6	55	100	0. 2–0. 8	Angular blocky	1. 2	5. 1–5. 5	Medium	Moderate.
A–2	32	100	5–10	Crumb	1. 1	5. 1–5. 5	Low	Low.
A–4	40	100	2. 5–5. 0	Crumb	1. 3	5. 1–5. 5	Low	Low.
A–6	50	100	0. 8–2. 5	Subangular blocky	1. 4	5. 1–5. 5	Medium	Moderate.
A–2	35	100	5–10	Crumb	1. 1	5. 1–5. 5	Low	Low.
A–4	48	100	2. 5–5. 0	Crumb	1. 3	5. 1–5. 5	Low	Low.
A–6	55	100	0. 8–2. 5	Subangular blocky	1. 4	5. 1–5. 5	Medium	Moderate.

TABLE 5.—*Estimated physical properties*

[Dashed lines indicate that soil has variable

Symbol on map	Soil	Depth to seasonally high water table [2]	Description of soil	Depth from surface [3]	Classification	
					USDA Texture	Unified
		Feet		*Inches*		
RsA	Ruston loamy sand, thick surface, 0 to 2 percent slopes.	6+	Loamy sand on fine sandy loam, ½ foot to 1½ feet thick, on sandy loam to sandy clay loam. Occur in broad areas on uplands.	0–20	Loamy sand	SM
				20–24	Loamy fine sand	SM
				24–52	Fine sandy clay loam.	CL
RsB	Ruston loamy sand, thick surface, 2 to 5 percent slopes.	6+				
RsC	Ruston loamy sand, thick surface, 5 to 8 percent slopes.	6+				
RsD	Ruston loamy sand, thick surface, 8 to 12 percent slopes.	6+				
RtC	Ruston-Orangeburg-Lakeland complex, 5 to 8 percent slopes.	6+	Intermingled, small areas of Ruston, Orangeburg, and Lakeland soils.			
RtD	Ruston-Orangeburg-Lakeland complex, 8 to 12 percent slopes.	6+				
RtF	Ruston-Orangeburg-Lakeland complex, 12 to 50 percent slopes.	6+				
RtF3	Ruston-Orangeburg-Lakeland complex, 12 to 50 percent slopes, severely eroded.	6+				
RuA	Rutlege fine sand, 0 to 2 percent slopes.	0	Thick beds of fine sand that contains much organic matter to a depth of 1 foot. Occur as fresh water swamps in depressions and are saturated for long periods.	0–11	Fine sand	SP–SM or SP
				11–48	Fine sand	SP–SM or SP
RbB	Rutlege fine sand, 2 to 5 percent slopes.	0				
SaB	Sawyer loamy fine sand, 2 to 5 percent slopes.	6+	Loamy fine sand, 1 foot to 1½ feet thick on compact sandy clay and clay.	0–8	Loamy fine sand to fine sandy loam.	SM–SC or SC
SaC	Sawyer loamy fine sand, 5 to 8 percent slopes.	6+		8–33	Heavy fine sandy clay loam.	CL
				33–54	Fine sandy clay or clay.	CH or MH
ShB	Shubuta fine sandy loam, 2 to 5 percent slopes.	6+	Fine sandy loam, 6 to 14 inches thick, on compact sandy clay and clay.	0–9	Fine sandy loam	SM
				9–15	Fine sandy clay loam.	SC
				15–54+	Fine sandy clay to sandy clay loam.	CL or CH
SnB	Susquehanna loamy fine sand, 2 to 5 percent slopes.	2	Loamy fine sand, ½ to 1 foot thick, on very plastic clays; very slow internal drainage. Occur in small areas in uplands.	0–7	Loamy fine sand	SM
				7–37	Fine sandy clay	CL or CH
				37–62	Clay	CH or MH
SnC	Susquehanna loamy fine sand, 5 to 8 percent slopes.	2				
SrD	Susquehanna-Boswell-Binnsville complex, marly substratum, 5 to 12 percent slopes.	2	Intermingled small areas of the Susquehanna, Boswell, and Binnsville soils underlain by marly clay substratum at depths of ½ foot to 4 feet.			
SrF	Susquehanna-Boswell-Binnsville complex, marly substratum, 12 to 50 percent slopes.	2				

See footnotes at end of table.

significant to engineering [1]—Continued

characteristics and that property is not estimated]

Classification—Continued	Percentage Passing		Permeability [4]	Structure [5]	Available water [6]	Reaction [7]	Dispersion [8]	Shrink-swell potential [9]
AASHO	#200 sieve	#10 sieve						
			Inches per hour		*Inches per foot of depth*	*pH*		
A–2	28	100	5–10	Crumb	1. 1	5. 1–5. 5	Low	Low.
A–2	35	100	5–10	Crumb	1. 2	5. 1–5. 5	Low	Low.
A–6	55	100	0. 8–2. 5	Subangular blocky	1. 4	5. 1–5. 5	Medium	Moderate.
A–2	10	100	5–10	Single grain	1. 1	4. 5–5. 5		Low.
A–3	5	100	10+	Single grain	. 4	4. 5–5. 5		Low.
A–2	31	100	2. 5–5. 0	Crumb	1. 1	5. 1–5. 5	Low	Low.
A–6 or A–7–6	56	100	0. 2–0. 8	Subangular blocky	1. 4	5. 1–5. 5	Medium	Moderate.
A–7–5 or A–7–6	70	100	<0. 05	Subangular blocky	1. 4	5. 1–5. 5	High	Moderate to high.
A–4	35	100	0. 8–2. 5	Crumb	1. 1	5. 1–5. 5	Low	Low.
A–6	55	100	0. 2–0. 8	Crumb	1. 4	5. 1–5. 5	Medium	Low.
A–7–5 to A–7–6	65	100	0. 05–0. 2	Subangular and angular blocky.	1. 4	5. 1–5. 5	Medium	Moderate.
A–2	30	100	2. 5–5. 0	Crumb	1. 1	5. 1–5. 5	Medium	Low.
A–7–5 or A–7–6	70	100	<0. 05	Angular blocky	1. 4	5. 1–5. 5	High	Moderate to high.
A–7–5 or A–7–6	90	100	<0. 05	Angular blocky	1. 4	5. 1–5. 5	High	Moderate to high.

TABLE 5.—*Estimated physical properties*

[Dashed lines indicate that soil has variable

Symbol on map	Soil	Depth to seasonally high water table [2]	Description of soil	Depth from surface [3]	Classification	
					USDA Texture	Unified
		Feet		*Inches*		
SsD	Susquehanna-Sawyer complex, 5 to 12 percent slopes.	2	Intermingled small areas of Susquehanna and Sawyer soils. Occurs mainly on steep slopes in uplands.			
SsF	Susquehanna-Sawyer complex, 12 to 50 percent slopes.	2				
Sw	Swamp	0	Areas in soils of varied characteristics in swamps; surface layers high in organic matter.			
TfA	Tifton loamy fine sand, 0 to 2 percent slopes.	6+	Loamy fine sand, 0 foot to 1½ feet thick, fine sandy clay loam that, in turn, is on sandy clay; pebbles of iron occur throughout the solum. Occurs on uplands.	0–6	Loamy fine sand	SM
TfB	Tifton loamy fine sand, 2 to 5 percent slopes.	6+		6–10	Fine sandy loam	SM–SC or SC
TfB2	Tifton loamy fine sand, 2 to 5 percent slopes, eroded.	6+		10–72	Fine sandy clay loam.	SM–SC or SC
TfC2	Tifton loamy fine sand, 5 to 8 percent slopes, eroded.	6+				
ZuB	Zuber loamy sand, 2 to 5 percent slopes.	6+	Loamy sand, ½ foot to 1½ feet thick, on sandy loam or sandy clay loam; may contain a considerable amount of weathered phosphatic pebbles. Occurs on uplands.	0–13	Loamy sand	SM
ZuC	Zuber loamy sand, 5 to 8 percent slopes.	6+		13–17	Fine sandy loam	SM–SC or SC
				17–52	Sandy clay loam	CL

[1] The physical properties are estimated on basis of field observations and other experience. They apply only to the soils in Gadsden County.

[2] Level expected during the normal wet seasons.

[3] Depth from surface of a typical soil profile.

[4] Permeability as determined through saturated, undisturbed sample core 3 inches in diameter and 3 inches high with 1 inch head of water and tension of 60 centimeters water column.

[5] Structure is arrangement of individual soil particles and groups of particles in the natural state.

[6] Available water is the amount of capillary water available to plants in the soil when the flow downward by gravity has practically

significant to engineering [1]—Continued

characteristics and that property is not estimated]

Classification—Continued	Percentage Passing		Permeability[4]	Structure[5]	Available water[6]	Reaction[7]	Dispersion[8]	Shrink-swell potential[9]
AASHO	#200 sieve	#10 sieve	*Inches per hour*		*Inches per foot of depth*	*pH*		
A–2	31	100	2. 5–5. 0	Crumb	1. 1	5. 1–5. 5	Low	Low.
A–4	40	100	0. 8–2. 5	Crumb	1. 3	5. 1–5. 5	Low	Low.
A–6	40	85	0. 2–0. 8	Subangular blocky	1. 4	5. 1–5. 5	Medium	Moderate.
A–2	28	100	5–10	Crumb	1. 1	5. 6–6. 0	Low	Low.
A–4	40	90	2. 5–5. 0	Subangular blocky	1. 2	5. 6–6. 0	Low	Low.
A–6	55	90	0. 8–2. 5	Subangular blocky	1. 3	5. 1–5. 5	Medium	Moderate.

stopped. In sands it is approximately the total amount of water held. In clays it may be considerably less than the total amount.

[7] The pH value indicates the degree of soil acidity (less than 7.0) or alkalinity (more than 7.0).

[8] Dispersion refers to the degree and rapidity with which soil structure breaks down or slakes in water.

[9] Shrink-swell potential refers to the change in volume of the soil with change in moisture content.

[10] Data given is that for Fellowship soils.

[11] Subject to seasonal flooding.

[12] Subject to occasional flooding.

TABLE 6.—*Engineering*

[Dashed lines indicate that no estimate of

Soils and map symbols [1]	Suitability of soil material for—		Suitability as source of—		Soil features affecting—	
					Vertical alinement of highways	
	Road subgrade	Road fill	Topsoil	Sand	Materials	Drainage
Alluvial land (Ab)	Variable	Variable	Variable	Variable	Variable	High water table; frequent flooding.
Arredondo (AdB, AdC)	Good	Good	Good	Fair	Deep sands	Rapid internal drainage; erodible.
Arredondo-Fellowship-Gainesville (AfD, AfF).	Poor	Good	Good	Poor	Plastic clay; fragments of limestone in substratum.	Hillside seepage; very erodible.
Binnsville (BaC)	Poor	Fair	Fair	Poor	Plastic clay, marl or fragments of limestone.	Hillside seepage; slow internal drainage.
Blanton (BcB, BfB, BfC, BtB)	Good	Good	Fair	Good	Deep sands	Rapid internal drainage; erodible.
Carnegie (CaC3, CnA, CnB, CnB2, CnC, CnC2, CnD).	Good	Good	Very good	Poor	Compactable, well-graded sands with clay.	Erodible; moderately slow internal drainage.
Congaree (Co)	Fair	Fair	Fair	Poor	Friable silt; variable	Low position; high water table.
Cuthbert (CrB, CrC)	Fair	Good	Fair	Poor	Dense, firm sandy clays and clays.	Erodible; slow internal drainage.
Eustis loamy sands and loamy sands, shallow (EmB, EmC, EsA, EsB, and EsC).	Good	Good	Fair	Good	Sandy clay substrata below 30 inches.	Erodible; sandy clay substrata.
Eustis coarse sands (EcB, EcD, EdB)	Good	Good	Fair	Good	Deep sands	Very rapid internal drainage.
Faceville (FaC3, FaD3, FmA, FmB, FmB2, FmC, FmC2, FmD).	Good	Good	Good	Poor	Compactable, well-graded sands with clay.	Erodible; moderately slow internal drainage.
Goldsboro (GoA, GoB, GmA, GmB, GmC).	Good	Good	Good	Poor	Compactable, well-graded sands with clay.	Low position; perched water table.
Grady (Gr)	Poor	Poor	Good	Poor	Plastic sandy clays and clays.	Low position; very slowly permeable subsoil.
Gullied land (Gu)	(2)	(2)	(2)	(2)	(2)	(2)
Hannahatchee (Ha)	Fair to good.	Fair to good.	Good	Poor	Variable; stratified sands.	Depressed position; high water table.
Huckabee (HcB)	Good	Good	Fair	Fair	Deep sands	Very rapid internal drainage.
Izagora (Ig)	Poor to fair.	Fair to good.	Fair	Poor	Plastic sandy clay substrata.	High water table, slowly permeable.
Kalmia (KaA)	Good	Good	Good	Fair	Compactable, variably graded sands with clay.	Erodible; moderately permeable.
Klej (KbA, KbB, KcB, KsB, KsC)	Good	Good	Fair	Fair	Deep sands overlying sandy clay at 3 to 6 feet.	Rapid internal drainage.
Lakeland loamy sands and loamy sands, shallow (LdB, LdD, LeA, LeB, LmC).	Good	Good	Fair	Fair	Sandy clay substrata.	Erodible; moderate permeability.
Lakeland sands and coarse sands (LaB, LaD, LcB, LcD, LnB, LnD).	Good	Good	Poor	Very good.	Deep sands	Very rapid internal drainage.
Leaf (Lv)	Poor	Fair	Fair	Poor	Plastic clay	Slowly permeable subsoil; high water table.

See footnotes at end of table.

interpretation of soils

feature affecting engineering has been made]

Soil features affecting—Continued					
Farm ponds		Agricultural drainage	Irrigation	Terraces and diversions	Waterways
Reservoir area	Embankments				
Position along natural drains; variable material.	Variable	High water table; frequent flooding.			Naturally stable waterways.
Very porous to considerable depth.	Loose permeable material.		Low water-holding capacity.		Erodes easily; grows good sod.
Limestone substratum; variable subsoil.	Plastic clays; fragmental limestone.	Hillside seepage; erodible.	High water-holding capacity; low infiltration.	Irregular surface; very erodible.	Erodes easily; difficult to establish sod.
Slow permeability; underlain by marl or limestone.	Plastic clay over marly limestone.	Slow permeability			
Very porous to considerable depth.	Loose permeable material.	Rapid permeability	Low water-holding capacity.		Low nearly level position; sand texture.
Sandy clay subsoil with moderately slow permeability.	Good strength and stability.		Medium to high water-holding capacity.	Deep soil; moderate erodibility.	Moderately erodible; grows good sod.
	Variable material				
Slowly permeable subsoil; variable substrata.	Good strength and stability; sand lenses in substrata.		Low intake rate; medium to high water-holding capacity.		Erodible; difficult to establish sod.
Sandy clay substrata.	Sandy clay substrata.		Low water-holding capacity.		Erodes easily; difficult to establish sod.
Deep, very porous sand.	Loose sand		Low water-holding capacity.		Erodes easily; difficult to establish sod.
Sandy clay subsoil with moderately slow permeability.	Good strength and stability.		Medium to high water-holding capacity.	Deep soil; moderate erodibility.	Moderately erodible; grows good sod.
Low position; perched water table.	Good strength and stability.	Perched water table.	Medium water-holding capacity.		Moderately erodible; grows good sod.
Low position; very slowly permeable subsoil.	Fair strength and stability; plastic subsoil.	Depressed position; slowly permeable subsoils.			
(2)	(2)	(2)	(2)		
Depressed position; variable permeability in substratum.	Variable	Depressed position; variable stratified material.	Medium water-holding capacity.		
Very porous to considerable depth.	Loose permeable material.		Low water-holding capacity.		
Variable stratified material; slow permeability.	Fair strength and stability; plastic subsoil.	High water table; slow permeability.	Medium water-holding capacity.		
Sandy clay subsoil with moderate permeability.	Good strength and stability.		Moderate water-holding capacity.		
Very porous to considerable depth, sandy clay at 3 to 6 feet.	Loose permeable material.		Low water-holding capacity.		Low, nearly level positions; sand texture.
Sandy clay substrata with moderate permeability.	Loose permeable material.		Low water-holding capacity.		
Deep very porous sand.	Loose permeable sand.		Low water-holding capacity.		
Slowly permeable subsoil.	Plastic clay subsoil	High water table; slowly permeable subsoil.	High water-holding capacity.		

TABLE 6.—*Engineering*

[Dashed lines indicate that no estimate of

Soils and map symbols [1]	Suitability of soil material for—		Suitability as source of—		Soil features affecting—	
					Vertical alinement of highways	
	Road subgrade	Road fill	Topsoil	Sand	Materials	Drainage
Leon (Lw)	Good	Good	Fair	Fair	Deep sands; organic pan.	High water table; deep, porous sand.
Lynchburg (LyA, LyB, LzA, LzB)	Fair	Good	Fair	Poor	Compactable, well-graded sands with clay.	High water table; hillside seepage; sandy clay subsoil.
Made land (Ma)	(2)	(2)	(2)	(2)	(2)	(2)
Magnolia (MfB3, MfC3, MfD3, MgA, MgA2, MgB, MgB2, MgC, MgC2, MgD).	Good	Good	Good	Poor	Compactable, well-graded sands with clay.	Erodible; moderately slow internal movement of water.
Mines, pits, and dumps (Mp)	(2)	(2)	(2)	(2)	(2)	(2)
Myatt (MyB)	Fair	Good	Fair	Poor	Compactable, well-graded sands with clay.	High water table; moderately slow internal movement of water.
Norfolk (NfA, NfB, NfB2, NfC, NfC2, NfD, NpA, NpB, NpB2, NsA, NsB, NsC, NsD, NtA, NtB, NtC).	Good	Good	Good	Poor	Compactable, well-graded sands with clay.	Erodible; moderately slow internal movement of water.
Orangeburg (OfA, OfB, OfB2, OfC, OfC2, OfD, OtA, OtB, OtC, OtD).	Good	Good	Good	Poor	Compactable, well-graded sands with clay.	Erodible; moderately slow internal movement of water.
Plummer (PcA, PhA, PhB, PsA, PsB)	Good	Good	Poor	Good	Deep sands	Low position; high water table.
Portsmouth (Pt)	Fair	Good	Good	Poor	Compactable, well-graded sands with clay.	Low position; high water table.
Rains (Ra)	Fair	Good	Fair	Poor	Compactable, well-graded sands with clay.	Low position; moderately slow permeability.
Red Bay (RbB3, RbC3, RbD3, ReA, ReB, ReB2, ReC, ReC2, ReD).	Good	Good	Good	Poor	Compactable, well-graded sands with clay.	Erodible; moderately slow internal drainage.
Ruston (RfC3, RmA, RmB, RmB2, RmC, RmC2, RmD, RsA, RsB, RsC, RsD).	Good	Good	Good	Poor	Compactable, well-graded sands with clay.	Erodible; moderately slow internal drainage.
Rutlege (RuA, RbB)	Fair	Fair	Good	Fair	Deep sands	Low position; high water table.
Sawyer (SaB, SaC)	Poor	Fair	Fair	Poor	Plastic clay substratum	Erodible; slow internal drainage.
Shubuta (ShB)	Fair to good.	Good	Fair	Poor	Dense, firm clay substratum.	Erodible; slow internal drainage.
Susquehanna (SnB, SnC)	Poor	Poor	Poor	Poor	Very plastic clay subsoil.	Highly erodible; very slow internal drainage.
Swamp (Sw)	Poor	Poor	Fair to good.	Poor	High organic content	High water table; frequently inundated.
Tifton (TfA, TfB, TfB2, TfC2)	Good	Good	Good	Poor	Compactable, well-graded sands with clays.	Erodible; moderately slow internal drainage.
Zuber (ZuB, ZuC)	Good	Good	Good	Poor	Plastic clay substratum.	Erodible; moderately slow internal drainage.

[1] The map symbols in parentheses that follow the name of the soil series or soil type stand for the soils in the respective series or type that are included in the interpretations listed.

interpretation of soils—Continued

feature affecting engineering has been made]

Soil features affecting—Continued					
Farm ponds		Agricultural drainage	Irrigation	Terraces and diversions	Waterways
Reservoir area	Embankments				
Permeable sand; periodically high water table.	Loose permeable material.	High water table; rapid permeability.	Low water-holding capacity.		
High water table; sandy clay subsoil.	Good strength and stability.	High water table; seepage areas.	Medium water-holding capacity.		
(2)	(2)	(2)	(2)	(2)	(2)
Sandy clay subsoil with moderately slow permeability.	Good strength and stability.		Medium water-holding capacity.	Deep soil; moderate erodibility.	Moderately erodible; grows sod well.
(2)	(2)	(2)	(2)	(2)	(2)
High water table; moderately slow permeability.	Good strength and stability.	High water table; moderately slow permeability.	Medium to high water-holding capacity		
Sandy clay subsoil with moderately slow permeability.	Good strength and stability.		Medium to high water-holding capacity.	Deep soil; moderate erodibility.	Moderate erodibility; grows sod well.
Sandy clay subsoil with moderately slow permeability.	Good strength and stability.		Medium to high water-holding capacity.	Deep soil; moderate erodibility.	Moderate erodibility; grows sod well.
Low position; high water table; sand substratum.	Loose, permeable material.	High water table; low position.			Low, nearly level position.
Low position; high water table; clay substratum.	Loose, permeable material.	High water table; low position.			Low, nearly level position.
Low position; high water table; clayey subsoil.	Good strength and stability.	High water table; moderately slow permeability.			Low, nearly level position.
Sandy clay subsoil with moderately slow permeability.	Good strength and stability.		Medium to high water-holding capacity.	Deep soil; moderate erodibility.	Moderately erodible; grows sod well.
Sandy clay subsoil with moderately slow permeability.	Good strength and stability.		Medium to high water-holding capacity.	Deep soil; moderate erodibility.	Moderately erodible; grows sod well.
Low position; high water table; sand substratum.	Loose permeable material.	High water table; low position.			Low, nearly level position.
Plastic clay substratum with slow permeability.	Dense, plastic clay materials.		Medium water-holding capacity; low infiltration.	Thin surface soil; plastic, moderately highly erodible subsoil.	Moderately high erodibility; moderately difficult to establish sod.
Variable substrata	Good strength and stability.		Medium to high water-holding capacity	Deep soil; moderately erodible.	Moderately erodible; moderately difficult to establish sod.
Very slow permeability; very plastic clay subsoil.	Very plastic clay material.	Very slow permeability.		Very plastic subsoil.	Highly erodible; difficult to establish sod.
Low position; high water table.	High organic content; variable mineral materials.	Low position; variable substrata.			
Sandy clay subsoil with moderately slow permeability.	Good strength and stability.		Medium to high water-holding capacity.	Deep soil; moderate erodibility.	Moderate erodibility; grows sod well.
Sandy clay subsoil; limestone in substratum.	Plastic clay materials.		Medium to high water-holding capacity.	Deep soil; very erodible.	Very erodible; grows sod well.

[2] Variable; characteristics related to adjacent soils.

Soils of Gadsden County

This section first tells how soils are mapped and described, and then provides a description for each soil mapped in the county.

Soil Survey Methods and Definitions

The scientist who makes a soil survey examines soils in the fields, groves, pastures, and woodlands. He classifies the soils in accordance with the facts observed and maps their boundaries on an aerial photograph. The map shows the location of each kind of soil identified, as well as the roads, houses, streams, railroads, and other natural and cultural features of the landscape.

FIELD STUDY.—The soil scientist records everything about the soils that he believes might affect their suitability for farming. He examines surface soils and subsoils; measures slopes with a hand level; and notes differences in growth of crops, weeds, trees, and other vegetation. He bores or digs many holes to see what the soils are like. The holes are not spaced in a regular pattern but are located according to the lay of the land. Most of them are not more than a quarter of a mile apart, and some are much closer. Each hole reveals several distinct layers, called *soil horizons*, which collectively are known as the *soil profile*. Each horizon is studied to see how it differs from others in the profile and to learn the things about the soil that influence its capacity to support plant growth.

Color is normally related to drainage and the amount of organic matter in the soil. The darker the surface soil, as a rule, the more organic matter it contains. Streaks, spots, or mottles of gray, yellow, brown, and red in the lower layers generally indicate poor drainage and poor aeration. Uniformly yellow, red, or brown lower layers normally indicate good aeration.

Consistence, or the tendency of the soil to crumble or to stick together, indicates whether it is easy or difficult to keep the soil open and porous under cultivation.

Texture, or the relative proportions of sand, silt, and clay, is estimated by the way the soil feels when rubbed between the fingers. It is later checked by mechanical analysis in a laboratory. Texture determines how well the soil retains moisture, plant nutrients, and fertilizer and whether the soil is easy or difficult to cultivate.

Structure is the way the individual soil particles are arranged in larger aggregates, or peds, and the amount of pore (open) space between the aggregates. Structure has much to do with the ease or difficulty with which the soil is penetrated by plant roots, water, and air.

Other characteristics observed in field study and considered in classifiying the soil are the depth of the soil over bedrock or compact layers; the presence of gravel or stones that may interfere with cultivation; the steepness and pattern of slopes; the degree of erosion; the nature of the underlying material from which the soil developed; and the reaction (acidity or alkalinity) of the soil as measured by chemical tests.

CLASSIFICATION.—On the basis of the characteristics observed by the survey team or determined by laboratory tests, soils are classified in phases, types, and series. The soil type is the basic unit of classification. A soil type may consist of several phases. Types that resemble each other in most characteristics are grouped in soil series.

Soil type.—Soils similar in kind, thickness, and arrangement of horizons, and having essentially the same texture in the surface soil, are classified as members of one soil type. The name of the soil type consists of the name of the soil series followed by the textural designation of the surface soil.

Soil phase.—Soil types are frequently divided into phases because of differences other than those in kind, thickness, and arrangement of horizons. Frequently, these differences are significant in managing the soil. Among the characteristics that suggest dividing a soil type into phases are variation in slope, in frequency of rock outcrop, in degree of erosion, and in depth of soil over the subsoil.

If the depth of sand in a soil type ranges from 30 to 60 inches the type may be mapped as two phases—a typical phase, in which sand extends to a depth of 42 inches or more, and a shallow phase, in which the sand is underlain by a fine-textured horizon at depths of 30 to 42 inches. If a soil type varies in degree of slope, a level phase may be mapped where the degree of slope is less than 2 percent, and a gently sloping phase where the slopes are between 2 and 5 percent.

The soil phase (or the soil type if it has not been divided into phases) is the unit shown on the soil map. It is the unit that has the smallest range of characteristics. Use and management, therefore, can be specified more precisely for it than for broader groups of soils that necessarily contain more variation.

Soil series.—Two or more soil types that are similar in kind, thickness, and arrangement of soil layers are normally designated as a soil series. In some places, however, a soil series may be represented by only one soil type. Each soil series is named for a place near which it was first mapped. For example, the Lakeland series was first identified and mapped near Lakeland, Florida. Leon soils were first mapped in Leon County, Florida.

Miscellaneous land types.—Areas that have little true soil are not classified in types, phases, or series; they are identified by descriptive names. In Gadsden County the miscellaneous land types are Alluvial land, Swamp, Made land, Gullied land, and Mines, pits, and dumps.

Soil complex.—If two or more soils that normally occur in regular geographic association are so intricately mixed that separate mapping is impractical, the soils are mapped together as a soil complex. The group is named for the soils in it. An example in Gadsden County is Faceville-Shubuta-Ruston complex, 8 to 12 percent slopes.

Descriptions of Soils

In the following pages the soil series of Gadsden County are described in alphabetic order. Following the description of each series is a description of the mapping units, or soils, in that series. The first mapping unit described is considered most typical of the series. A detailed description of the profile is given for this unit and, in some series, for other units as well. The soils for which a profile is not described are compared with the soils that have profile descriptions.

In the profile descriptions, some terms are used that may not be familiar to the general reader. The top layer in tilled areas is the A_p horizon, or the plow layer, and in undisturbed areas it is the A_1 horizon. Below this layer, some profiles may have A_2, A_3, or other horizons that are

designated by the letter *A* and a subscript. The A horizon consists of all of these layers combined.

In describing the individual soils of one series, the A horizon is frequently referred to as "surface layers," for the purpose of indicating that the horizon contains more than one layer and reaches a depth greater than 8 inches. Elsewhere in the report, where soils of one or more series are grouped for the purpose of discussing their management, the significance of the separate layers and exact depth of the A horizon are not great and, therefore, the term "surface layer" is used. The A horizon, if it is not more than 8 inches deep, is equivalent to "surface soil," but if it is more than 8 inches deep it is equivalent to "surface soil" and "subsurface soil" (see Glossary).

The subsoil, or B horizon, contains clay and other minerals that were moved from the A horizon. It is sometimes divided in B_1, B_2, and B_3 layers. In most places, the soil formed from material similar to that which underlies the B horizon. This material is called the C horizon. Some soils have a D horizon. The material of this horizon does not conform with that of the horizon above. The term "subsoil" is used also as a general term that refers to all the soil below plow depth.

In this report color is designated both by a descriptive term, such as grayish brown, and by Munsell notations, such as 10YR 5/2. The Munsell notations are precise terms that denote hue, value, and chroma. Unless otherwise designated, the color designated is for moist soils.

Other terms, such as "texture," "structure," and "consistence," are described in the subsection "Soil Survey Methods and Definitions." Soil terms may also be found in the Glossary. Much valuable information is in the "Soil Survey Manual." [8] The approximate acreage and proportionate extent of the soils are given in table 7. The location and distribution of the soil mapping units are shown on the soil map at the back of this report. This map does not have section lines.

[8] Soil Survey Staff. soil survey manual. U.S. Dept. Agr. Handb. No. 18, 503 pp., illus., 1951.

Table 7.—*Approximate acreage and proportionate extent of the soils mapped*

Soil	Area	Extent	Soil	Area	Extent
	Acres	*Percent*		*Acres*	*Percent*
Alluvial land	48, 184	14. 8	Faceville fine sandy loam, 5 to 8 percent slopes, severely eroded	250	0. 1
Arredondo fine sand, 0 to 5 percent slopes	143	(1)	Faceville fine sandy loam, 8 to 12 percent slopes, severely eroded	162	(1)
Arredondo fine sand, 5 to 8 percent slopes	342	. 1	Faceville-Shubuta-Ruston complex, 8 to 12 percent slopes	1, 139	. 4
Arredondo-Fellowship-Gainesville soils, 8 to 12 percent slopes	231	. 1	Faceville-Shubuta-Ruston complex, 8 to 12 percent slopes, severely eroded	557	. 2
Arredondo-Fellowship-Gainesville soils, 12 to 40 percent slopes	204	. 1	Faceville-Shubuta-Ruston complex, 12 to 35 percent slopes	3, 275	1. 0
Binnsville soils, 2 to 12 percent slopes	141	(1)	Faceville-Shubuta-Ruston complex, 12 to 35 percent slopes, severely eroded	389	. 1
Blanton fine sand, 0 to 5 percent slopes	7, 635	2. 3	Goldsboro loamy fine sand, 0 to 2 percent slopes	1, 817	. 6
Blanton fine sand, 5 to 8 percent slopes	2, 745	. 8	Goldsboro loamy fine sand, 2 to 5 percent slopes	1, 812	. 6
Blanton fine sand, terrace, 0 to 5 percent slopes	1, 835	. 6	Goldsboro loamy sand, thick surface, 0 to 2 percent slopes	1, 816	. 6
Blanton coarse sand, 0 to 5 percent slopes	666	. 2	Goldsboro loamy sand, thick surface, 2 to 5 percent slopes	1, 500	. 5
Carnegie fine sandy loam, 5 to 8 percent slopes, severely eroded	222	. 1	Goldsboro loamy sand, thick surface, 5 to 8 percent slopes	397	. 1
Carnegie loamy fine sand, 0 to 2 percent slopes	409	. 1	Grady fine sandy loam	533	. 2
Carnegie loamy fine sand, 2 to 5 percent slopes	655	. 2	Gullied land	22	(1)
Carnegie loamy fine sand, 2 to 5 percent slopes, eroded	780	. 2	Hannahatchee soils, local alluvium	643	. 2
Carnegie loamy fine sand, 5 to 8 percent slopes	199	. 1	Huckabee fine sand, 0 to 5 percent slopes	159	(1)
Carnegie loamy fine sand, 5 to 8 percent slopes, eroded	461	. 1	Izagora loamy fine sand	725	. 2
Carnegie loamy fine sand, 8 to 12 percent slopes	92	(1)	Kalmia loamy fine sand, 0 to 2 percent slopes	224	. 1
Congaree silt loam	338	. 1	Klej loamy sand, shallow, 0 to 2 percent slopes	513	. 2
Cuthbert loamy fine sand, 2 to 5 percent slopes	102	(1)	Klej loamy sand, shallow, 2 to 5 percent slopes	1, 064	. 3
Cuthbert loamy fine sand, 5 to 8 percent slopes	107	(1)	Klej sand, 0 to 5 percent slopes	8, 123	2. 5
Cuthbert, Boswell, and Susquehanna soils, 5 to 12 percent slopes	1, 760	. 5	Klej sand, 5 to 8 percent slopes	1, 835	. 6
Cuthbert, Boswell, and Susquehanna soils, 12 to 60 percent slopes	3, 508	1. 1	Klej coarse sand, 0 to 5 percent slopes	1, 250	. 4
Eustis loamy sand, 0 to 5 percent slopes	1, 108	. 9	Lakeland loamy sand, 0 to 5 percent slopes	4, 565	1. 4
Eustis loamy sand, 5 to 8 percent slopes	528	. 2	Lakeland loamy sand, 5 to 12 percent slopes	1, 744	. 5
Eustis loamy sand, shallow, 0 to 2 percent slopes	280	. 1	Lakeland loamy sand, shallow, 0 to 2 percent slopes	1, 648	. 5
Eustis loamy sand, shallow, 2 to 5 percent slopes	1, 156	. 4	Lakeland loamy sand, shallow, 2 to 5 percent slopes	3, 984	1. 2
Eustis loamy sand, shallow, 5 to 8 percent slopes	300	. 1	Lakeland loamy sand, shallow, 5 to 8 percent slopes	1, 255	. 4
Eustis coarse sand, 0 to 5 percent slopes	532	. 2	Lakeland sand, 0 to 5 percent slopes	21, 012	6. 5
Eustis coarse sand, 5 to 12 percent slopes	333	. 1	Lakeland sand, 5 to 12 percent slopes	9, 717	3. 0
Eustis coarse sand, excessively drained, 0 to 5 percent slopes	1, 254	. 4	Lakeland coarse sand, 0 to 5 percent slopes	13, 870	4. 3
Faceville loamy fine sand, 0 to 2 percent slopes	167	. 1	Lakeland coarse sand, 5 to 12 percent slopes	4, 687	1. 4
Faceville loamy fine sand, 2 to 5 percent slopes	597	. 2	Lakeland coarse sand, excessively drained, 0 to 5 percent slopes	7, 809	2. 4
Faceville loamy fine sand, 2 to 5 percent slopes, eroded	1, 321	. 4			
Faceville loamy fine sand, 5 to 8 percent slopes	300	. 1			
Faceville loamy fine sand, 5 to 8 percent slopes, eroded	1, 164	. 4			
Faceville loamy fine sand, 8 to 12 percent slopes	273	. 1			

See footnote at end of table.

TABLE 7.—*Approximate acreage and proportionate extent of the soils mapped*—Continued

Soil	Area	Extent
	Acres	*Percent*
Lakeland coarse sand, excessively drained, 5 to 12 percent slopes	1, 314	0. 4
Lakeland and Eustis sands, 12 to 50 percent slopes	4, 591	1. 4
Lakeland-Eustis-Cuthbert complex, 5 to 8 percent slopes	793	. 2
Lakeland-Eustis-Cuthbert complex, 8 to 12 percent slopes	1, 081	. 3
Lakeland-Eustis-Cuthbert complex, 12 to 45 percent slopes	6, 886	2. 1
Leaf very fine sandy loam	1, 442	. 4
Leon sand	780	. 2
Lynchburg loamy fine sand, 0 to 2 percent slopes	320	. 1
Lynchburg loamy fine sand, 2 to 5 percent slopes	107	(1)
Lynchburg loamy sand, thick surface, 0 to 2 percent slopes	1, 105	. 3
Lynchburg loamy sand, thick surface, 2 to 5 percent slopes	363	. 1
Made land	570	. 2
Magnolia loamy fine sand, 0 to 2 percent slopes	1, 230	. 4
Magnolia loamy fine sand, 0 to 2 percent slopes, eroded	255	. 1
Magnolia loamy fine sand, 2 to 5 percent slopes	484	. 1
Magnolia loamy fine sand, 2 to 5 percent slopes, eroded	1, 406	. 4
Magnolia loamy fine sand, 5 to 8 percent slopes	194	. 1
Magnolia loamy fine sand, 5 to 8 percent slopes, eroded	551	. 2
Magnolia loamy fine sand, 8 to 12 percent slopes	207	. 1
Magnolia fine sandy loam, 2 to 5 percent slopes, severely eroded	146	(1)
Magnolia fine sandy loam, 5 to 8 percent slopes, severely eroded	258	. 1
Magnolia fine sandy loam, 8 to 12 percent slopes, severely eroded	84	(1)
Mines, pits, and dumps	2, 032	. 6
Myatt loamy fine sand, 0 to 5 percent slopes	1, 000	. 3
Norfolk loamy fine sand, pebbly, 0 to 2 percent slopes	1, 818	. 6
Norfolk loamy fine sand, pebbly, 2 to 5 percent slopes	1, 253	. 4
Norfolk loamy fine sand, pebbly, 2 to 5 percent slopes, eroded	469	. 1
Norfolk loamy fine sand, 0 to 2 percent slopes	4, 435	1. 4
Norfolk loamy fine sand, 2 to 5 percent slopes	5, 973	1. 8
Norfolk loamy fine sand, 2 to 5 percent slopes, eroded	2, 006	. 6
Norfolk loamy fine sand, 5 to 8 percent slopes	876	. 3
Norfolk loamy fine sand, 5 to 8 percent slopes, eroded	1, 004	. 3
Norfolk loamy fine sand, 8 to 12 percent slopes	204	. 1
Norfolk loamy sand, thick surface, 0 to 2 percent slopes	3, 286	1. 0
Norfolk loamy sand, thick surface, 2 to 5 percent slopes	4, 512	1. 4
Norfolk loamy sand, thick surface, 5 to 8 percent slopes	1, 056	. 3
Norfolk loamy sand, thick surface, 8 to 12 percent slopes	233	. 1
Norfolk loamy sand, thick surface, pebbly, 0 to 2 percent slopes	561	. 2
Norfolk loamy sand, thick surface, pebbly, 2 to 5 percent slopes	777	. 2
Norfolk loamy sand, thick surface, pebbly, 5 to 8 percent slopes	264	. 1
Orangeburg loamy fine sand, 0 to 2 percent slopes	3, 023	. 9
Orangeburg loamy fine sand, 2 to 5 percent slopes	4, 139	1. 3
Orangeburg loamy fine sand, 2 to 5 percent slopes, eroded	2, 200	0. 7
Orangeburg loamy fine sand, 5 to 8 percent slopes	1, 331	. 4
Orangeburg loamy fine sand, 5 to 8 percent slopes, eroded	1, 013	. 3
Orangeburg loamy fine sand, 8 to 12 percent slopes	948	. 3
Orangeburg loamy sand, thick surface, 0 to 2 percent slopes	1, 409	. 4
Orangeburg loamy sand, thick surface, 2 to 5 percent slopes	1, 225	. 4
Orangeburg loamy sand, thick surface, 5 to 8 percent slopes	310	. 1
Orangeburg loamy sand, thick surface, 8 to 12 percent slopes	113	(1)
Plummer sand, 0 to 2 percent slopes	7, 179	2. 2
Plummer sand, 2 to 5 percent slopes	2, 564	. 8
Plummer sand, high, 0 to 2 percent slopes	4, 284	1. 3
Plummer sand, high, 2 to 5 percent slopes	864	. 3
Plummer coarse sand, high, 0 to 2 percent slopes	1, 770	. 5
Portsmouth fine sandy loam	440	. 1
Rains fine sandy loam	597	. 2
Red Bay fine sandy loam, 2 to 5 percent slopes, severely eroded	106	(1)
Red Bay fine sandy loam, 5 to 8 percent slopes, severely eroded	325	. 1
Red Bay fine sandy loam, 8 to 12 percent slopes, severely eroded	102	(1)
Red Bay loamy fine sand, 0 to 2 percent slopes	880	. 3
Red Bay loamy fine sand, 2 to 5 percent slopes	733	. 2
Red Bay loamy fine sand, 2 to 5 percent slopes, eroded	596	. 2
Red Bay loamy fine sand, 5 to 8 percent slopes	138	(1)
Red Bay loamy fine sand, 5 to 8 percent slopes, eroded	315	. 1
Red Bay loamy fine sand, 8 to 12 percent slopes	570	. 2
Ruston fine sandy loam, 5 to 8 percent slopes, severely eroded	302	. 1
Ruston loamy fine sand, 0 to 2 percent slopes	2, 262	. 7
Ruston loamy fine sand, 2 to 5 percent slopes	6, 005	1. 8
Ruston loamy fine sand, 2 to 5 percent slopes, eroded	3, 093	1. 0
Ruston loamy fine sand, 5 to 8 percent slopes	1, 664	. 5
Ruston loamy fine sand, 5 to 8 percent slopes, eroded	1, 872	. 6
Ruston loamy fine sand, 8 to 12 percent slopes	541	. 2
Ruston loamy sand, thick surface, 0 to 2 percent slopes	1, 096	. 3
Ruston loamy sand, thick surface, 2 to 5 percent slopes	2, 729	. 8
Ruston loamy sand, thick surface, 5 to 8 percent slopes	1, 078	. 3
Ruston loamy sand, thick surface, 8 to 12 percent slopes	230	. 1
Ruston-Orangeburg-Lakeland complex, 5 to 8 percent slopes	4, 222	1. 3
Ruston-Orangeburg-Lakeland complex, 8 to 12 percent slopes	5, 652	1. 7
Ruston-Orangeburg-Lakeland complex, 12 to 50 percent slopes	10, 328	3. 2
Ruston-Orangeburg-Lakeland complex, 12 to 50 percent slopes, severely eroded	237	. 1
Rutlege fine sand, 0 to 2 percent slopes	2, 180	. 7
Rutlege fine sand, 2 to 5 percent slopes	463	. 1
Sawyer loamy fine sand, 2 to 5 percent slopes	378	. 1
Sawyer loamy fine sand, 5 to 8 percent slopes	545	. 2
Shubuta fine sandy loam, 2 to 5 percent slopes	115	(1)
Susquehanna loamy fine sand, 2 to 5 percent slopes	1, 340	. 4

See footnote at end of table.

TABLE 7—*Approximate acreage and proportionate extent of the soils mapped*—Continued

Soil	Area	Extent	Soil	Area	Extent
	Acres	*Percent*		*Acres*	*Percent*
Susquehanna loamy fine sand, 5 to 8 percent slopes	626	0. 2	Tifton loamy fine sand, 0 to 2 percent slopes	278	0. 1
Susquehanna-Sawyer complex, 5 to 12 percent slopes	1, 575	. 5	Tifton loamy fine sand, 2 to 5 percent slopes	402	. 1
Susquehanna-Sawyer complex, 12 to 50 percent slopes	985	. 3	Tifton loamy fine sand, 2 to 5 percent slopes, eroded	151	(1)
Susquehanna-Boswell-Binnsville complex, marly substratum, 5 to 12 percent slopes	344	. 1	Tifton loamy fine sand, 5 to 8 percent slopes, eroded	137	(1)
Susquehanna-Boswell-Binnsville complex, marly substratum, 12 to 50 percent slopes	189	. 1	Zuber loamy sand, 2 to 5 percent slopes	153	(1)
Swamp	2, 165	. 7	Zuber loamy sand, 5 to 8 percent slopes	115	(1)
			Total	325, 120	

[1] Less than 0.1 percent.

Alluvial land

This land type consists of alluvial soils on first bottoms along streams. It is frequently flooded and varies greatly in drainage.

Alluvial land (Ab).—This mapping unit has a wide range in texture and color because it is made up of a variety of sediments that were washed from many different soils. It is flooded intermittently, and variable amounts and kinds of sediments are deposited in each overflow. The wide bottom lands, except in the narrow strips along their drainage channels, generally receive much finer textured sediments than the narrow bottom lands. Along these narrow strips the materials consist dominantly of sands and loamy sands. The finer textured materials are deposited in areas farther from the stream channels than are the coarser textured materials. In these areas backwaters occur and surface drainage is slow. Because the location of large channels changes little, deposition continues on the wide bottom lands for a long time. Deposits of sediments with varied texture build up, and the texture of the subsoil is extremely variable.

The drainage of this land varies extremely in the narrow bottom lands and in the wide bottom lands. The better drained areas occur along the stream channels where the streams have enough gradient to form a deep channel. They are also in the higher areas along old, meandering drainage channels where the surface is hummocky or uneven. Some of the narrow bottom lands are well drained and have brown or yellowish-brown soils. In many places, however, these narrow strips have slow drainage and gray soils. Here the stream gradient is slight, and water seeps from the adjacent upland. The soils on the large bottom lands range from brown, yellowish brown, and pale brown to gray and light gray. The brownish and yellowish soils are in the better drained areas, and the grayish soils are in the more poorly drained areas.

The native vegetation consists chiefly of oaks, bays, gums, hickory, and pines. Only a small part of this land type is cleared. The cultivated areas consist of only a few small patches that are especially suited to garden crops and a few areas that adjoin cultivated areas of other soils. Because it is frequently flooded, is rough and dissected, and has varied drainage, this land is not suited to cultivation in most places. Where it is cleared and properly managed, however, favorable yields from improved grasses can be obtained except in the most poorly drained areas or in the areas that are flooded for long periods.

Arredondo series

The Arredondo series consists of deep, well-drained, medium acid to strongly acid soils. These soils are on uplands in nearly level to very steep areas. They have a very small total acreage that occurs mostly along Rocky Comfort Creek. A few areas are in the southeastern part of the county. These soils developed from deep beds of unconsolidated loamy sands that were affected by phosphatic materials.

Arredondo soils have gray to dark grayish-brown fine sand surface layers, 4 to 16 inches thick. These are underlain by a C horizon of yellowish-brown fine sand that extends to depths greater than 42 inches. No B horizon has developed. The subsoil is underlain by a mottled D horizon that ranges from fine sandy loam to fine sandy clay loam.

Arredondo soils are associated with the Zuber, Gainesville, and Fellowship soils. They have a lighter colored subsoil than the Gainesville soils and a thicker, much coarser textured subsoil than the Fellowship soils. The subsoil of the Fellowship soils is fine textured and plastic. Finer textured materials are at depths of more than 30 inches in the Arredondo soils, whereas they are at depths of less than 30 inches in the Zuber soils. The Arredondo soils are similar to the Lakeland soils in profile characteristics but have a higher content of phosphorus due to underlying phosphatic materials.

The native vegetation consists principally of longleaf and loblolly pines, various oaks, hickory, and a sparse growth of native grasses. Only a small part of the total acreage has been cleared; this is in corn, small grains, and pasture.

The Arredondo soils are rapidly permeable, have a low available moisture-holding capacity, and are somewhat droughty. The natural fertility is low to moderate, and added plant nutrients leach rapidly. Where the slopes are gentle and good management is practiced, these soils are moderately well suited to general farm crops.

Arredondo fine sand, 0 to 5 percent slopes (AdB).—This well-drained, deep, sandy soil is on uplands. It has been affected by phosphatic materials.

Profile in a gently sloping, cultivated field (*location:* NE¼NE¼ sec. 29, R. 3 W., T. 2 N.):

A_p 0 to 5 inches, dark grayish-brown (10YR 4/2) fine sand; weak, fine, crumb structure; loose; medium content of organic matter; few fine roots; strongly acid; boundary clear and smooth.

A_2 5 to 16 inches, grayish-brown (10YR 5/2) fine sand; weak, fine, crumb structure; loose; few fine roots; medium acid; boundary clear and wavy.

C_1 16 to 34 inches, yellowish-brown (10YR 5/4) fine sand; weak, fine, crumb structure; loose; few small pebbles; medium acid; boundary clear and wavy.

C_2 34 to 43 inches, light yellowish-brown (10YR 6/4) fine sand; weak, fine, crumb structure; very friable; many fine pores; few fine roots; very few medium to large pebbles of moderately hard sandstone; medium acid; boundary gradual and wavy.

D_1 43 to 51 inches, light yellowish-brown (10YR 6/4) loamy fine sand; common, medium, faint, very pale brown (10YR 7/3), and common, medium, faint, yellowish-brown (10YR 5/4) mottles; moderate, fine, crumb structure; friable; common fine pores; few root channels; few small, medium, and large pebbles; medium acid; boundary gradual and irregular.

D_2 51 to 66 inches +, gray (10YR 6/1) sandy clay loam with common, medium, distinct, yellowish-brown (10YR 5/6), and common, fine, prominent, yellowish-red (5YR 4/8) mottles; moderate, fine, subangular blocky and moderate, medium, crumb structure; friable; common fine pores; few fine root channels; few small, medium, and large pebbles; medium acid.

The surface layer ranges from dark gray to dark grayish brown in color and from 3 to 6 inches in thickness. The subsurface layer ranges from gray to grayish brown in color and from 4 to 11 inches in thickness. The C horizon is light yellowish brown to yellowish brown.

Included with this soil are small areas where loamy sand extends from the surface to depths of more than 42 inches. Finer textured material is commonly below a depth of 42 inches. In a few small areas the finer textured material is less than 42 inches deep. Also included is a small acreage that is moderately eroded and has many shallow gullies and a few deep ones.

The natural fertility and content of organic matter are low. Response to fertilization is fair to good.

This soil is in relatively small areas adjacent to other sandy soils that are only moderately well suited to crops. Because it has low natural fertility and low available moisture, and because plant nutrients leach rapidly, this soil is only fairly well suited to corn, peanuts, small grains, and other cultivated crops. It is not suited to shade tobacco but is well suited to improved pastures of deep-rooted bahiagrass. It is well suited to woodland and makes a good habitat for wildlife. Capability unit IIIse–1.

Arredondo fine sand, 5 to 8 percent slopes (AdC).—This soil has steeper slopes than Arredondo fine sand, 0 to 5 percent slopes. Included are a few scattered, moderately eroded areas that have many shallow gullies and a few deep ones. A few small areas with slopes of 8 to 12 percent are also included. Small weathered phosphatic boulders and pebbles are on the surface in a few places.

This soil is only moderately well suited to corn, small grains, and peanuts. It should not be cultivated frequently. It is suited to improved pastures of deep-rooted, drought-resistant bahiagrass and similar grasses. It is best suited as woodland or as a wildlife habitat. Capability unit IVse–1.

Arredondo-Fellowship-Gainsville soils, 8 to 12 percent slopes (AfD).—This mapping unit consists of Arredondo, Fellowship, and Gainesville soils that occur together on strongly sloping hillsides, mainly along well-developed drainageways. These soils are in such intricate patterns that it is not feasible to separate them on a map of the scale used. Generally, the proportion of soils is 35 to 45 percent Arredondo, 35 to 45 percent Fellowship, and 15 to 20 percent Gainesville. A small acreage of Zuber soils is also in the mapping unit.

A profile of Arredondo fine sand, 0 to 5 percent slopes, is described for the Arredondo series. Except that they are strong brown to reddish brown in the subsoil instead of yellowish brown, the Gainesville soils are similar to the Arredondo soils in profile characteristics. The Fellowship soils have a plastic fine sandy clay subsoil.

The texture of the surface layer is mainly loamy fine sand, but in some areas it ranges from fine sand to loamy sand. Phosphatic pebbles occur on the surface and throughout the profile. Phosphatic stones, 3 to 6 inches in diameter, are on the surface in some areas.

Included in this mapping unit are small areas having slopes of 5 to 8 percent. A few cultivated areas are moderately eroded.

The native vegetation is chiefly longleaf and loblolly pines, turkey, blackjack, and red oaks, hickory, low shrubs, and grasses. Many areas have been cleared and are planted to corn, small grains, pasture, and other crops. The total acreage is small.

Surface runoff is rapid or medium, and internal drainage depends on the kind of underlying material. The base-exchange capacity, permeability, natural fertility, and available moisture-holding capacity vary for the different soils of the complex.

Because of their irregular characteristics, steepness, low fertility, and erosion hazard, these soils are not suited to tilled crops. They are fairly well suited to improved pastures of bahiagrass but require good management. They are well suited as woodland and make a good habitat for wildlife. Capability unit VIes–1.

Arredondo-Fellowship-Gainesville soils, 12 to 40 percent slopes (AfF).—The soils in this complex have steeper slopes than Arredondo-Fellowship-Gainesville soils, 8 to 12 percent slopes. In some small areas the slopes are as steep as 65 percent. Many areas have moderate sheet erosion. There are many shallow gullies in the eroded areas, and a few deep ones.

These soils are in small areas on highly dissected, steep hillsides and are too steep for cultivation. Pasture grasses grow moderately well, but modern farm machinery cannot be used effectively. These soils are best suited as woodland and make a good habitat for wildlife. Capability unit VIIes–1.

Binnsville series

The Binnsville series consists of very shallow, neutral soils that are moderately well drained but have slow internal drainage. These soils developed from limestone or marl on gentle to strong slopes on uplands in the western part of the county. Their total acreage is small.

These soils have a thin, dark-gray to black fine sandy loam to fine sandy clay loam surface layer. Their subsoil is grayish-brown to light olive-brown fine sandy clay to clay that normally is slightly mottled. It is firm when moist and plastic when wet. The subsoil grades abruptly to marly clay or limestone at a depth of as much as 12 inches. Various sizes of limestone outcrops occur in some areas.

The Binnsville soils are closely associated with the marly substratum phases of the Boswell and Susquehanna soils. They are shallower over limestone and much less acid than the Boswell and Susquehanna soils. Their

subsoil is lighter colored than the yellowish-red subsoil in the Boswell soils and is not highly mottled like that of the Susquehanna soils.

The native vegetation consists mainly of loblolly and shortleaf pines, hickory, various oaks, sweetgum, low shrubs, and native grasses. All the acreage is still in native vegetation.

These soils are poorly aerated and have low capacity for holding available moisture. They are moderately fertile and contain a medium amount of organic matter. The more gentle slopes are suited to a few shallow-rooted crops.

Binnsville soils, 2 to 12 percent slopes (BaC).—These are moderately well drained soils on hillsides. They are underlain at very shallow depths by limestone or marly clay.

Profile in a sloping, disturbed area where the vegetation is chiefly myrtle, sweetgum, wiregrass, and broomsedge (*location:* SW¼SE¼ sec. 4, R. 6 W., T. 3 N.):

A 0 to 4 inches, black (10YR 2/1) very fine sandy loam; weak, fine, crumb structure; friable; high organic content; few fine roots; neutral; boundary abrupt and smooth.

B 4 to 10 inches, grayish-brown (2.5Y 5/2) clay with mottles of yellowish brown (10YR 5/4); moderate, medium, angular structure; firm when moist and plastic when wet; neutral; boundary abrupt and smooth.

C 10 to 42 inches +, light-gray (10YR 7/2) marly clay; very firm; some free lime; alkaline.

The surface layer ranges from 2 to 5 inches in thickness, from dark gray to black in color, and from fine sandy loam to fine sandy clay loam in texture. The B horizon is missing in places, but, where present, ranges from 2 to 12 inches in thickness. In some areas limestone is on the surface in fragments, or it forms barren patches.

Included in this mapping unit are small severely eroded areas of fine sandy clay or clay and a few small uneroded areas of fine sandy clay loam.

These soils are in small areas in highly dissected, rough terrain. The limestone material normally crops out on short, choppy slopes or on the lower part of long, steep slopes. Cultivated crops are not grown. The more gentle slopes are suited to improved pasture, but the best use for these soils is woodland. Hardwoods of low quality dominate in the present forest, and pine trees that make poor growth are scattered among the hardwoods. Capability unit VIes–2.

Blanton series

The Blanton series consists of deep, moderately well drained to somewhat poorly drained, strongly acid soils. These soils are on nearly level to strongly sloping stream terraces and in moderately high positions on uplands. They have a moderately large total acreage that is well distributed throughout the county, normally in small areas. They developed from thick beds of unconsolidated acid sands.

The surface layers are dark-gray to grayish-brown sand to coarse sand, 4 to 7 inches thick, and grade to a gray to white C horizon of fine sand to coarse sand. No B horizon has developed. The substratum is slightly to strongly mottled with various shades of yellow to depths of more than 42 inches.

The Blanton soils are associated with the Lakeland, Leon, Plummer, and Klej soils and have parent material similar to these soils. To a depth of 24 inches, they are grayer in the subsoil than the Klej soils, which have a subsoil of yellowish color. They are better drained than the Plummer and Leon soils and do not have a pan layer stained with organic matter like that in the Leon soils. Blanton soils have a lighter colored subsoil than the Lakeland soils and, within a depth of 48 inches, are more affected by the water table.

Most of the acreage in Blanton soils is still in native vegetation—thin stands of longleaf and slash pines, turkey and post oaks, low shrubs, and grasses. Some areas have been cleared and are in corn, small grains, or pasture.

These soils are rapidly permeable and leach rapidly. They are low in available water-holding capacity and are somewhat droughty. Tilth is poor, and natural fertility and the content of organic matter are low.

Blanton fine sand, 0 to 5 percent slopes (BfB).—This moderately well drained soil occurs on uplands. It is coarse textured to depths of more than 42 inches.

Profile in a nearly level, undisturbed area where the vegetation is palmetto, slash pine, wiregrass, waxmyrtle, gallberry, and post oak (*location*: NE¼NE¼ sec. 3, R. 4 W., T. 1. S):

A_1 0 to 4 inches, dark-gray (10YR 4/1) fine sand; single grain (structureless); loose; medium content of organic matter; many fine roots and root channels; few worm holes; very strongly acid; boundary abrupt and smooth.

A_2 4 to 6 inches, grayish-brown (10YR 5/2) fine sand; single grain (structureless); loose; many fine roots and common fine root channels; few fine worm holes; very strongly acid; boundary abrupt and smooth.

C_1 6 to 9 inches, gray (10YR 6/1) fine sand; single grain (structureless); loose; many small roots; strongly acid; boundary gradual and wavy.

C_2 9 to 35 inches, light-gray (10YR 7/1) fine sand; few, fine, distinct, yellow (10YR 7/8) mottles; single grain (structureless); loose; few fine roots and few fine worm holes; strongly acid; boundary gradual and wavy.

C_3 35 to 50 inches, white (10YR 8/2) fine sand; few, medium, distinct, yellow (10YR 7/8) mottles; single grain (structureless); loose; few fine roots; strongly acid; boundary gradual and wavy.

C_4 50 to 64 inches +, white (10YR 8/2) fine sand; single grain (structureless); loose; strongly acid.

The surface layer (A_1 horizon) ranges from dark gray to gray in color and from 2 to 4 inches in thickness. The subsurface layer (A_2 horizon) is gray, grayish brown, or light brownish gray and is 2 or 3 inches thick. In most places the upper part of the C horizon ranges from light gray to gray and light brownish gray. It has varied amounts of white and yellow mottles. The dominant color of the mottled lower part of the C horizon is normally white or light gray. In a few areas the texture of the C horizon is sand. Included are a few small areas that are higher and better drained than the soil described.

This soil is scattered throughout the county in fairly large and small areas. The small areas are surrounded by soils suited to uses different than those of this soil. This soil is moderately well suited to corn, small grains, and other crops and is well suited to bahiagrass in improved pastures. It is also well suited as woodland and as a habitat for wildlife.

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This is one of the less widely used soils in the county, mainly because of its drought hazard and the difficulty of maintaining fertility. The larger areas, however, could be used more intensively than they are. The smaller areas ought to be used, along with adjacent soils, for woodland. Capability unit IIIse–3.

Blanton fine sand, 5 to 8 percent slopes (BfC).—This soil is steeper than Blanton fine sand, 0 to 5 percent slopes, and has more rapid runoff as well as a lower water table. Unprotected areas, therefore, are more susceptible to water and wind erosion. Included with this soil are a few small areas that are higher and better drained than is normal for this soil.

This soil is low in fertility, and plant nutrients leach rapidly. It responds only moderately well to fertiiizer. It is poorly suited to general farm crops; corn and small grains are the most suitable. Bahiagrass does moderately well in improved pasture. This soil is suited as woodland and makes a good habitat for wildlife. Capability unit IVse–3.

Blanton coarse sand, 0 to 5 percent slopes (BcB).—This soil is coarser textured than Blanton fine sand, 0 to 5 percent slopes, but it is similar to the fine sand in most other characteristics. It occurs in small areas adjacent to more poorly drained soils that are not suited to cultivated crops. This soil is only moderately well suited to general crops but is fairly well suited to bahiagrass in improved pastures that are managed well. It is well suited as woodland and makes a good habitat for wildlife. Capability unit IIIse–3.

Blanton fine sand, terrace, 0 to 5 percent slopes (BtB).—This is a deep, sandy soil on terraces along streams. It is moderately well drained.

Profile in a nearly level area where the vegetation is mainly water oak, slash pine, waxmyrtle, and red oak (*location*: NW¼SE¼ sec. 13, R. 2 W., T. 2 N.):

- A_1 0 to 2 inches, gray (10YR 5/1) fine sand; single grain (structureless); loose; low organic content; common fine roots and very few medium roots; strongly acid; boundary abrupt and smooth.
- A_2 2 to 5 inches, gray (10YR 6/1) fine sand; single grain (structureless); loose; common fine roots and few medium roots; strongly acid; boundary clear and wavy.
- A_3 5 to 14 inches, light brownish-gray (10YR 6/2) fine sand; single grain (structureless); loose; few fine and medium roots; strongly acid; boundary clear and wavy.
- C_1 14 to 20 inches, light brownish-gray (10YR 6/2) fine sand with common, medium, faint, light-gray (10YR 7/2) mottles; single grain (structureless); loose; few fine roots; strongly acid; boundary clear and wavy.
- C_2 20 to 40 inches, very pale brown (10YR 8/4) fine sand with common, medium, faint, white (10YR 8/2) mottles; single grain (structureless); loose; few fine roots and root channels; strongly acid; boundary gradual and wavy.
- C_3 40 to 46 inches, very pale brown (10YR 8/4) fine sand with common, coarse, distinct, white (10YR 8/1) mottles and few, fine, distinct, reddish-yellow (7.5YR 6/8) mottles; single grain (structureless); loose; few fine roots; strongly acid; boundary gradual and wavy.
- C_4 46 to 50 inches, white (N 8/0) fine sand with common, medium, distinct, very pale brown (10YR 8/4) mottles and few, fine, distinct, yellow (10YR 7/8) mottles; single grain (structureless); loose; strongly acid; boundary gradual and wavy.
- D 50 to 58 inches +, mottled strong-brown (7.5YR 5/8), white (N 8/0), very pale brown (10YR 8/3), and yellow (10YR 7/8) loamy fine sand; weak, fine, crumb structure; very friable; strongly acid.

The surface layers range from 2 to 6 inches in thickness and from gray to dark gray in color. The C horizon normally ranges from light brownish gray to light yellowish brown or very pale brown and, with increasing depth, grades to white. White to strong-brown mottles normally occur at a depth of 20 inches but may be as shallow as 14 or as deep as 24 inches.

Included with this soil are small areas that have a loamy fine sand surface layer. A few small areas have fine sandy loam material within 30 to 42 inches of the surface. Most of this soil is moderately well drained, but some areas are somewhat poorly drained.

This soil occurs along the major streams in the county, generally in small areas. A few areas are large, but they are isolated from the general farming sections and are still in native vegetation. The usefulness of the small areas adjacent to poorly drained soils is commonly impaired by those soils. This soil is suited to corn, small grains, and a few other crops. It is moderately well suited to bahiagrass in improved pasture. It is well suited as woodland and makes a good habitat for wildlife. Capability unit IIIse–3.

Carnegie series

The Carnegie series consists of deep, well-drained, strongly acid soils that are nearly level to strongly sloping. They are on uplands in small areas scattered throughout all of the county except the southern part. Much of the acreage is in the central part of the county. These soils developed from unconsolidated, stratified, acid sandy clay loams and sandy clays.

The surface layers are very dark gray to grayish-brown loamy fine sand to fine sandy loam as much as 18 inches thick. The subsoil is yellowish-red to red, heavy fine sandy clay loam to fine sandy clay that is moderately friable and porous. It is underlain by parent materials of distinctly mottled fine sandy clay loam to sandy clay. These soils contain many iron pebbles throughout the profile.

Carnegie soils are associated with the Ruston, Faceville, and Tifton soils. Their subsoil is about the same color as that of the Ruston and Faceville soils but is redder than that of the Tifton. It is finer textured and less friable than the subsoil in the Ruston soils. Carnegie soils contain more iron pebbles than the Ruston or Faceville soils.

The original vegetation consisted chiefly of longleaf pine, shrubs, and wiregrass; but the native vegetation is now mainly longleaf and loblolly pines, hickory, various oaks, briars, low shrubs, and wiregrass. Much of this soil has been cleared and is planted to shade tobacco, corn, cotton, peanuts, pasture plants, and other crops.

Carnegie soils have good surface runoff and internal drainage. Permeability is moderately rapid in the surface soil and moderately slow in the subsoil. These soils are well aerated and have a high capacity for holding available moisture. They have moderately high natural fertility, are able to retain plant nutrients, and respond well to fertilizers. Tilth is good. Gently sloping areas of these soils are well suited to a wide variety of cultivated crops.

Carnegie loamy fine sand, 2 to 5 percent slopes (CnB).—This well-drained, deep soil has a moderately fine textured subsoil.

Profile in a gently sloping, undisturbed area where the vegetation is chiefly longleaf pine, wiregrass, and briars (*location:* NW¼SE¼ sec. 26, R. 5 W., T. 3 N.):

- A_1 0 to 5 inches, very dark gray (10YR 3/1) loamy fine sand; weak, very fine, crumb structure; loose; high content of organic matter; many fine roots; common fine root channels and worm holes; many fine and medium iron pebbles; strongly acid; boundary abrupt and smooth.
- A_2 5 to 9 inches, dark grayish-brown (10YR 4/2) loamy fine sand; weak, very fine, crumb structure; loose; many fine roots and root channels; common fine pores; many small and medium iron pebbles; strongly acid; boundary clear and wavy.
- A_3 9 to 11 inches, strong-brown (7.5YR 5/8) fine sandy loam; moderate, fine, crumb structure; very friable; many fine and a few medium roots; common fine root channels and common fine pores; common fine and medium iron pebbles; strongly acid; boundary gradual and wavy.
- B_{11} 11 to 16 inches, yellowish-red (5YR 5/8), light fine sandy clay loam; moderate, medium, crumb structure; very friable; common fine roots; common fine pores; common small to medium iron pebbles; strongly acid; boundary gradual and wavy.
- B_{12} 16 to 18 inches, yellowish-red (5YR 4/8) fine sandy clay loam; moderate, fine, subangular blocky structure that breaks easily into moderate, medium, crumb structure; friable; common fine roots and pores; common small to medium iron pebbles; strongly acid; boundary gradual and wavy.
- B_2 18 to 35 inches, red (2.5YR 5/8) fine sandy clay loam; moderate, medium, subangular blocky structure; friable; common fine roots; common small to medium iron pebbles; common fine pores; strongly acid; boundary gradual and irregular.
- B_{31} 35 to 45 inches, red (2.5YR 5/8) fine sandy clay loam with few, medium, prominent, yellow (10YR 8/6) mottles; moderate, medium, subangular blocky structure; friable; few fine roots; common fine pores; common fine iron pebbles; strongly acid; boundary gradual and irregular.
- B_{32} 45 to 56 inches, mottled red (2.5YR 5/8) and yellow (10YR 8/8) fine sandy clay loam; moderate, medium, subangular blocky structure; friable; very few fine roots; common fine pores; few fine and medium iron pebbles; strongly acid; boundary gradual and irregular.
- C 56 to 65 inches, mottled red (2.5YR 4/8), yellow (10YR 7/8), very pale brown (10YR 8/3), and strong-brown (7.5YR 5/8) fine sandy clay loam; moderate, medium, subangular and angular blocky structure; friable; no pebbles; strongly acid.

The surface layers range from 10 to 18 inches in thickness and from very dark gray to grayish brown in color. In a few small areas where erosion has exposed the subsurface material the top layer is brown. The color of the upper part of the subsoil ranges from yellowish red to red in most areas, but in some places it is strong brown. The texture of the subsoil is mainly fine sandy clay loam, but in a few areas it is light fine sandy clay. The lower subsoil normally is mottled at depths ranging from 35 to 56 inches, but in places mottles of strong brown and red are at 28 to 35 inches. In most places the mottled parent material is at depths of 50 to 64 inches, but in a few places it is at depths of 40 to 50 inches.

Included with this soil are a few small areas that have a fine sandy loam surface layer.

This soil generally occurs in small areas, but it is closely associated with other soils and can be managed with them in a good field layout. Because tilth and response to fertilizer are good, slopes are gentle, and the available moisture-holding capacity is high, this soil is well suited to all locally grown crops, pasture grasses, and clovers. It is especially well suited to shade tobacco. It is well suited as woodland and makes a good habitat for wildlife. Capability unit IIe–2.

Carnegie loamy fine sand, 0 to 2 percent slopes(CnA).—This soil has milder slopes than Carnegie loamy fine sand, 2 to 5 percent slopes, and, therefore, has slower runoff and less susceptibility to erosion. It is in small areas but is adjacent to other well-drained soils and can be managed with them in a good field layout. This soil is well suited to all general crops, especially shade tobacco. It is also well suited to improved pasture. The supply of moisture is sufficient for growing good yields of clovers, including whiteclover. This soil is well suited as woodland and makes a good habitat for wildlife. Capability unit I–2.

Carnegie loamy fine sand, 2 to 5 percent slopes, eroded (CnB2).—Because it is eroded, this soil has thinner surface layers than Carnegie loamy fine sand, 2 to 5 percent slopes. Most of the erosion is sheet erosion, and not many gullies have formed. In the sheet-eroded areas, the fine-textured subsoil is at depths ranging from 3 to 10 inches. A few areas have many shallow gullies and a few deep ones. In these areas the surface layers between the gullies are 10 to 18 inches deep. Mottling normally is at depths of 30 to 42 inches but may be at depths of 28 to 30 inches. In most places the mottled parent material is at depths of 42 to 54 inches, but in a few places it is at depths of 36 to 42 inches.

This is a productive soil that occurs with other good soils and can be managed with them in a good field layout. It is well suited to the cultivated crops grown in the area and is one of the best soils in the county for shade tobacco. Erosion, however, is a hazard. This soil is well suited to whiteclover and other pasture plants grown in the area. It is also well suited as woodland and makes a good habitat for wildlife. Capability unit IIe–2.

Carnegie loamy fine sand, 5 to 8 percent slopes (CnC).—Except for difference in slope, this soil is similar to Carnegie loamy fine sand, 2 to 5 percent slopes, in most characteristics. In most places, however, the thickness of the surface layers is only 10 to 16 inches and the depths to mottling are only 30 to 38 inches. The mottled parent material is generally at depths of 46 to 54 inches.

This soil is suited to most cultivated crops grown in the county, but, because of the hazard of erosion, it ought not be cultivated so frequently as Carnegie loamy fine sand, 2 to 5 percent slopes. It is well suited to improved pastures and woods and makes a good habitat for wildlife. Capability unit IIIe–2.

Carnegie loamy fine sand, 5 to 8 percent slopes, eroded (CnC2).—This soil has steeper slopes, more erosion, and generally thinner surface layers than Carnegie loamy fine sand, 2 to 5 percent slopes. Most areas are sheet eroded but are not appreciably gullied. In these areas the fine-textured subsoil is at depths of 3 to 10 inches and mottling occurs at 28 to 35 inches. The mottled parent material is at depths of 38 to 48 inches. A few areas have many shallow gullies and a few deep ones. Between the gullies the depth to the fine-textured subsoil is generally 10 to 18 inches.

This soil is in small areas adjacent to areas of soils similar to it. It can be managed together with these soils. Because of the rapid runoff, low rate of infiltration, and the hazard of erosion, this soil is only moderately well

suited to cultivated crops. It is well suited to woods and pasture and makes a good habitat for wildlife. Capability unit IIIe–2.

Carnegie loamy fine sand, 8 to 12 percent slopes (CnD).—This soil has stronger slopes than Carnegie loamy fine sand, 2 to 5 percent slopes, and is much more susceptible to erosion. The surface layers range from 10 to 18 inches in thickness but, in most places, are only 10 to 15 inches thick. Mottling generally occurs at depths of 27 to 38 inches. The depths to the parent material normally range from 38 to 44 inches. Included with this soil are a few small areas that are moderately eroded.

This soil is poorly suited to cultivation. It is well suited to use for improved pasture and as woodland, and it makes a good habitat for wildlife. Capability unit IVe–2.

Carnegie fine sandy loam, 5 to 8 percent slopes, severely eroded (CaC3).—This soil is steeper than Carnegie loamy fine sand, 2 to 5 percent slopes, and more severely eroded. Nearly all of the surface layer has been lost in most areas, and the subsoil is exposed or mixed with the remaining 1 to 3 inches. Therefore, the surface layer is finer textured than that of Carnegie loamy fine sand, 2 to 5 percent slopes and, in many places, is reddish yellow. In some areas there are many shallow gullies and a few deep ones. In these areas the surface layer is slightly more than 3 inches thick. Mottling generally is at depths of 24 to 32 inches, and mottled parent material is at depths of 32 to 46 inches. Included with this soil are small areas where the surface layer is sandy clay loam.

This soil is poorly suited to frequent cultivation. It is suited to improved pasture but must be managed intensively if yields are to be high. It is well suited as woodland and makes a good habitat for wildlife. Capability unit IVe–2.

Congaree series

The Congaree series consists of deep, well-drained, strongly acid soils. These soils have a small total acreage, all of which is on the flood plain of the Apalachicola River south of Chattahoochee. They are nearly level and are likely to be flooded frequently. They formed from moderately fine textured, micaceous sediments that washed from upland soils on the Piedmont Plateau and the Middle Coastal Plain.

Congaree soils have very dark grayish-brown to dark reddish-brown silt loam surface layers. The subsoil is dark-gray, very dark grayish-brown, or dark reddish-brown silty clay loam.

Congaree soils are associated with Alluvial land and with the Blanton and Kalmia soils. They have a much narrower range in drainage than Alluvial land and much less variety in texture and color. They are more reddish brown and finer textured than Kalmia soils. The Congaree soils are finer textured throughout the profile than the Blanton soils and are free of mottles to a greater depth.

The native vegetation consists mainly of white oak, sweetgum, ironwood, and palmetto. All the acreage in the county is still in native vegetation.

Only one Congaree soil is mapped in Gadsden County. This soil has moderate surface runoff and internal drainage. The permeability of the subsoil is moderate to moderately slow. Tilth is good and natural fertility is moderately high, but because it is likely to be flooded frequently, this soil is not well suited to cultivated crops.

Congaree silt loam (0 to 2 percent slopes) (Co).—This deep, moderately fine textured soil is on nearly level areas of the first bottom along the Apalachicola River.

Profile in a nearly level undisturbed area where the vegetation is mainly ironwood, white oak, palmetto, sweetgum, and blackgum (*location:* SE¼SE¼ sec. 6, R. 6 W., T. 3 N.):

0 to 2 inches, very dark grayish-brown (10YR 3/2) silt loam containing common fine mica flakes; strong, medium, crumb structure; friable; high content of organic matter; strongly acid; boundary gradual and smooth.
2 to 12 inches, dark reddish-brown (5YR 3/3) silt loam containing mica flakes; strong, medium, crumb structure; friable; strongly acid; boundary gradual and smooth.
12 to 16 inches, dark reddish-brown (5YR 3/3) silty clay loam containing many fine mica flakes; strong, coarse, crumb structure; firm; strongly acid; boundary gradual and smooth.
16 to 23 inches, dark-brown (7.5YR 4/2) silty clay loam containing many fine mica flakes; firm; strong, coarse, crumb structure; strongly acid; boundary gradual and wavy.
23 to 36 inches, very dark grayish-brown (10YR 3/2) silty clay loam containing fine mica flakes; strong, coarse, crumb structure; firm; strongly acid; boundary gradual and wavy.
36 to 42 inches +, dark grayish-brown (10YR 4/2) silty clay loam containing some mica; strong, coarse, crumb structure; firm; strongly acid.

The surface layer ranges from very dark gray to very dark grayish brown in color and from 2 to 6 inches in thickness. Mottles of strong brown or yellowish red normally are at depths below 42 inches. In a few spots yellowish-red mottles are at depths of 24 to 42 inches. The subsoil is mainly silty clay loam. In some places it is very fine sandy clay loam at depths below about 30 inches.

Included with this soil are some patches that have a fine sandy loam surface soil.

This soil has moderately high natural fertility and moderately high cation-exchange capacity. It is loamy enough to have good tilth.

All this soil is in hardwood forest. It would be suited to corn and other grain if it were not susceptible to overflow. But the acreage is too small and the cost of protecting it from flooding is too great to make reclamation feasible under present conditions. Capability unit Vws–1.

Cuthbert series

The Cuthbert series consists of well-drained, strongly acid soils that are on uplands on gentle slopes and steeper hillsides. These soils have a small total acreage that is mainly in the western part of the county. Small areas are scattered through all of the county except the extreme southern part. Cuthbert soils developed from thick beds of unconsolidated acid sandy clay and clay that contain thin lenses of coarse-textured materials.

The surface layer is dark-gray to dark grayish-brown loamy fine sand. At depths of 5 to 12 inches, the subsurface layer grades abruptly to a yellowish-red, firm, sandy clay or clay subsoil. The lower subsoil is red, mottled with various hues of red and brown. The parent material is very slowly permeable, highly mottled, compact sandy clay.

Cuthbert soils are associated with Faceville, Shubuta, and Sawyer soils. They have thinner surface layers than the Faceville soils and a thinner, finer textured, less friable subsoil. The depth to mottling is much less than in the Faceville soils. Cuthbert soils have a thinner and more compact subsoil than the Shubuta soils, and their subsoil

is yellowish red to red instead of yellow as in the Sawyer soils.

The native vegetation consists mainly of loblolly, longleaf, slash, and shortleaf pines, sweetgum, myrtle, oaks, hickory, dogwood, and wiregrass. Most of the acreage is still in native vegetation.

Cuthbert soils have medium to rapid surface runoff and slow to medium internal drainage. Permeability is moderate to moderately slow in the surface layers and slow to very slow in the subsoil. The subsoil is dense, poorly aerated, and not favorable for root development. A low capacity for holding available moisture causes the soils to be droughty. These soils are very erodible. On slopes gentle enough for cultivation, they are best suited to shallow-rooted, close-growing crops.

Cuthbert loamy fine sand, 5 to 8 percent slopes (CrC).—This well-drained, upland soil has a firm, poorly aerated, fine-textured subsoil.

Profile in a sloping undisturbed area where the vegetation is waxmyrtle, sweetgum, bay, and slash and loblolly pines (*location:* NE¼SW¼ sec. 24, R. 3 W., T. 3 N.):

A_1 0 to 3 inches, dark-gray (10YR 4/1) loamy fine sand; weak, fine, crumb structure; very friable; many very small grains of quartz; few fine and medium roots; medium content of organic matter; strongly acid; boundary gradual and smooth.

A_3 3 to 6 inches, grayish-brown (10YR 5/2) sandy loam; moderate, medium, crumb structure; very friable; common, small, white quartz pebbles; few fine and medium roots; few fine root channels; strongly acid; boundary abrupt and smooth.

B_2 6 to 10 inches, yellowish-red (5YR 5/6) fine sandy clay; moderate, medium, subangular blocky structure; firm when moist, plastic when wet, and hard when dry; few fine quartz pebbles; very few fine roots; common fine pores; strongly acid; boundary clear and wavy.

B_3 10 to 20 inches, yellowish-red (5YR 5/6) fine sandy clay with common, medium, distinct, red (10R 4/6) mottles and few, medium, distinct, pink (7.5YR 8/4) mottles; strong, moderate, angular and subangular blocky structure; firm when moist and very hard when dry; very few fine white pebbles of quartz; very few fine roots and root channels; strongly acid; boundary gradual and wavy.

C 20 to 54 inches +, mottled red (10R 4/6), strong-brown (7.5YR 5/8), and light-gray (N 7/0) sandy clay with small lenses of fine sandy clay loam; moderate, medium, angular and subangular blocky structure; firm; slightly sticky when wet and hard when dry; strongly acid.

The surface layer ranges from 3 to 5 inches in thickness and from dark gray to very dark gray in color. The subsurface layer ranges from 3 to 6 inches in thickness and from light brownish gray to dark grayish brown in color. The color of the subsoil is yellowish red to red. The upper part of the subsoil is normally yellowish red, and the lower part is predominantly red. The texture of the subsoil ranges from fine sandy clay to clay but is fine sandy clay in most areas. The depth to mottling, in most places, is 10 to 16 inches. Underlying the subsoil is highly mottled red, yellowish-brown, strong-brown, and gray, firm, sandy clay material. This material occurs at depths of 16 to 22 inches and, in many areas, has mixed with it thin layers of fine sandy loam and fine sandy clay loam material.

Included in this mapping unit are small areas that have a fine sandy loam surface soil and a few scattered areas with slopes of 8 to 12 percent. Also included are a few scattered sheet-eroded areas. Most of these areas have a few deep gullies and many shallow ones. A few small areas are severely eroded. In the moderately eroded areas, the surface soil ranges from 2 to 6 inches in thickness. In the severely eroded areas, most of the surface soil and some of the subsoil have been removed.

Most areas of this soil are small and are associated with other soils of poor quality in rough, highly dissected terrain. The soil can be managed so that it produces moderate yields of corn, small grains, peanuts, and similar crops, but it is too steep and too erodible for frequent cultivation. It is one of the poorer soils of the county and, in most places, is not well suited to farming. It is suited to improved pasture of bermudagrass and bahiagrass, but the shallow root zone causes droughtiness. This soil is well suited as woodland and makes a good habitat for wildlife. Capability unit IVes–2.

Cuthbert loamy fine sand, 2 to 5 percent slopes (CrB).—This soil has milder slopes than Cuthbert loamy fine sand, 5 to 8 percent slopes, and, therefore, is less susceptible to erosion. Included with this soil are scattered areas that have moderate sheet erosion, many shallow gullies, or a few deep ones. The surface layer is only 2 to 6 inches thick where the sheet erosion is moderate.

This soil is moderately well suited to corn, small grains, peanuts, cotton, and other crops. It is not well suited to shade tobacco. Because of its position on narrow hilltops in rough, highly dissected areas, this soil cannot be laid out in a good field arrangement. The soil is suited to improved pasture of bermudagrass and bahiagrass. It is well suited as woodland and as a wildlife habitat. Capability unit IIIes–2.

Cuthbert, Boswell, and Susquehanna soils, 5 to 12 percent slopes (CsD).—These are deep, well drained and moderately well drained, strongly acid soils that have a plastic clay subsoil. They are on uplands in gently sloping to strongly sloping areas and occupy a small total acreage. These soils occur together in such intricate patterns that it is not feasible to map them separately. About 40 to 50 percent of the total acreage is in Cuthbert soils, about 30 to 40 percent is in Boswell soils, and the remaining 15 to 25 percent is in Susquehanna soils. Small scattered areas of the Shubuta soils and Esto soils are also in this mapping unit. The Esto soils are not mapped separately in Gadsden County.

The Cuthbert soils generally are on the upper part of the slope, and the Boswell and Susquehanna soils are on the lower part. In some areas Susquehanna soils are missing, and in other areas they are dominant. In areas dominated by Shubuta soils, the Cuthbert soils are generally missing.

These soils are mainly on sloping and strongly sloping hillsides where the slopes range from 5 to 12 percent. Small areas with slopes of 2 to 5 percent are also in the mapping unit. These soils are very susceptible to erosion. Where they are not cleared, the soils generally are only slightly eroded. Where they are cleared, they are moderately eroded.

The texture of the surface soil of these soils ranges from loamy fine sand to fine sandy loam. The soils differ mainly in color and texture of the subsoil. The Cuthbert soil has a yellowish-red fine sandy clay subsoil, the Boswell soil has a yellowish-red to red clay subsoil, and the Susquehanna soils have a grayish-brown fine sandy clay loam subsoil.

For description of a profile for a Cuthbert soil and a Susquehanna soil, turn to the part of this section that

discusses those soil series. The Esto soils are similar to the Cuthbert soils but are not so red in the subsoil and are only moderately well drained.

Following is a description of a profile for a gently sloping Boswell soil that is in an undisturbed area where the vegetation is chiefly loblolly and longleaf pines, sweetgum, and native grasses (*location:* SE¼SE¼ sec. 10, R. 6 W., T. 3 N.):

A_1 0 to 4 inches, very dark gray (10YR 3/1) loamy fine sand; single grain (structureless); loose; few fine and medium roots; strongly acid; boundary clear and smooth.

A_2 4 to 7 inches, light brownish-gray (10YR 6/2) loamy fine sand; single grain (structureless); loose; few fine and medium roots; strongly acid; boundary abrupt and smooth.

B_2 7 to 11 inches, yellowish-red (5YR 4/6) clay; moderate, medium, subangular blocky and weak, medium, angular structure; firm when moist, plastic when wet, and hard when dry; strongly acid; boundary gradual and wavy.

B_3 11 to 32 inches +, mottled red (2.5YR 4/6), yellowish-red (5YR 5/6), and grayish-brown (10YR 5/2) clay; moderate, medium, angular structure; firm when moist and plastic when wet; strongly acid.

The native vegetation consists mainly of longleaf, loblolly, slash, and shortleaf pines, hickory, various oaks, low shrubs, and native grasses. Most of the acreage of this unit is in native vegetation, but a few areas are cleared and pastured.

These soils have medium to rapid surface runoff and slow internal drainage. The dense, poorly aerated subsoil is not favorable for root development. The available moisture-holding capacity is low.

Because of their position on long or short irregular slopes in highly dissected terrain, and because of other unfavorable characteristics, these soils are not suited to cultivated crops. They are moderately well suited to improved pasture. Their best use is for woodland, and they make good habitats for wildlife. Capability unit VIes–2.

Cuthbert, Boswell, and Susquehanna soils, 12 to 60 percent slopes (CsF).—These soils are steeper than Cuthbert, Boswell, and Susquehanna soils, 5 to 12 percent slopes, and are, therefore, more susceptible to erosion. A few areas have slopes as steep as 80 percent. Some areas have moderate sheet erosion and a few shallow gullies.

These soils are on steep irregular slopes in rough terrain. They are not suited to crops or pastures. They have a shallow, thin subsoil and low available moisture-holding capacity. They are very susceptible to erosion and are best suited as woodland and as wildlife habitats. Capability unit VIIes–2.

Eustis series

The Eustis series consists of deep, well-drained to excessively drained, strongly acid soils that are on nearly level to strong slopes on uplands. These soils are fairly extensive and occur mostly in the southern part of the county on droughty coarse sand and sand. Loamy sands are in the central and northern parts of the county, and a few scattered areas of sand are in the northeastern part. Eustis soils developed from moderately thick beds of unconsolidated acid sand and loamy sand that are underlain by finer textured materials at depths of more than 30 inches.

These soils have dark-gray to grayish-brown coarse sand to loamy sand surface layers, 2 to 12 inches thick. No B horizon has developed, and the transition from the A horizon to the C horizon is clear and wavy. The C horizon is coarse sand, fine sand, or loamy sand, which is generally at depths of 42 to more than 60 inches. In some areas where the Eustis soils are shallower than normal, a D horizon of finer textured material occurs at depths of 30 to 42 inches. This material generally is strong-brown to red sandy loam to fine sandy loam. The color of the C horizon ranges from reddish yellow to yellowish red.

Eustis soils are associated with the Lakeland, Ruston, Orangeburg, and Norfolk soils. They are similar to the Lakeland soils in texture and consistence and to the Ruston soils in color. Their C horizon is reddish yellow to yellowish red, whereas that of the Lakeland soil is yellow to yellowish brown. Their C horizon is browner than the subsoil of the Norfolk soils and the Orangeburg soils. The coarser textured material extends to greater depths in Eustis soils than in Ruston, Norfolk, and Orangeburg soils.

The native vegetation consists chiefly of longleaf pine, turkey and blackjack oaks, a few water oaks, and sparse native grasses. Most of the acreage remains in native vegetation, especially in those areas where the subsoil is mainly coarse sand. A fairly large acreage of the loamy sand is cleared and cultivated.

The surface runoff from Eustis soils is slow to medium. The internal drainage ranges from very rapid in the more droughty sands to rapid in the loamy sands. These soils are not loamy enough to have good tilth, and natural fertility is low. Because of the deep, coarse-textured material, their capacity to retain plant nutrients is low. The Eustis soils with a loamy sand subsoil, however, respond fairly well to heavy fertilization. Gently sloping areas that have their finer textured materials occurring at depths of 30 to 48 inches are moderately well suited to most general farm crops.

Eustis coarse sand, 0 to 5 percent slopes (EcB).—The coarse sand in this well-drained, very deep, upland soil is strong brown or yellowish red and extends to depths of more than 60 inches.

Profile in a nearly level cultivated field (*location:* SE¼SW¼ sec. 31, R. 2 W., T. 3 N.):

A_p 0 to 5 inches, gray (10YR 5/1) coarse sand; single grain (structureless); loose; low content of organic matter; common fine roots; strongly acid; boundary clear and wavy.

A_2 5 to 11 inches, gray (10YR 6/1) coarse sand; single grain (structureless); loose; common fine roots; strongly acid; boundary clear and wavy.

A_3 11 to 15 inches, light yellowish-brown (10YR 6/4) coarse sand; single grain (structureless); loose; common fine roots; strongly acid; boundary clear and wavy.

C_1 15 to 29 inches, reddish-yellow (7.5YR 6/6) coarse sand; single grain (structureless); loose; few fine roots and root channels; strongly acid; boundary gradual and wavy.

C_2 29 to 46 inches, strong-brown (7.5YR 5/8) coarse sand; single grain (structureless); loose; very few fine roots; very few light-gray mottles in lower part; strongly acid; boundary gradual and irregular.

C_3 46 to 63 inches, yellowish-red (5YR 5/8) coarse sand with common, medium, distinct mottles of light gray (10YR 7/1); single grain (structureless); loose; very few fine roots; strongly acid; boundary clear and wavy.

C_4 63 to 71 inches, light-red (2.5YR 6/8) coarse sand; weak, fine, crumb structure; loose; very few fine roots; strongly acid; boundary clear and wavy.

D_1 71 to 77 inches +, red (2.5YR 5/8) sandy loam; weak, medium, crumb structure; friable; strongly acid.

The surface layer of this soil ranges from 3 to 7 inches in thickness and from dark gray to gray in color. It is underlain by a subsurface layer, 3 to 7 inches thick, that is gray to light brown. The C horizon is reddish yellow to yellowish red. Mottles normally occur below depths of 48 inches, but in some areas the mottles are at 42 to 48 inches. The depth to the finer textured material is generally slightly more than 72 inches, but in some areas this material is at depths of 60 to 72 inches. The finer textured material is normally yellowish red to red. In most places the water table is at depths of about 84 to 94 inches.

Included with this soil are a few small areas of fine sand or medium sand. In a few places water and wind have removed some of the surface soil, but in most places no appreciable amount of erosion has occurred.

This soil is droughty and very rapidly permeable in the surface layer, subsurface layer, and subsoil. Its available moisture-holding capacity is very low. The free movement of water through the coarse-textured upper layers causes rapid leaching of plant nutrients. This soil is very low in organic-matter content, natural fertility, and cation-exchange capacity.

Most of this soil is wooded. In most places the soil is in small areas, not large enough for independent use, that are adjacent to soils not well suited to many cultivated crops. But this soil and the adjacent soils can produce fair yields of watermelons, corn, small grains, and drought-resistant pasture grasses. Though natural reproduction of pines is poor on this soil, the best use for most areas is woodland. Capability unit IVse–2.

Eustis coarse sand, 5 to 12 percent slopes (EcD).—This soil is steeper than Eustis coarse sand, 0 to 5 percent slopes, and more susceptible to erosion. A few scattered areas are included that have many shallow gullies and a few deep ones.

This soil is too steep, too droughty, and too low in fertility for cultivation. Fair to good yields of bahiagrass and other drought-resistant grasses can be obtained under careful management. The soil is moderately well suited as woodland, though natural reproduction and growth of pines are slow. Capability unit VIse–1.

Eustis coarse sand, excessively drained, 0 to 5 percent slopes (EdB).—This soil is more droughty than Eustis coarse sand, 0 to 5 percent. Its water table and finer textured material are more than 10 feet from the surface. The mottled substratum is generally below a depth of 16 feet. The movement of water through the profile causes very rapid leaching. The organic-matter content, natural fertility, and available water-holding capacity are very low.

All this soil is wooded. It is suitable to only a few crops, such as watermelons and corn, and needs a high level of management to produce good yields of these crops. If it is fertilized and otherwise well managed, it may produce fair to good yields of bahiagrass and other drought-resistant grasses. Capability unit IVse–2.

Eustis loamy sand, shallow, 2 to 5 percent slopes (EsB).—This is a deep, well-drained, upland soil that has sandy loam or light fine sandy clay loam material at depths of 30 to 42 inches.

Profile in a gently sloping, cultivated field (*location:* SE¼NE¼ sec. 16, R. 2 W., T. 2 N.):

A_p 0 to 6 inches, gray (10YR 5/1) loamy sand; single grain (structureless); loose; many fine and few medium roots; low content of organic matter; strongly acid; boundary abrupt and smooth.

A_2 6 to 13 inches, light yellowish-brown (10YR 6/4) loamy sand; single grain (structureless); loose; many fine and few medium roots; strongly acid; boundary clear and wavy.

C_1 13 to 24 inches, reddish-yellow (7.5YR 6/6) loamy sand; weak, medium, crumb structure; very friable; common fine and few medium roots; few fine pores; strongly acid; boundary clear and wavy.

C_2 24 to 39 inches, strong-brown (7.5YR 5/8) loamy sand; weak, fine, crumb structure; very friable; few fine roots; few fine pores; strongly acid; boundary clear and wavy.

D_1 39 to 42 inches, reddish-yellow (5YR 6/8) sandy loam; moderate, medium, crumb structure; very friable; few fine roots; common fine pores; strongly acid; boundary gradual and wavy.

D_2 42 to 55 inches +, yellowish-red (5YR 5/8) fine sandy clay loam; moderate, medium, subangular blocky structure; friable; common fine pores and few medium pores; strongly acid.

The surface layer ranges from dark gray to gray in color and from 3 to 6 inches in thickness. It is underlain by a light brownish-gray to light yellowish-brown subsurface layer, 4 to 7 inches thick. The C horizon is reddish yellow to yellowish red. The D horizon is at depths of 30 to 40 inches. It ranges from sandy loam to fine sandy loam in texture and from strong brown to yellowish red in color. In some areas the D horizon is red below 36 inches. Many small and medium iron pebbles occur throughout the profile in some places.

Included with this soil are a few small areas of loamy fine sand and some moderately eroded areas that have many shallow gullies and a few deep ones.

This soil has a deep root zone, but the movement of water through the profile is rapid and causes rapid leaching of nutrients. The available moisture-holding capacity is low. The permeability of the surface layer is rapid, and that of the underlying material is moderately rapid. This soil has a moderate content of organic matter and low natural fertility.

This soil is associated with productive agricultural soils; it can be managed with them in a good field layout. The soil is only moderately well suited to most locally grown general crops. It is best suited to corn, small grains, and peanuts. Because of its deep sandy profile and droughtiness, it is not well suited to shade tobacco. It is well suited to improved pastures of bermudagrass and other deep-rooted grasses. It is also well suited as woodland and makes a good habitat for wildlife. Capability unit IIIse–1.

Eustis loamy sand, shallow, 0 to 2 percent slopes (EsA).—This soil is more nearly level than Eustis loamy sand, shallow, 2 to 5 percent slopes, but is similar to that soil in most other characteristics. Water erosion is not likely, but unprotected fields may have some wind erosion.

This soil is in small areas that generally fit in well with large, uniform fields suitable for cultivation. It is moderately well suited to most locally grown general crops, particularly corn, small grains, and peanuts. It is too droughty to be well suited to shade tobacco, but it is well suited to improved pastures of bermudagrass, bahiagrass, and other deep-rooted pasture grasses. This soil

is well suited as woodland and makes a good habitat for wildlife. Capability unit IIIse–1.

Eustis loamy sand, shallow, 5 to 8 percent slopes (EsC).—This soil is more strongly sloping than Eustis loamy sand, shallow, 2 to 5 percent slopes, and, therefore, has more rapid runoff and is more susceptible to erosion. It is moderately well suited to occasional cultivation for small grains, corn, and similar crops. It is well suited to bahiagrass and other deep-rooted, drought-resistant pasture plants. It is also well suited as woodland and makes a good habitat for wildlife. Capability unit IVse–1.

Eustis loamy sand, 0 to 5 percent slopes (EmB).—This soil has a surface layer of about the same thickness and texture as that of Eustis loamy sand, shallow, 2 to 5 percent slopes, but the coarser underlying material extends to depths of more than 42 inches. Water, therefore, moves more rapidly through this soil and leaching is more rapid. This soil has lower cation-exchange capacity than the shallower soil and lower available moisture-holding capacity.

This soil is in areas where a good field layout can be made. But it is only moderately well suited to corn, small grains, and similar crops. Bahiagrass and other deep-rooted pasture plants do well. This soil is well suited as woodland and makes a good habitat for wildlife. Capability unit IIIse-1.

Eustis loamy sand, 5 to 8 percent slopes (EmC).—Because it is more strongly sloping, this soil has more rapid runoff than Eustis loamy sand, 0 to 5 percent slopes, and is more susceptible to erosion. Included with this soil are a few scattered, moderately eroded areas.

This soil is in small areas that are generally among areas of more nearly level soils of the same soil type. It is moderately well suited to watermelons, corn, small grains, and a few other crops, but it needs intensive management that will control erosion. Deep-rooted pasture grass, such as bahiagrass and lovegrass, do well. This soil is well suited to pine trees and makes a good habitat for wildlife. Capability unit IVse-1.

Faceville series

In the Faceville series are deep, well-drained, strongly acid soils that are on uplands in nearly level to strongly sloping areas. These soils have a fairly large total acreage, mainly in the northern and northeastern parts of the county. They developed from thick beds of unconsolidated, acid sandy clay loam and sandy clay.

These soils have very dark gray to dark grayish-brown loamy fine sand to fine sandy loam surface layers as much as 18 inches thick. The subsoil is strong-brown to red, moderately friable to firm fine sandy clay loam to fine sandy clay. It grades to underlying materials of clay loam to sandy clay texture. These materials are gray mottled with red, or they are strong brown to red mottled with gray or white.

The Faceville soils are associated with well-drained soils in the Magnolia, Carnegie, Tifton, Orangeburg, Ruston, and Norfolk series, particularly those that have a finer textured subsoil. Faceville soils have darker surface layers than the Ruston and Orangeburg soils and a less friable, finer textured subsoil. Also, the transition in texture from their surface layers to the subsoil is more abrupt. Their subsoil is not so red as that in the Orangeburg soils. Faceville soils are not so red as the Carnegie soils. They lack iron pebbles like those in the Carnegie soils and Tifton soils. The subsoil of the Faceville soils is not so red as that in the Magnolia soils and is finer textured and less friable than the subsoil in the Norfolk soils. The subsoil is redder than that in the Norfolk or Tifton soils.

The native vegetation is mainly longleaf, slash, and loblolly pines, various oaks, hickory, dogwood, and wiregrass. Much of the acreage has been cleared and is planted to corn, cotton, peanuts, shade tobacco, vegetables, or pasture plants.

Faceville soils have medium surface runoff and internal drainage. Their permeability is moderately rapid in the surface layers and moderately slow in the subsoil. Water and air move freely in these soils, and tilth is good. These soils hold a large amount of water that plants can use and are moderately high in natural fertility. They retain plant nutrients well and respond well to fertilizers.

Faceville loamy fine sand, 2 to 5 percent slopes (FmB).—This is a gently sloping, well-drained, deep soil on uplands. It has a yellowish-red, firm, moderately fine textured subsoil.

Profile in a gently sloping, undisturbed area where the vegetation is chiefly loblolly pine, holly, bay, and red oak (*location:* SE¼NW¼ sec. 29, T. 3 N., R. 2 W.):

- A_1 0 to 7 inches, very dark grayish-brown (10YR 3/2) loamy fine sand; weak, medium, crumb structure; very friable; many fine and few medium roots; very few large roots; common fine root channels; few fine pores; medium content of organic matter; strongly acid; boundary abrupt and smooth.
- A_3 7 to 14 inches, dark-brown (10YR 4/3) fine sandy loam; moderate, medium, crumb structure; very friable; common fine and few medium roots; many fine root channels; few fine pores; strongly acid; boundary clear and wavy.
- B_1 14 to 17 inches, dark reddish-brown (5YR 3/4) fine sandy clay loam; weak, medium, subangular blocky structure that breaks down easily when moist to moderate, medium, crumb structure; friable; few fine roots and common fine root channels; common fine pores; strongly acid; boundary clear and wavy.
- B_2 17 to 35 inches, yellowish-red (5YR 4/8) heavy fine sandy clay loam; moderate, medium, subangular blocky structure; firm when moist and slightly sticky and plastic when wet; very few fine roots; common fine pores; strongly acid; boundary gradual and wavy.
- B_{31} 35 to 55 inches, yellowish-red (5YR 4/8) mottled fine sandy clay loam; a few, medium, prominent, yellow (10YR 7/8) mottles, a few, fine, prominent, very pale brown (10YR 8/4) mottles, and common, medium, distinct, red (10R 5/8) mottles; the red increases with depth; moderate, medium, subangular blocky structure and moderate, fine, angular blocky structure; slightly firm; very few fine roots; common fine pores; strongly acid; boundary gradual and irregular.
- B_{32} 55 to 61 inches, red (10R 5/8) sandy clay loam with common, large, prominent, white (10YR 8/1) mottles and common, medium, distinct, yellowish-red (5YR 5/8) mottles; moderate, medium, subangular blocky structure; friable; common fine pores; strongly acid; boundary gradual and irregular.
- C 61 to 79 inches +, mottled yellowish-red (5YR 5/8), red (2.5YR 5/8), pinkish-white (7.5YR 8/2), and yellow (10YR 7/8) sandy clay loam; weak, medium, angular and subangular blocky structure; firm; strongly acid.

The surface layers range from 10 to 18 inches in thickness. In most places the surface soil is dark gray to very dark grayish brown, but in some eroded areas it is browner. The subsoil normally ranges from strong brown to yellowish red, but in a few areas it is red. The texture of the subsoil is generally heavy fine sandy clay loam, but in

a few areas it is fine sandy clay. Mottles normally occur at depths of 35 to 48 inches. In some areas strong-brown and red mottles are at depths of 24 to 36 inches. Included with this soil are a few areas that have a fine sandy loam surface layer.

This is a productive soil. It occurs in fairly large areas with other good soils and can be managed with them in a good field layout. This soil is well suited to practically all crops grown in the county, especially shade tobacco. It is well suited to improved pasture. Because this soil can hold a large amount of moisture that plants can use, white clover, sweet clover, and crimson clover are suitable pasture plants. This soil is well suited as woodland and makes a good habitat for wildlife. Capability unit IIe–2.

Faceville loamy fine sand, 0 to 2 percent slopes (FmA).—Except that it is more nearly level, this soil is similar to Faceville loamy fine sand, 2 to 5 percent slopes. A few small, scattered areas are moderately eroded and have a surface layer 3 to 10 inches thick.

This is one of the best soils in the county. Most of its small acreage is cultivated. It is adjacent to other good agricultural soils and can be managed with them in a good field layout. It is well suited to all general crops grown in the county and is one of the better soils for shade tobacco. It is also well suited to improved pasture. Capability unit I–2.

Faceville loamy fine sand, 2 to 5 percent slopes, eroded (FmB2).—This eroded soil generally has thinner surface layers than Faceville loamy fine sand, 2 to 5 percent slopes. Most of the erosion is sheet erosion, but a few gullies occur. In eroded areas the finer textured subsoil is at depths of 3 to 10 inches. A few areas have many shallow gullies and a few deep ones. Mottles normally are at depths of 32 to 40 inches, but in some areas they are at 28 to 32 inches.

This is a productive soil that has a fairly large total acreage. It occurs with other good agricultural soils and can be managed with them in a good field layout. It is suited to all locally grown crops, especially shade tobacco. Because it is susceptible to erosion, it needs protection. It is well suited to all locally grown pasture plants, including whiteclover. It is also well suited as woodland and makes a good habitat for wildlife. Capability unit IIe–2.

Faceville loamy fine sand, 5 to 8 percent slopes (FmC).—This soil is more strongly sloping than Faceville loamy fine sand, 2 to 5 percent slopes, but it is similar to that soil in most other characteristics. The surface layers range from 10 to 18 inches in thickness but are generally 10 to 15 inches thick. Mottles normally occur at depths of 32 to 38 inches, and the mottled parent material generally is at 40 to 56 inches. A few, small intricate patterns of Faceville, Shubuta, and Ruston soils are included with this soil.

This soil is well suited to all general crops locally grown and to shade tobacco. Because of the erosion hazard, its use should be only moderately intensive. It is well suited to improved pasture and to woodland. It makes a good habitat for wildlife. Capability unit IIIe–2.

Faceville loamy fine sand, 5 to 8 percent slopes, eroded (FmC2).—This soil is more strongly sloping and more eroded than Faceville loamy fine sand, 2 to 5 percent slopes, and generally is thinner in the surface layers. Most areas have uniform sheet erosion and not many gullies. In these areas the remaining surface layers are 3 to 10 inches thick. A few areas have many shallow gullies and a few deep ones. Between the gullies in these areas the depth to the finer textured subsoil ranges from 10 to 18 inches. Mottles normally are at depths of 30 to 40 inches. The mottled parent material generally is at 38 to 48 inches. Included with this soil are a few small patches of severely eroded Shubuta soils on slopes of 5 to 8 percent.

This soil is only moderately well suited to cultivation. In most places it is in relatively small areas that are not well suited to a good field layout. It has been damaged enough by erosion to lower crop yields. It is well suited to pasture and as woodland and wildlife habitats. Capability unit IIIe–2.

Faceville fine sandy loam, 5 to 8 percent slopes, severely eroded (FaC3).—This soil is steeper and more severely eroded than Faceville loamy fine sand, 2 to 5 percent slopes, and is thinner in the surface layers. Nearly all of the original surface soil has been removed by erosion, and many shallow gullies as well as a few deep ones have been cut. In areas where sheet erosion is uniform and few gullies occur, the fine sandy loam surface soil is less than 3 inches thick. In most of these areas the fine sandy clay loam subsoil is exposed or is mixed with the original surface soil. Here the surface layer is somewhat browner than in places where the original surface soil remains. In gullied areas the surface soil is 3 to 10 inches thick between gullies. Generally, mottles are at depths of 26 to 38 inches and the mottled parent material is at 38 to 46 inches. In some places the parent material is nearer the surface because erosion is severe or soil development is poor.

Included with this soil are a few small areas of severely eroded Shubuta soils on 5 to 8 percent slopes.

This soil is in small areas that are not suited to a good field layout. The soil is poorly suited to cultivated crops. The best uses are pasture, woodland, and wildlife habitats. Capability unit IVe–2.

Faceville loamy fine sand, 8 to 12 percent slopes (FmD).—This soil has stronger slopes than Faceville loamy fine sand, 2 to 5 percent slopes. The surface layers range from 10 to 18 inches in thickness but are less than 14 inches thick in most places. A few small areas are moderately eroded and are similar to areas of Faceville loamy fine sand, 5 to 8 percent slopes, eroded. Mottles are normally at depths of 30 and 38 inches. This soil has thinner soil horizons than similar soils that are more nearly level. The parent material is generally at depths of 36 to 44 inches.

This soil occurs on strongly sloping hillsides among soils that are not well suited to cultivated crops. It is poorly suited to cultivation. The best uses are pasture, woodland, and wildlife habitats. Capability unit IVe–2.

Faceville fine sandy loam, 8 to 12 percent slopes, severely eroded (FaD3).—This soil is steeper and more severely eroded than Faceville loamy fine sand, 2 to 5 percent slopes. Nearly all of the original surface layer has been removed by erosion; many shallow gullies and a few deep ones have formed. In areas where sheet erosion is uniform and few gullies occur, the remaining fine sandy loam surface layer is less than 3 inches thick. In some of these areas the fine sandy clay loam subsoil is exposed or is mixed with the remaining surface layer. Here the surface layer is somewhat browner than that of Faceville loamy fine sand, 2 to 5 percent slopes. In gullied areas

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the surface layer is generally slightly more than 3 inches thick. Mottles are normally at depths of 26 to 36 inches. This soil has a thinner solum than Faceville soils on more gentle slopes. Its mottled parent material is at depths of 36 to 46 inches generally.

This soil is not suited to cultivated crops. The best uses are improved pasture, woodland, and wildlife habitats. Capability unit VIes–1.

Faceville-Shubuta-Ruston complex, 8 to 12 percent slopes (FsD).—This mapping unit consists of deep, well-drained, strongly acid soils that are along streams on sloping hillsides. These soils have a small total acreage, and they occur in such intricate patterns that it is not feasible to map them separately. About 40 to 60 percent of the total acreage is in Faceville soils, about 30 to 40 percent is in Shubuta soils, and about 20 to 30 percent is in Ruston soils. Small, scattered areas of Magnolia, Carnegie, Orangeburg, and Norfolk soils are included with these soils. A characteristic profile of each soil is described for the corresponding series.

The texture of the surface layer of these soils ranges from loamy sand to sandy loam. The finer textured surface layer is in areas of Shubuta, Faceville, and other finer textured soils, and in areas where erosion is active. Areas of these soils that have not been cleared are generally slightly eroded, whereas areas that are cleared and cultivated are generally moderately eroded. Included with these soils are small areas with slopes of 5 to 8 percent.

Most of these soils have not been cleared. The native vegetation consists mainly of oaks, hickory, and pines. Most of the cleared areas are in pasture. A small part is cultivated, generally as a part of a more nearly level field of other soils.

Depending on the soil, surface runoff is medium to rapid and internal drainage is medium.

These soils are too steep and too erodible for cultivation. They are moderately well suited to pasture but are best suited as woodland and as wildlife habitats. Capability unit VIes–1.

Faceville-Shubuta-Ruston complex, 8 to 12 percent slopes, severely eroded (FsD3).—This mapping unit is more eroded than Faceville-Shubuta-Ruston complex, 8 to 12 percent slopes, and generally is thinner in the surface layer. In most places the surface layer is yellowish brown to yellowish red. Nearly all of the original surface layer has been removed by erosion in most areas. In these areas the finer textured subsoil is exposed or is mixed with the original surface layer. Therefore, the surface layer is generally finer textured than in less severely eroded areas. In some areas many shallow gullies and a few deep ones occur. Between the gullies the surface layer is slightly thicker than in other places.

These soils are in highly dissected terrain, not suited to good field layout. Because of the strong slopes and severe erosion, these soils are not suited to cultivated crops and are only fairly well suited to pasture. They are best suited as woodland and as wildlife habitats. Capability unit VIIes–1.

Faceville-Shubuta-Ruston complex, 12 to 35 percent slopes (FsF).—This mapping unit is much steeper than Faceville-Shubuta-Ruston complex, 8 to 12 percent slopes. Some areas have slopes as steep as 65 percent. In some places these soils are moderately sheet eroded or have many shallow gullies and a few deep ones.

These soils are on highly dissected, steep slopes and are not suited to cultivated crops. Some areas may be suited to pasture under very careful practices of erosion control. Use as woodland or as wildlife habitats is best. Capability unit VIIes–1.

Faceville-Shubuta-Ruston complex, 12 to 35 percent slopes, severely eroded (FsF3).—This soil complex is more eroded than Faceville-Shubuta-Ruston complex, 8 to 12 percent slopes, and generally is thinner in the surface layer. All or nearly all of the original surface layer has been removed by erosion in most areas. In these areas the fine-textured subsoil is exposed or has been mixed with the original surface layer. The surface layer therefore, is generally finer textured in these areas than it is in less severely eroded areas. Many shallow gullies and a few deep ones have formed in many places. Because of the severe erosion, the parent material normally is not so deep as it is in Faceville-Shubuta-Ruston complex, 8 to 12 percent slopes.

Included with Faceville-Shubuta-Ruston complex, 12 to 35 percent slopes, severely eroded, are some areas that have 25 to 65 percent slopes.

These soils are not suited to cultivated crops or to pasture, and they are surrounded by other soils not suited to cultivation. The best uses are for woodland and wildlife habitats. Capability unit VIIes–1.

Goldsboro series

The Goldsboro series consists of deep, moderately well drained, strongly acid soils that are on uplands in nearly level to sloping areas. Most of the small total acreage of these soils is near Greensboro, but small areas are distributed throughout the county. These soils developed from thick beds of acid sandy loam and sandy clay loam.

They have a very dark gray loamy fine sand to loamy sand surface layer that generally totals 14 to 17 inches in thickness. Thick-surface phases are mapped that have an A horizon 18 to 30 inches thick. The upper part of the subsoil is normally light yellowish brown to yellow in color and fine sandy loam to light fine sandy clay loam in texture. Faint pale-brown and pale-yellow mottles normally occur at a depth of 24 inches. The mottles increase in intensity below 30 inches and are gray at the lower depths. Below the subsoil is distinctly mottled parent material with a fine sandy clay loam texture.

Goldsboro soils are closely associated with the Norfolk, Klej, Lynchburg, Ruston, and Tifton soils. They are more poorly drained than the Norfolk, Ruston, and Tifton soils and are better drained than the Lynchburg soils. Their subsoil is not so brown as that in the Ruston soils but is finer textured than that in the Klej soils. In the upper part, the subsoil is yellowish like the subsoil in the Norfolk and Tifton soils. The lower part is faintly mottled like the upper part of the subsoil in the Lynchburg soils.

The native vegetation is mainly longleaf, slash, and loblolly pines, gallberry, sweetgum, maple, various oaks, low shrubs, and wiregrass. Much of the acreage is in shade tobacco, corn, small grains, and pasture plants.

Goldsboro soils have medium runoff and medium internal drainage. Permeability is rapid to moderately rapid in the surface layers and moderate in the subsoil. These soils are loamy enough to have good tilth. They have a high capacity for holding moisture that plants can use. Their natural fertility is low, and their content of

organic matter is medium, but they retain plant nutrients well and respond well to fertilizer. Except in periods of excess rainfall, these soils are well suited to most general crops.

Goldsboro loamy fine sand, 2 to 5 percent slopes (GoB).—This moderately well drained, gently sloping soil is on uplands. It has a friable, moderately fine textured, yellow subsoil.

Profile in a gently sloping, undisturbed area where the vegetation is chiefly gallberry, wiregrass, slash pine, and dogfennel (*location:* SE¼NW¼ sec. 18, R. 4 W., T. 3 N.):

- A_1 0 to 3 inches, very dark gray (10YR 3/1) loamy fine sand; weak, medium, crumb structure; loose; medium content of organic matter; common fine and few medium roots; strongly acid; boundary abrupt and smooth.
- A_2 3 to 7 inches, gray (10YR 5/1) loamy fine sand; weak, medium, crumb structure; loose; common fine and very few medium roots; few fine pores and root channels; strongly acid; boundary clear and smooth.
- A_3 7 to 11 inches, grayish-brown (10YR 5/2) loamy fine sand; weak, medium, crumb structure; loose; common fine and very few medium roots; few fine pores and root channels; strongly acid; boundary clear and smooth.
- B_{11} 11 to 16 inches, light yellowish-brown (10YR 6/4) fine sandy loam with common, medium, faint mottles of grayish brown (10YR 5/2); moderate, medium and coarse, crumb structure; very friable; few fine and medium roots; few fine and medium pores and root channels; strongly acid; boundary clear and wavy.
- B_{12} 16 to 20 inches, yellow (10YR 7/6) fine sandy loam with few, fine, faint, grayish-brown (10YR 5/2) mottles; moderate, medium, crumb structure; very friable; few fine and medium roots and root channels; few fine and medium pores; strongly acid; boundary clear and wavy.
- B_2 20 to 27 inches, yellow (10YR 7/8) fine sandy clay loam with few, medium, faint, yellow (10YR 8/6) mottles; weak, fine, subangular blocky and moderate, medium, crumb structure; friable; very few fine roots; common fine pores and root channels; strongly acid; boundary clear and wavy.
- B_3 27 to 42 inches, mottled yellow (10YR 8/6) and brownish-yellow (10YR 6/8) fine sandy clay loam; moderate, medium, subangular blocky structure; friable; few fine pores; strongly acid; boundary gradual and wavy.
- C 42 to 59 inches +, mottled yellow (10YR 8/6) and brownish-yellow (10YR 6/8) fine sandy clay loam with few, common, distinct, light-gray (10YR 7/2) mottles; few, common, distinct, firm, yellowish-red (5YR 5/8) concretions; moderate fine pores; strongly acid.

The surface layer ranges from 3 to 7 inches in thickness and from very dark gray to gray in color. In most places it is very dark gray to dark gray. The finer textured subsoil is within 18 inches of the surface. It ranges from light yellowish brown to brownish yellow. Pale-yellow and brown mottles are normally at depths of 24 to 30 inches, but faint mottles may be as shallow as 20 inches. The mottling increases in intensity with increasing depth. Fine sandy loam to fine sandy clay loam is the texture of the subsoil. Compact, highly mottled, slowly permeable fine sandy loam or fine sandy clay is at depths as shallow as 34 inches in some places. Many small iron pebbles occur throughout the profile in a few areas, particularly where this soil is associated with the the Tifton soils and with the pebbly Norfolk soils.

This is a productive soil. It is on gentle slopes in both large and small areas, generally adjacent to other soils that are well suited to crops. If properly managed, this soil is well suited to most locally grown crops, but yields from some crops are low because of restricted drainage. The soil is best suited to corn and small grains. If properly drained, it is well suited to shade tobacco. It is well suited to improved pasture and produces good yields of grasses and clovers, including whiteclover. This soil is well suited as woodland and makes a good habitat for wildlife. Pine and hardwood trees grow rapidly. Capability unit IIsw–2.

Goldsboro loamy fine sand, 0 to 2 percent slopes (GoA).—Because this soil is nearly level, runoff is slow. After heavy rains the soil remains wet longer than Goldsboro loamy fine sand, 2 to 5 percent slopes.

This productive soil is in small and large areas, generally adjacent to other soils suited to crops. In wet periods the yield of most crops are low because of restricted drainage. This soil is suited to most crops grown in the county but is not so well suited to cotton and peanuts as it is to corn. It is well suited to shade tobacco if the soil is drained by tile or other effective means. This soil is well suited to pasture and produces good yields of all locally grown pasture plants. It is well suited as woodland and makes a good habitat for wildlife. Capability unit IIsw–2.

Goldsboro loamy sand, thick surface, 0 to 2 percent slopes (GmA).—This soil is more nearly level than Goldsboro loamy fine sand, 2 to 5 percent slopes, and is thicker and coarser textured in the surface layers. The A horizon is 18 to 30 inches thick. The surface layer, or upper part of the A horizon, is about the same thickness as that in the loamy fine sand, but the subsurface layers are thicker. Water moves through the upper part of the rooting zone more rapidly than in Goldsboro loamy fine sand, 2 to 5 percent slopes and leaching is more rapid. The cation-exchange capacity and natural fertility of the surface layers are lower.

Most general crops can be grown on this soil, but it is best suited to corn and small grains. Because of restricted drainage in the subsoil, crop yields are sometimes low. This soil is well suited to improved pasture, woodland, and wildlife habitats. Capability unit IIsw–2.

Goldsboro loamy sand, thick surface, 2 to 5 percent slopes (GmB).—This soil is thicker and coarser in the surface layers than Goldsboro loamy fine sand, 2 to 5 percent slopes. The top layer is about the same thickness as in that soil, but the subsurface material is thicker. Together these layers are 18 to 30 inches thick. Water moves more rapidly through the upper part of the rooting zone in this thick surface soil, and leaching is more rapid. The cation-exchange capacity and natural fertility are lower.

This soil is best suited to corn, small grains, and similar crops. Because of restricted drainage in the subsoil, crop yields are sometimes low in wet periods. This soil is well suited to improved pasture, woodland, and wildlife habitats. Capability unit IIsw–2.

Goldsboro loamy sand, thick surface, 5 to 8 percent slopes (GmC).—This soil is steeper than Goldsboro loamy sand, thick surface, 2 to 5 percent slopes. Generally it is on short slope breaks adjacent to that soil. It has more rapid runoff than the more nearly level soil and normally a lower water table. Because of its thick, coarse-textured surface layers, leaching is rapid. The cation-exchange capacity and natural fertility are a little

lower than for Goldsboro soils having thinner surface layers.

This soil is in small areas on short slopes and, in most places, is kept wet by drainage from adjacent soils. It has some hazard of erosion. Because of the low fertility, low content of organic matter, and rapid leaching of applied plant nutrients, this soil is poorly suited to cultivated crops. It is suited to improved pasture of bermudagrass and bahiagrass. It is also well suited as woodland and makes a good habitat for wildlife. Capability unit IVse–3.

Grady series

In the Grady series are poorly and very poorly drained, strongly acid soils. These soils are on uplands in nearly level, low-lying areas, generally in small depressions. The total acreage is small and is mostly in the central and northeastern parts of the county. These soils developed from thick beds of acid sandy clay and clay.

Grady soils have a very dark gray to dark gray fine sandy loam surface layer, 3 to 6 inches thick. This grades to a subsurface layer of dark-gray to gray fine sandy loam to fine sandy clay loam that normally extends to depths of 8 to 10 inches. Then the transition is fairly abrupt to a subsoil of gray to light gray, tough, plastic fine sandy clay that is mottled with yellow to yellowish red.

Grady soils are associated with Rains, Magnolia, Faceville, Tifton, and Norfolk soils. Of these soils, the Grady soils are most similar to the Rains soils, and differ mainly in having a finer textured subsoil. They are much more poorly drained than the Magnolia, Faceville, Tifton, and Norfolk soils, and they have a much lighter colored, more plastic, and finer textured subsoil.

The native vegetation is mainly blackgum, cypress, sweetgum, and water-loving grasses. Much of the acreage has been cleared along with adjacent areas of better drained soils. Most cleared areas are in pasture or are idle, and little of the acreage is cultivated.

Grady soils have slow surface runoff and very slow drainage through the subsoil. The subsoil is very slowly permeable. The drainage in depressions that have poor outlets, or none, is practically all underground. These soils are very poorly aerated. Their natural fertility is moderate.

Grady fine sandy loam is the only soil in the Grady series mapped in Gadsden County.

Grady fine sandy loam (0 to 2 percent slopes) (Gr).—This is a very poorly drained soil that is on uplands, generally in depressions. It has a fine-textured, plastic subsoil.

Profile in a nearly level pasture (*location:* SE¼NW¼ sec. 9, R. 4 W., T. 2 N.):

- A_p 0 to 4 inches, very dark gray (N 3/0) fine sandy loam; moderate, medium, crumb structure; friable; high content of organic matter; very few fine roots; strongly acid; boundary abrupt and smooth.
- A_3 4 to 9 inches, dark-gray (N 4/0) fine sandy clay loam; weak, medium, subangular blocky structure and moderate, medium, crumb structure; friable; very few fine roots; strongly acid; boundary clear and wavy.
- B_{1g} 9 to 23 inches, gray (N 5/0) fine sandy clay; massive (structureless); slightly sticky and plastic when wet, firm when moist, and hard when dry; very few fine roots in the upper part; strongly acid; boundary clear and wavy.
- B_{2g} 23 to 33 inches, gray (N 6/0) fine sandy clay with few, fine, distinct, yellow (10YR 8/6) mottles; massive (structureless); plastic when wet, firm when moist, and very hard when dry; strongly acid; boundary gradual and wavy.
- C_g 33 to 44 inches +, light-gray (N 7/0) fine sandy clay with few, fine, distinct, yellow (10YR 8/6) mottles and few, fine, distinct, yellowish-red (5YR 4/8) mottles; massive (structureless); plastic when wet, firm when moist, and hard when dry.

The surface layer ranges from very dark gray to dark gray in color and from 3 to 6 inches in thickness. The subsurface layer is gray to dark gray in color and fine sandy loam to fine sandy clay loam in texture. It extends to depths of 8 to 10 inches. The subsoil is mainly gray in the upper part and light gray in the lower part. A few mottles of yellow to yellowish red normally occur throughout the subsoil, but in some areas the upper part of the subsoil is free of mottles. The texture of the subsoil is normally fine sandy clay, but in a few areas it is clay. The consistence of the subsoil ranges from slightly sticky to sticky and plastic.

Included with this soil are small areas that have a very fine sandy loam surface layer, and a few small areas with slopes ranging up to 5 percent. Also included are a few areas that have very dark gray to black surface layers as much as 18 inches thick. These areas are high in organic matter. The surface layer in a few places consists of sediments washed from adjacent areas.

This soil is susceptible to flooding. Several inches of water cover the surface in a few areas during most of the year. The soil occurs in small depressions and the drainage is underground. Artificial drainage is difficult because there are no suitable outlets.

Even if it is drained, this soil is poorly suited to crops. The soil is thin and has poor tilth. It is hard to plow when dry and clods if it is plowed when wet. If it is drained, fair to poor pasture can be established. Pine trees grow well in drained areas, but undrained areas are suited to only water-tolerant hardwoods. Capability unit Vws–1.

Gullied land

Gullied land consists of areas that are very severely eroded. These areas are so dissected by recently formed, deep gullies that the soils have been destroyed except for small patches or narrow strips between the gullies. Most of this land is in areas that have slopes steeper than 5 percent.

Gullied land (Gu).—Gullied land has formed in soils that ranged from sandy to clayey texture before erosion. The exposed materials are equally varied in texture. Most of the gullies are more than 4 feet deep and have steep sides. In some areas erosion is still active, and in other areas it is stabilized.

Except as a refuge for wildlife, in areas where native plants have reproduced naturally, Gullied land has little or no agricultural value in its present condition. It may or may not be converted into arable land, depending on the depth of the gullies and on the kind and depth of the soil materials.

Hannahatchee series

In the Hannahatchee series are deep, moderately well drained, strongly acid soils. These soils are nearly level and occur in depressions, at the base of slopes, and along intermittent streams. They have a small total acreage

that is well distributed through all of the county except the extreme southern and southeastern parts.

Hannahatchee soils consist of unaltered or slightly altered material that rolled or washed from Magnolia, Faceville, Orangeburg, Red Bay, Norfolk, and other fine-textured soils. Hannahatchee soils lack the well-developed profile that characterizes the Magnolia, Faceville, and Orangeburg soils.

Hannahatchee soils have dark reddish-brown fine sandy loam surface layers, 18 to 28 inches thick. These layers are underlain by soil material that varies greatly in color and texture. The material ranges from red to yellowish brown or very dark red in color and from fine sandy loam to fine sandy clay loam in texture.

The native vegetation is mainly slash pine, various oaks, sweetgum, hickory, and dogwood. Much of the acreage is planted to truck crops, small grains, and pasture.

Hannahatchee soils have slow to medium surface runoff and meduim internal drainage. In depressions the drainage is underground. The internal movement of air and water varies according to the varied subsoil materials. These soils are susceptible to occasional flooding and have a fluctuating water table. They have a high capacity for holding available moisture. Natural fertility is high. These soils normally retain plant nutrients and respond well to fertilizer.

Hannahatchee soils, local alluvium, is the only mapping unit in the Hannahatchee series that is mapped in Gadsden County.

Hannahatchee soils, local alluvium (0 to 2 percent slopes) (Ha).—This moderately well drained, moderately fine textured alluvial soil consists of sediments washed from the adjacent uplands.

Profile in a gently sloping cultivated field (*location:* NE¼NW¼ sec. 21, R. 4 W., T. 2 N.):

0 to 17 inches, dark reddish-brown (5YR 2/2) very fine sandy loam; moderate, medium, crumb structure; friable; high content of organic matter; common fine roots and pores; strongly acid; boundary abrupt and wavy.

17 to 23 inches, dark reddish-brown (5YR 3/3) very fine sandy loam; moderate, medium, crumb structure; friable; high content of organic matter; common fine roots and pores; strongly acid; boundary clear and wavy.

23 to 48 inches +, dark-red (10R 3/6) fine sandy clay loam with few, fine, faint, red (2.5YR 4/8) mottles; moderate, medium, subangular blocky structure; slightly firm when moist; few to common fine pores; strongly acid.

The surface layer generally ranges from 18 to 23 inches in thickness. In a few small areas it may be as little as 16 inches or as much as 28 inches thick. The subsoil ranges in color according to the color of the upland soils from which the materials were transported. The texture of the subsoil is fine sandy loam to fine sandy clay loam but, in most places, is fine sandy clay loam. The texture of the surface layer ranges from fine sandy loam to loam.

Included with this soil are a few very small areas that have a gray fine sand or loamy fine sand subsoil. In these areas the surface layer is only 8 to 14 inches thick. Also included are a few small, somewhat poorly drained areas and a few areas with slopes ranging from 2 to 5 percent.

This soil has a deep root zone and is moderately well drained. Because it is in low positions and is susceptible to flooding, it may be waterlogged occasionally in wet seasons. The available moisture-holding capacity, content of organic matter, and natural fertility vary from place to place. The position of this soil at the base of slopes, however, is favorable for accumulating moisture, organic matter, and plant nutrients from the surrounding soils.

This soil is very productive of most crops, particularly corn, small grains, and truck crops. But yields are lower than normal in some years because of long wet periods. Few areas of this soil are large enough to cultivate separately, but the soil is generally in fields with larger areas of soils suited to crops. It is well suited to pasture of grasses and most clovers, as woodland, and as a wildlife habitat. Pine trees grow rapidly on this soil. Capability unit IIsw–1.

Huckabee series

The Huckabee series consists of deep, well-drained, strongly acid soils that are on stream terraces in nearly level to gently sloping areas. These soils have a small total acreage that is mainly along the Ochlockonee River on the eastern boundary of the county; a few acres are along other large streams. Huckabee soils developed from coarse-textured sediments that washed from acid upland soils on the Coastal Plain.

These soils have dark gray to gray fine sand surface layers 2 to 8 inches thick. No B horizon has developed. The surface layers grade to a C horizon of light yellowish-brown to yellow fine sand that extends to depths below 42 inches. Below depths of 36 inches, the material is normally mottled.

These soils are closely associated with the Kalmia and Blanton soils on nearly level and gentle slopes. They have a fine sand and loamy fine sand C horizon, instead of the fine sandy clay loam that makes up the B horizon of Kalmia soils. Drainage is better in the Huckabee soils than in the Blanton soils, and the parent material is less gray and is unmottled to greater depths. Huckabee soils are somewhat similar to the Lakeland soils in their profile characteristics, but occupy river terraces instead of upland positions.

The native vegetation is chiefly blackjack oak, native grasses, scattered slash pine, and a few clumps of palmetto. All the acreage in Huckabee soils in the county is wooded.

Huckabee soils have medium surface runoff and medium internal drainage. Permeability is rapid to very rapid and leaching is rapid. These soils have a low capacity for holding available moisture. They are low in fertility, have poor tilth, and are not well suited to most general crops.

Huckabee fine sand, 0 to 5 percent slopes, is the only Huckabee soil mapped in Gadsden County.

Huckabee fine sand, 0 to 5 percent slopes (HcB).—This is a well-drained, deep, sandy soil. It is in nearly level and gently sloping areas on terraces along Ochlockonee River and other large streams.

Profile in an undisturbed, nearly level, uneroded area where the vegetation is mainly blackjack oak, slash pine, a few palmettos, and wiregrass (*location:* NE¼SE¼ sec. 2, R. 2 W., T. 2 N.):

A_1 0 to 2 inches, dark-gray (10YR 4/1) fine sand; weak, very fine, crumb structure; loose; many fine and medium roots; medium to low content of organic matter; strongly acid; boundary clear and smooth.

A_2 2 to 4 inches, gray (10YR 5/1) fine sand; single grain (structureless); loose; many fine and common medium roots; strongly acid; boundary clear and wavy.

C_1 4 to 28 inches, yellow (10YR 7/6) fine sand; single grain (structureless); loose; many fine and medium roots; strongly acid; boundary clear and wavy.

C_2 28 to 39 inches, yellow (10YR 8/6) fine sand; single grain (structureless); loose; many fine roots; strongly acid; boundary clear and wavy.

C_3 39 to 56 inches, yellow (10YR 8/6) fine sand with few, fine, faint, yellow (10YR 8/8) mottles and common, medium, distinct, white (10YR 8/2) mottles; white mottles increase with increasing depth; single grain (structureless); loose; strongly acid; boundary gradual and wavy.

C_4 56 to 64 inches +, mottled white (10YR 8/2) and yellow (10YR 8/6) sand; single grain (structureless); loose; strongly acid.

The surface layer ranges from dark gray to gray in color and from 2 to 4 inches in thickness. The subsurface layer is gray to grayish brown and is 2 to 3 inches thick. Small areas of this soil have a very dark gray surface layer. To a depth of at least 36 inches, the subsoil ranges from light yellowish brown to yellow. Below this depth the color ranges from slightly mottled light yellowish brown or yellow to a mixture of yellowish brown and gray in the lower horizons. Areas are included that have loamy sand to sand in the lower part of the subsoil. In most places the change in texture is gradual, but in some places it is abrupt, especially where the texture is coarser than normal.

This soil occurs in parts of the county not generally farmed, in small, isolated areas adjacent to soils that are less well drained. Most areas are poorly situated for a good field layout. Bahiagrass is suitable for improved pasture, but this soil is too droughty for clover. It is well suited as woodland and makes a good habitat for wildlife. Capability unit IIIse–2.

Izagora series

The Izagora series consists of deep, moderately well drained, strongly acid soils. These soils are nearly level and occur on terraces, in this county mainly those along the Ochlockonee River. They formed from medium-textured sediments washed from upland soils of the Coastal Plain.

The surface soil, to a depth of about 8 inches, is very dark gray to dark gray loamy fine sand. It is underlain by a fine sandy loam to fine sandy clay loam subsoil that is light yellowish brown to yellowish brown. The subsoil extends to a depth of about 36 inches. Mottles of very pale brown, yellow, and yellowish red are normally at a depth of about 18 inches. The subsoil is underlain by highly mottled fine sandy clay loam parent material.

Izagora soils are closely associated with the Blanton, Kalmia, Myatt, and Leaf soils. They are finer textured than the Blanton soils. They are less well drained than the Kalmia soils and are mottled closer to the surface. The Izagora soils are better drained than the Myatt soils and have a pale-brown to light yellowish-brown subsoil instead of a gray one. They are better drained than the Leaf soils and are more friable in the upper part of the subsoil.

The native vegetation is mainly longleaf, slash, and loblolly pines, various oaks, sweetgum, hickory, low shrubs, and native grasses. All the acreage is in native vegetation, though Izagora soils are suited to some cultivated crops. These soils are mainly in small isolated areas, normally surrounded by soils that are poorly suited to cultivation.

Izagora soils have low to medium surface runoff and moderately slow internal drainage. Permeability is moderately rapid in the surface soil and moderate to slow in the subsoil. These soils have good aeration above the water table, but aeration varies at different depths because the water table fluctuates.

Izagora loamy fine sand (0 to 2 percent slopes) (Ig).—This is a deep, moderately well drained soil that has a moderately fine textured, friable subsoil. It is nearly level and is on terraces.

Profile in a nearly level, undisturbed area where the vegetation is mainly water oak, pines, and waxmyrtle (*location:* NW¼SE¼ sec. 24, R. 2 W., T. 2 N.):

A_{11} 0 to 4 inches, very dark gray (10YR 3/1) loamy fine sand; moderate, medium, crumb structure; very friable; many fine roots; medium content of organic matter; strongly acid; boundary clear and smooth.

A_{12} 4 to 8 inches, dark-gray (10YR 4/1) loamy fine sand; moderate, medium, crumb structure; very friable; many fine roots; strongly acid; boundary clear and wavy.

B_{11} 8 to 15 inches, light olive-brown (2.5Y 5/4) fine sandy loam; moderate, medium, crumb structure; friable; common fine roots and few medium roots; common fine pores; strongly acid; boundary clear and wavy.

B_{12} 15 to 20 inches, yellowish-brown (10YR 5/4) light fine sandy clay loam; moderate, medium, crumb structure and weak, fine, subangular blocky structure; friable; few fine and medium roots; common fine pores; few root channels; strongly acid; boundary clear and wavy.

B_{21} 20 to 28 inches, yellowish-brown (10YR 5/4) fine sandy clay loam with common, fine, distinct, yellowish-red (5YR 5/8) mottles; moderate, medium, subangular blocky structure; friable; few fine and medium roots; common fine pores; few root channels; strongly acid; boundary clear and wavy.

B_{22} 28 to 31 inches, yellowish-brown (10YR 5/6) fine sandy clay loam with common, medium, distinct, yellowish-red (5YR 5/8) mottles; moderate, medium, subangular blocky structure; friable; few fine roots and pores; strongly acid; boundary gradual and wavy.

B_3 31 to 36 inches, yellowish-brown (10YR 5/6) fine sandy clay loam with common, medium, distinct, yellowish-red (5YR 4/8) mottles and few, fine, distinct, light-gray (10YR 7/1) mottles; moderate, medium, subangular blocky structure; friable; strongly acid; boundary gradual and wavy.

C_1 36 to 44 inches, mottled light-gray (10YR 7/1), strong-brown (7.5YR 5/8), red (2.5YR 4/8) and yellowish-brown (10YR 5/6) fine sandy clay loam; moderate, medium, subangular blocky structure; friable; strongly acid; boundary gradual and irregular.

C_2 44 to 50 inches +, mottled light-gray (10YR 7/1) and yellowish-brown (10YR 5/8) fine sandy clay loam with common, fine streaks of yellowish red (5YR 4/8); moderate, medium, blocky structure; friable; strongly acid.

The surface layer ranges from gray to very dark gray in color but is mostly very dark gray. It is 3 to 8 inches thick. The subsoil is mainly yellowish brown, but in some areas it is yellowish brown to light yellowish brown. It is mottled at depths that generally ranges from 16 to 24 inches. The subsoil ranges from fine sandy loam to fine sandy clay loam but is mainly fine sandy clay loam. In places the subsoil grades gradually from fine sandy clay loam in the upper part to fine sandy loam in the lower part. In a few places the lower subsoil consists of mixed layers of loamy sand and fine sand.

Included with this soil are a few areas of fine sandy loam. Also included are small areas that are somewhat poorly drained. In these areas the B horizon is weaker

than that in well-drained areas and is more intensely mottled and less yellowish or brownish in color.

This soil contains a medium amount of organic matter and is loamy enough to have good tilth. Its cation-exchange capacity is moderately high. The available moisture-holding capacity is moderate in the surface soil and moderately high in the subsoil. This soil has low natural fertility but responds well to fertilizer. When rainfall is above normal, the water table is near the surface.

This soil is suited to most general crops grown locally. Because of the slow drainage in the subsoil, however some crops are not suited. If this soil were cleared, the most suitable crops would be corn, small grains, and truck crops. This soil is well suited to improved pasture, including whiteclover. It is well suited as woodland and as a habitat for wildlife. Capability unit IIsw–2.

Kalmia series

The Kalmia series consists of deep, well-drained, strongly acid soils. These soils are in nearly level areas on stream terraces. In this county they occur in a small acreage, only along the Ochlockonee River. They developed from medium-textured sediments that washed from acid soils on the uplands of the Coastal Plain.

These soils have loamy fine sand surface layers, 15 to 18 inches thick. They are black to dark gray in the upper part and grayish brown to yellowish brown in the lower part. The subsoil is yellow to yellowish-brown, friable fine sandy loam to fine sandy clay loam. It is underlain by mottled fine sand to fine sandy clay loam parent material.

Kalmia soils are associated with the Blanton, Izagora, Congaree, and Myatt soils. They are better drained and finer textured than the Blanton soils and are not so pale in the subsoil. They have a finer textured subsoil than the Huckabee soils. Kalmia soils are better drained than the Myatt soils and have a yellow instead of a gray subsoil. They are better drained and lighter colored in the subsoil than the Congaree soils and are less susceptible to flooding.

The native vegetation is mainly longleaf, slash, and loblolly pines, various oaks, sweetgum, low shrubs, and wiregrass. These soils occur in small isolated areas and are still in native vegetation.

Kalmia soils have medium external drainage and internal drainage. Their permeability is moderately rapid in the surface layers and moderate in the subsoil. They have a high capacity for holding available moisture and are well aerated throughout the profile. Tilth is good and natural fertility is moderate. These soils retain plant nutrients and respond well to fertilizer. If they were cleared, they would be suited to many crops.

Only one soil in the Kalmia series is mapped in Gadsden County.

Kalmia loamy fine sand, 0 to 2 percent slopes (KaA).—This well-drained, deep, nearly level soil is on terraces. It has a moderately fine textured, friable subsoil.

Profile in a nearly level, undisturbed area where the vegetation is wiregrass, water oak, slash pine, and sweetgum (*location:* NW¼SE¼ sec. 24, R. 2 W., T. 2 N.):

A_1 0 to 3 inches, black (10YR 2/1) loamy fine sand; weak, medium, crumb structure; very friable; high content of organic matter; many fine to medium roots; few fine root channels; few fine pores; strongly acid; boundary abrupt and smooth.

A_2 3 to 9 inches, dark grayish-brown (2.5Y 4/2) loamy fine sand; weak, medium, crumb structure; very friable; many roots; few fine root channels; few fine pores; strongly acid; boundary abrupt and wavy.

A_3 9 to 15 inches, yellowish-brown (10YR 5/4) loamy fine sand; moderate, medium, crumb structure; friable; few fine roots; few fine pores; strongly acid; boundary gradual and wavy.

B_1 15 to 21 inches, yellowish-brown (10YR 5/6) fine sandy loam; weak, fine, subangular blocky structure that breaks readily to moderate, medium, crumb structure; friable; few fine roots; few fine pores; strongly acid; boundary gradual and wavy.

B_2 21 to 39 inches, yellowish-brown (10YR 5/8) fine sandy clay loam; moderate, fine and medium, subangular blocky structure and moderate, medium, crumb structure; friable; few fine roots and common fine root channels; common fine pores; strongly acid; boundary gradual and irregular.

B_3 39 to 49 inches, yellowish-brown (10YR 5/8) fine sandy loam with common, fine, distinct, strong-brown (7.5YR 5/6) mottles and common, fine, distinct, gray (10YR 6/1) mottles; weak, fine, subangular blocky structure and moderate, medium, crumb structure; friable; very few fine roots; few fine pores; strongly acid; boundary gradual and irregular.

C 49 to 64 inches +, yellowish-brown (10YR 5/6) fine sand with common, medium, distinct, strong-brown (7.5YR 5/6) mottles and many, medium, distinct, white (10YR 8/2) mottles; the white increases with increasing depth; single grain (structureless); very friable; slightly compact; few fine roots; strongly acid.

The surface layer of this soil ranges from 3 to 7 inches in thickness. It is mainly dark gray but ranges from black to dark gray. The finer textured subsoil is normally at depths less than 18 inches, but in a few places it is at depths slightly more than 18 inches. The subsoil ranges from fine sandy loam to light fine sandy clay loam. In many places the texture change is gradual from fine sandy clay loam in the upper part of the subsoil to fine sandy loam and fine sand in the lower part. Mottles generally occur below 38 inches, but brown and gray mottles occur at depths of 28 to 30 inches in a few small areas. In these areas the soil is moderately well drained.

Kalmia soil occurs in small areas surrounded by larger areas of soils that are poorly suited for use as cropland. Good tilth, good drainage, deep root zone, and high available moisture-holding capacity make this soil well suited to general crops. This soil, however, is isolated from the general farming section of the county, and all of the acreage is in native vegetation. It is well suited to improved pasture, woodland, and wildlife habitats. Capability unit I–1.

Klej series

In the Klej series are deep, moderately well drained, strongly acid soils that occur on uplands in nearly level to sloping areas. These soils have a fairly large total acreage that is about equally distributed throughout the county in small areas. The soils developed from thick beds of acid sand and loamy sand underlain by sandy clay loam and sandy clay.

Klej soils have gray to dark-gray coarse sand to loamy sand surface layers, 7 to 14 inches thick. No B horizon has developed, and the surface layers grade into a yellowish-brown to yellow C horizon of coarse sands, sands, or loamy sands. The C horizon generally extends to a depth

below 42 inches, but in some areas where the Klej soils are shallower than normal, a D horizon of finer textured material is at depths of 30 to 42 inches. A few, fine, faint mottles of various shades of yellow and brown are normally at depths of 22 to 30 inches. In some areas these mottles are as shallow as 20 inches or as deep as 34 inches. With increasing depth, the soil material is more distinctly mottled with various shades of yellow, brown, and gray.

The Klej soils are closely associated with the Lakeland, Blanton, Plummer, Goldsboro, and Lynchburg soils. They are less well drained than the Lakeland soils and are mottled at shallower depths. Except for color, which is more yellow than gray, their surface layer is similar to that of the Blanton soils. Their coarse-textured material extends to greater depths than that of the Goldsboro soils, and they are better drained than the Plummer soils.

The native vegetation is mainly longleaf and slash pines, myrtle, gallberry, various oaks, and wiregrass. Most of the acreage is in native vegetation, especially where the subsoil is chiefly sand. Some areas of loamy sands and sands have been cleared and are in corn or other cultivated crops and pasture plants.

Klej soils have low surface runoff, and their internal drainage is restricted by a high water table. The permeability, except in the loamy sand areas, is very rapid, and the capacity to retain plant nutrients is poor. These soils have low natural fertility and are not loamy enough to have good tilth. Their poor soil qualities limit their use for general farm crops.

Klej sand, 0 to 5 percent slopes (KsB).—This is a moderately well drained, deep soil that is coarse textured to depths of more than 42 inches. It is on uplands in nearly level to gently sloping areas.

Profile in a nearly level cultivated area (*location:* sec. 2, R. 4., T. 3 N.):

- A_1 0 to 3 inches, gray (10YR 5/1) sand; single grain (structureless); loose; few fine roots; low content of organic matter; strongly acid; boundary abrupt and smooth.
- A_2 3 to 9 inches, gray (10YR 6/1) sand; common, faint, pale-brown (10YR 6/3) splotches; single grain (structureless); loose; few fine and medium roots and root channels; strongly acid; boundary clear and wavy.
- C_1 9 to 22 inches, yellow (10YR 7/6) sand; few, distinct, white (10YR 8/1) streaks that have penetrated along the root channels from above; few fine roots and root channels; strongly acid; boundary clear and wavy.
- C_2 22 to 36 inches, yellow (10YR 8/6) sand; few, medium, faint, yellow (10YR 7/8) mottles; single grain (structureless); loose; few fine to medium root channels; strongly acid; boundary clear and wavy.
- C_3 36 to 47 inches, mottled yellow (10YR 7/6) and very pale-brown (10YR 8/3) sand; few, fine, distinct mottles of reddish yellow (7.5YR 6/8); single grain (structureless); loose; few fine to medium root channels; strongly acid; boundary gradual and irregular.
- C_4 47 to 56 inches +, yellow (10YR 8/6) sand; common, medium, distinct, white (10YR 8/2) and common, medium, distinct, reddish-yellow (7.5YR 6/8) mottles; single grain (structureless); loose; strongly acid.

The surface layer of this soil ranges from dark gray to gray in color and from 2 to 5 inches in thickness. The subsurface layer ranges from gray to light brownish gray in color and from 3 to 6 inches in thickness. The subsoil is light yellowish brown to yellow to depths of about 36 inches. Pale-brown and yellow mottles are normally at depths of 22 to 30 inches, but in a few small areas they are at depths of 30 to 36 inches. Below a depth of about 36 inches, the very pale brown mottles dominate at shallower depths but the intensity of the gray increases with increasing depth.

Included with this soil are a few small areas of coarse sand. Also included are a few small areas of loamy sand and fine sand where these sands extend to depths of more than 42 inches.

Mainly because this soil leaches rapidly and is droughty, it produces only moderate yields of most crops, even when it is managed well. It occurs in small areas with larger areas of similar sandy soils and generally is managed with these soils. Locally grown crops best suited to this soil are corn and small grains. If this soil is managed well, it can produce good improved pasture of bahiagrass and other drought-resistant grasses. It is well suited to woodland and makes a good habitat for wildlife. Capability unit IIIse–3.

Klej sand, 5 to 8 percent slopes (KsC).—This soil has more rapid surface runoff than Klej sand, 0 to 5 percent slopes, and has scattered shallow gullies in a few areas. Unprotected areas are susceptible to wind and water erosion.

This soil is not well suited to the general farm crops grown in the county. It normally occurs in small narrow areas adjacent to larger areas of less strongly sloping but similar soils, and generally it is managed along with these soils. It is best suited to improved pastures of deep-rooting, drought-resistant grasses, to woodland, and to wildlife habitats. Capability unit IVse–3.

Klej loamy sand, shallow, 2 to 5 percent slopes (KbB).—This moderately drained soil occurs in gently sloping areas on uplands. Its loamy sand texture extends to depths of 30 to 42 inches. It differs from Klej sand, 0 to 5 percent slopes, mainly in texture of the surface layers and in having sandy loam or sandy clay loam beginning at depths between 30 and 42 inches.

Profile in a gently sloping, undisturbed area where the vegetation is mainly wiregrass, slash pine, runner oak, maple, and fern (*location:* SW¼NE¼ sec. 36, R. 5 W., T. 3 N.):

- A_1 0 to 4 inches, dark-gray (10YR 4/1) loamy sand; weak, fine, crumb structure; loose; numerous fine and medium roots; moderate content of organic matter; strongly acid; boundary clear and wavy.
- A_2 4 to 13 inches, gray (10YR 5/1) loamy sand; single grain (structureless); loose; numerous fine to medium roots and numerous fine root channels; strongly acid; boundary clear and wavy.
- C_1 13 to 21 inches, light yellowish-brown (10YR 6/4) loamy sand; weak, fine, crumb structure; loose; common fine roots and root channels filled with grayish-brown (10YR 5/2) material; stongly acid; boundary gradual and wavy.
- C_2 21 to 27 inches, yellow (10YR 7/8) loamy sand; few, fine, faint, light yellowish-brown (10YR 6/4) mottles; weak, fine, crumb structure; loose; few fine roots and root channels; strongly acid; boundary clear and wavy.
- C_3 27 to 35 inches, yellow (10YR 7/8) loamy sand; common, medium, faint, yellow (10YR 8/6) and common, fine, faint, very pale brown (10YR 7/4) mottles; weak, fine, crumb structure; loose; very few fine roots; strongly acid; boundary gradual and wavy.
- C_4 35 to 41 inches, yellow (10YR 8/8) sandy loam with common, fine, faint, brownish-yellow (10YR 6/8) mottles and few, fine, faint, very pale brown (10YR 8/4) mottles; weak, very fine, crumb structure; loose; very few fine roots; strongly acid; boundary gradual and wavy.
- D_1 41 to 54 inches, yellow (10YR 7/8), light sandy clay loam with common, medium, distinct, yellowish-brown (10YR 5/8) mottles and few, fine, faint, very pale

brown (10YR 8/3) mottles; weak, medium, crumb structure; very friable; very few fine roots; strongly acid; boundary gradual and wavy.

D_2 54 to 68 inches, yellow (10YR 7/8) sandy clay loam with common, medium, distinct, yellowish-brown (10YR 5/6) mottles, with common, medium, distinct, light-gray (10YR 7/2) mottles, and with common, fine, distinct, strong-brown (7.5YR 5/6) mottles; weak, fine, subangular blocky structure and moderate, medium, crumb structure; friable; strongly acid

Although loamy sand material extends to depths ranging from 30 to 42 inches, in most areas the finer textured material occurs at depths of 36 to 42 inches. In a few places the finer textured material is deeper than 42 inches. Included with this soil are a few areas of loamy fine sand.

Permeability is rapid in the surface layers and moderately rapid in the underlying finer textured material. The content of organic matter and natural fertility are slightly higher than in Klej sand, 0 to 5 percent slopes.

This soil generally occurs in relatively small areas and is surrounded by moderately well to somewhat poorly drained sandy soils. Although the soil is suited to some of the locally grown general crops, particularly corn, yields are low. Bahiagrass and other drought-resistant, deep-rooted pasture grasses do well. This soil is well suited to woodland and makes a good habitat for wildlife. Capability unit IIIse–3.

Klej loamy sand, shallow, 0 to 2 percent slopes (KbA).—This soil has milder slopes and less rapid runoff than Klej loamy sand, shallow, 2 to 5 percent slopes, and a slightly shallower water table.

Yields of general crops are usually low on this soil because plant nutrients and fertilizer leach out rapidly and the soil is droughty. The soil is well suited to improved pasture of bahiagrass and other deep-rooted, drought-resistant grasses. It is well suited to woodland and makes a good habitat for wildlife. Capability unit IIIse–3.

Klej coarse sand, 0 to 5 percent slopes (KcB).—This soil has a coarser texture that extends to a greater depth than in Klej sand, 0 to 5 percent slopes. Its organic-matter content and natural fertility are lower than in the Klej sand, and maintenance of fertility is more of a problem.

Most of this soil is in the southwestern part of the county in small areas adjacent to swampy places and drainageways. Its suitability for crops is limited, but this soil can produce moderate yields of corn, small grains, and a few other crops under good management. If it is well managed, it has moderate to good yields of pasture grasses in improved pastures. It is well suited as woodland and makes a good habitat for wildlife. Most areas are too small to be cultivated independently and should be kept in woods. Capability unit IIIse–3.

Lakeland series

The Lakeland series consists of deep, well-drained to excessively drained, strongly acid soils that are on nearly level to strong slopes on uplands. These soils have developed from thick beds of unconsolidated sands and loamy sands that are underlain by finer textured sediments at depths of more than 30 inches. They have a large total acreage, mostly in the southern part of the county. In the northern part of the county, the Lakeland soils are fine sands and loamy sands; in the extreme southern part, they are chiefly droughty coarse sands. Sands and coarse sands are also in other parts of the county.

These soils have dark-gray to grayish-brown sand to loamy sand or coarse sand surface layers, 2 to 12 inches thick. No B horizon has developed. The surface layers grade to a C horizon of coarse sands, sands, or loamy sands that extends to depths of 42 inches to more than 60 inches. Some areas, however, have a finer textured D horizon at depths of 30 to 42 inches. This material ranges from sandy loam to fine sandy loam in texture. Normally, the upper 4 to 8 inches of the subsoil is light yellowish brown, and the lower part ranges from yellow to yellowish brown.

Lakeland soils are associated with Eustis, Blanton, Norfolk, Klej, and Ruston soils. They are similar to the Eustis soils in texture, consistence, and thickness of horizons. Their subsoil, however, is yellow to yellowish brown instead of strong brown to yellowish red as it is in the Eustis soils. Lakeland soils are coarser textured than the Norfolk and Ruston soils to depths of more than 30 inches. The subsoil in the Lakeland soils is not so brown as that in the Ruston soils. Lakeland soils are better drained than Klej soils and do not have so much multicolored mottling as the Klej soils. They differ from the Blanton soils in having a yellow subsoil instead of a light gray or very pale brown one.

The native vegetation consists chiefly of longleaf pine, turkey oak, blackjack oak, a few water oaks, and sparse wiregrass. Much of this soil is in trees especially in areas where the subsoil is mainly coarse sand. In the northern part of the county, however, where the subsoil is generally finer textured, much of this soil is cleared. These areas are usually planted to corn, cotton, peanuts, and pasture plants.

The surface runoff of Lakeland soils is medium. The internal drainage ranges from very rapid in the more droughty sands to rapid in the loamy sands. These soils are not loamy enough to have good tilth, and natural fertility is low. Because they are deep and coarse textured, their capacity to retain plant nutrients is low. Normally, the Lakeland soils with loamy sand texture respond fairly well to high fertilization. Where the slopes are gentle and the finer textured materials occur at depths of 30 to 48 inches, these soils are moderately well suited to most general crops.

Lakeland coarse sand, 0 to 5 percent slopes (LaB).—This is a well-drained, very deep, sandy soil on uplands. The coarse sand extends from the surface to depths of more than 60 inches.

Profile in a nearly level area where the vegetation is mainly longleaf pine, wiregrass, broomsedge, turkey oak, and post oak (*location:* NE¼NE¼ sec. 13, R. 6 W., T. 2 N.):

A_1 0 to 2 inches, dark-gray (10YR 4/1) coarse sand; single grain (structureless); loose; low content of organic matter; many fine roots; strongly acid; boundary abrupt and smooth.

A_2 2 to 5 inches, gray (10YR 6/1) coarse sand; single grain (structureless); loose; many fine roots; strongly acid; boundary abrupt and smooth.

C_1 5 to 11 inches, light yellowish-brown (10YR 6/4) coarse sand; single grain (structureless); loose; few fine roots and very few medium roots; strongly acid; boundary clear and wavy.

C_2 11 to 42 inches, yellowish-brown (10YR 5/3) coarse sand; single grain (structureless); loose; few fine roots and very few medium roots; strongly acid; boundary clear and wavy.

C_3 42 to 55 inches, brownish-yellow (10YR 6/6) coarse sand with many, coarse, distinct, very pale brown (10YR 8/3) mottles; single grain (structureless); loose; few fine root channels filled with gray (10YR 5/1) sand; strongly acid; boundary gradual and wavy.

C_4 55 to 74 inches, very pale brown (10YR 8/3) coarse sand with common, fine, distinct, brownish-yellow (10YR 6/6) mottles; single grain (structureless); loose; very few fine root channels filled with gray (10YR 5/1) sand; strongly acid; boundary gradual and wavy.

D 74 to 82 inches, mottled light-gray (10YR 7/1), yellow (10YR 7/8), strong-brown (7.5YR 5/8), and red (2.5YR 5/8) light sandy clay loam; weak, medium, subangular blocky structure that breaks readily to moderate, medium, crumb structure; friable; few fine root channels; few small pebbles of quartz; strongly acid.

The surface layer ranges from 2 to 3 inches in thickness and from dark gray to grayish brown in color. The subsurface layer is gray to pale brown and 2 to 4 inches thick. The top 2 to 6 inches of the subsoil is normally light yellowish brown. Below this the subsoil normally ranges from yellow to yellowish brown and is generally pale brown to very pale brown at depths of 50 to 56 inches.

Included with this soil are a few small areas of fine sand and sand. The depth to finer textured material is generally more than 72 inches, but in some areas this material is at depths of 60 to 72 inches. Mottles normally are at depths below 42 inches. In most places, the water table is at depths of about 84 to 94 inches.

This well-drained soil has very poor tilth. It is very low in organic matter, water-holding capacity, and natural fertility. The cation-exchange capacity is very low, and the permeability is very rapid.

Most areas of this soil are large and uniform, but they are poorly suited to cultivation. Improved pastures of bahiagrass are fairly productive, but this soil is too droughty to produce good yields of most other pasture plants grown in the area. It is best suited as woodland and habitats for wildlife. Capability unit IVse–2.

Lakeland coarse sand, 5 to 12 percent slopes (LaD).—This soil is more strongly sloping than Lakeland coarse sand, 0 to 5 percent slopes, but it is similar in most other characteristics. A few small areas are included where there are many shallow gullies and a few deep ones. In many areas where the slopes range from 8 to 12 percent, the finer textured material is at depths of 60 to 72 inches.

This soil generally occurs in relatively large areas on long, narrow slopes adjacent to drainageways. It is too steep, too droughty, and too low in natural fertility for cultivation. If carefully managed, it has fair to good yields of grass in improved pastures. Most areas remain in woods and are moderately well suited to pine trees. Capability unit VIse–1.

Lakeland coarse sand, excessively drained, 0 to 5 percent slopes (LcB).—This soil is more droughty than Lakeland coarse sand, 0 to 5 percent slopes. The water table and finer textured materials are at depths of more than 10 feet and, in most places, are at depths of more than 16 feet. Mottling in the subsoil is at a greater depth than in the Lakeland coarse sand, 0 to 5 percent slopes. The surface soil contains very little organic matter. This soil has very low capacity for retaining plant nutrients, very low capacity for holding available moisture, and very low natural fertility.

This soil is in fairly large, uniform areas, but it is poorly suited to cultivation. It is too droughty for most pasture plants but is fairly well suited to lovegrass, bahiagrass, and other drought-resistant grasses. It is best suited to woodland and wildlife habitats. Most of the soil is wooded. The trees are mainly blackjack oak and turkey oak, and there are a few longleaf pines. Pine trees grow slowly. Capability unit IVse–2.

Lakeland coarse sand, excessively drained, 5 to 12 percent slopes (LcD).—This soil (fig. 12) is more strongly sloping than Lakeland coarse sand, excessively drained, 0 to 5 percent slopes. A few small areas of Eustis soils are included in this mapping unit.

This soil is in relatively large areas on sloping to strongly sloping hillsides that are adjacent to narrow drainageways. Because of its strong slopes, droughtiness, low fertility, and poor tilth, it is not suited to cultivated crops. Fair to good yields of bahiagrass and lovegrass can be

Figure 12.—**Lakeland coarse sand, excessively drained, 5 to 12 percent slopes.**

grown if large amounts of fertilizer are applied and the soil is otherwise well managed. Though pine trees grow slowly and their natural reproduction is poor, this soil is best suited to woodland and wildlife habitats. Capability unit VIse–1.

Lakeland sand, 0 to 5 percent slopes (LnB).—This soil has a water table and finer textured material that are somewhat closer to the surface than in Lakeland coarse sand, 0 to 5 percent slopes. The depth to the finer textured material normally ranges from 60 to 72 inches, but in a few areas this depth is 48 to 60 inches. Mottling is usually nearer the surface than in the coarse sand. The available moisture-holding capacity, content of organic matter, and natural fertility are slightly higher. Only a few areas are eroded by water or wind. Included with this soil are a few small areas of fine sand.

This soil is in large, uniform areas. It is associated with soils that are somewhat similar to it. Tilth is poor, and the available moisture-holding capacity is low. This soil is low in fertility and responds only fairly well to fertilizer. Its use for cultivated crops is limited to corn and a few other crops. It is moderately well suited to improved pasture of bahiagrass. Woodland and wildlife habitats are the best uses. Capability unit IIIse–2.

Lakeland sand, 5 to 12 percent slopes (LnD).—This soil is on stronger slopes than Lakeland coarse sand, 0 to 5 percent slopes. Its water table and finer textured material are nearer the surface than in that soil. The depth to the finer textured material generally ranges from 60 to 72 inches, but in a few areas this depth is 48 to 60 inches. The available moisture-holding capacity, content of organic matter and natural fertility are slightly higher in this soil than in the coarse sand. A few widely scattered areas have moderate sheet erosion, and a few areas have a few deep gullies or many shallow ones. Bare fields are susceptible to wind erosion. Included are a few small severely eroded areas that have many deep gullies.

This soil is not suited to cultivated crops and is only fairly well suited to improved pasture of bahiagrass. It is in areas of various sizes along with other poor agricultural soils. It is susceptible to erosion, low in fertility, poor in tilth, and droughty. This soil is best suited to woodland and wildlife habitats. Capability unit VIse–1.

Lakeland loamy sand, shallow, 2 to 5 percent slopes (LeB).—This well-drained soil is on uplands. The loamy sand extends to depths of 30 to 42 inches.

Profile in a gently sloping, undisturbed area where the vegetation is chiefly live oak, longleaf pine, turkey oak, dogfennel, and wiregrass (*location:* SW¼NE¼ sec. 36, R. 5 W., T. 3 N.):

A_{11} 0 to 4 inches, gray (10YR 5/1) loamy sand; single grain (structureless); loose; medium content of organic matter; many small roots and few small root channels; strongly acid; boundary clear and smooth.

A_{12} 4 to 9 inches, gray (10YR 6/1) loamy sand; single grain (structureless); loose; many small roots and few root channels; strongly acid; boundary clear and wavy.

C_1 9 to 20 inches, light yellowish-brown (10YR 6/4) loamy sand; single grain (structureless); loose; many small roots with few root channels; strongly acid; boundary clear and wavy.

C_2 20 to 37 inches, yellow (10YR 7/6) loamy sand; single grain (structureless); loose; common small roots; strongly acid; boundary gradual and irregular.

D_1 37 to 41 inches, yellow (10YR 7/8) sandy loam; weak, medium, crumb structure; very friable; strongly acid; boundary gradual and wavy.

D_2 41 to 63 inches, brownish-yellow (10YR 6/8) sandy clay loam; moderate, medium, crumb structure; friable; few, small, soft and hard concretions of iron; strongly acid; boundary gradual and wavy.

D_3 63 to 72 inches +, yellow (10YR 7/8) fine sandy clay loam with common, medium, distinct, strong-brown (7.5YR 5/8) mottles and few, fine, faint, very pale brown (10YR 8/4) mottles; moderate, medium, crumb structure; friable; few soft to hard concretions of iron; strongly acid.

The surface layer ranges from dark gray to gray in color and from 2 to 5 inches in thickness. The subsurface layer ranges from gray to grayish brown in color and from 3 to 6 inches in thickness. The subsoil is yellow to yellowish brown. Its texture ranges from loamy sand to loamy fine sand but is mainly loamy sand. It is underlain by a finer textured D horizon at depths ranging from 30 to 42 inches. The D horizon is yellow to yellowish brown and is normally mottled at depths below 42 inches. In some areas many small and medium iron pebbles occur throughout the profile.

Included with this soil are moderately eroded areas that have many shallow gullies or a few deep ones. Also included are areas of loamy sand.

This soil has a deep root zone. Water moves rapidly through the soil and rapidly leaches plant nutrients. The content of organic matter normally is medium, but the organic matter deteriorates rapidly. The available moisture-holding capacity is low. This soil has rapid permeability. The permeability of the underlying materials is generally moderately rapid.

This soil is on gentle slopes among soils somewhat similar to it. It is only moderately well suited to most general crops in the county. Corn, small grains, and peanuts are the most suitable crops. This soil is well suited to bahiagrass in pasture, to woodland, and to habitats for wildlife. Capability unit IIIse–1.

Lakeland loamy sand, shallow, 0 to 2 percent slopes (LeA).—This soil is more nearly level than Lakeland loamy sand, shallow, 2 to 5 percent slopes. Bare fields may be eroded by wind, but the hazard of erosion by water is slight.

This soil is generally in small areas, but a few areas are large and are suited to a good field layout. This soil is only moderately suited to corn, peanuts, small grains, and other tilled crops. It is well suited to bermudagrass, bahiagrass, and other deep-rooted pasture plants, as well as to woodland and wildlife habitats. Capability unit IIIse–1.

Lakeland loamy sand, shallow, 5 to 8 percent slopes (LmC).—This soil is more strongly sloping than Lakeland loamy sand, shallow, 2 to 5 percent slopes. A few small eroded areas are included that have many shallow gullies and a few deep ones. A few areas are on slopes of 8 to 12 percent.

This soil is generally in small areas. It is susceptible to erosion. It is only moderately well suited to corn, small grains, and a few other general crops. Pasture grows well if the plants are bahiagrass or other deep-rooted grasses. This soil is well suited to woodland and to habitats for wildlife. Capability unit IVse–1.

Lakeland loamy sand, 0 to 5 percent slopes (LdB).—This soil is more nearly level than Lakeland loamy sand, shallow, 2 to 5 percent slopes. The loamy sand also extends deeper in the profile, commonly to depths of more

than 42 inches. The surface layer is about the same thickness as that in the shallower soil, but the coarser textured subsurface layer is thicker. Because of this coarser textured material, water moves more rapidly through the root zone and causes rapid leaching. The cation-exchange capacity and the available water-holding capacity are lower in this soil than in the shallower soil. Large bare fields may be eroded by the wind, but the hazard of erosion by water is slight.

Most of this soil is in areas that are well suited to a good field layout, but the soil is only moderately well suited to corn, small grains, and other tilled crops. If fertilizer and lime are applied, bahiagrass and other deep-rooted grasses grow well. This soil is well suited to woodland and to habitats for wildlife. Capability unit IIIse–1.

Lakeland loamy sand, 5 to 12 percent slopes (LdD).—This soil is more strongly sloping than Lakeland loamy sand, 0 to 5 percent slopes. Included with it are a few, scattered, moderately eroded areas.

This soil has low fertility, low available moisture-holding capacity, and moderate erosion hazard. It is moderately well suited to occasional cultivation of corn, small grains, and other tilled crops. It is suited to pasture planted to bahiagrass or other deep-rooted grasses. This soil is well suited to woodland and to habitats for wildlife. Capability unit IVse–1.

Lakeland and Eustis sands, 12 to 50 percent slopes (LsF).—This mapping unit consists mainly of Lakeland and Eustis soils that have a sand to loamy sand surface layer. These soils were mapped as one unit because they occur together in such intricate patterns that it is not feasible to separate them on the soil map. The percentage of the Lakeland soils and the Eustis soils in the mapping unit varies from place to place, but generally it is 60 to 70 percent Lakeland soils and 30 to 40 percent Eustis soils. A few small areas of Blanton soils are also included.

A profile of a soil in each series is described in a soil description in the respective series.

These soils are on moderately steep and steep hillsides along drainageways. Included are small areas that have slopes of 8 to 12 percent and small areas with slopes of 50 to 65 percent. A few areas are moderately eroded and have many shallow gullies or a few deep ones.

The native vegetation consists mainly of oaks, pines, shrubs, and wiregrass. All the acreage, which is small, is in native vegetation.

Surface runoff and internal drainage are rapid. The natural fertility, cation-exchange capacity, and available moisture-holding capacity are low.

This mapping unit is in large areas on long, narrow, steep slopes. It is suited as woodland and makes a good habitat for wildlife. Capability unit VIIes–1.

Lakeland-Eustis-Cuthbert complex, 5 to 8 percent slopes (LtC).—This mapping unit is scattered throughout most of the county but is mainly in the western part. It consists dominantly of Lakeland, Eustis, and Cuthbert soils. These soils occur in an intricate pattern, and it is not feasible to separate them on a map of the scale used. The percentage of the soils in each series varies from place to place. Generally it is 45 to 55 percent Lakeland soils, 25 to 35 percent Eustis soils, and 20 to 30 percent Cuthbert soils. Faceville, Shubuta, and Ruston soils occur in this mapping unit but in much smaller areas than the main soils. A few areas of Blanton soils that are too small to map also occur.

For a description of a profile of the main soils in this complex, turn to the part of this section that describes those series.

These soils are on sloping hillsides along drainageways. Their surface layer ranges from loamy sand to sandy loam but in most areas is loamy sand. Cleared areas of these soils are generally slightly eroded, but some small areas are moderately eroded. Included are small areas with slopes of 8 to 12 percent.

The native vegetation on these soils consists mainly of longleaf pine, turkey, blackjack, and red oaks, hickory, low shrubs, and wiregrass. Most of the acreage is still in native vegetation, but some areas are cleared and pastured.

Surface runoff is normally rapid, and the internal drainage is rapid to slow. The natural fertility, cation-exchange capacity, and available moisture-holding capacity are low.

This mapping unit is in large and small areas that are generally rough and highly dissected. It is moderately well suited to general crops and to improved pasture of bahiagrass. It is best suited as woodland and as habitats for wildlife. Capability unit IVes–2.

Lakeland-Eustis-Cuthbert complex, 8 to 12 percent slopes, (LtD).—This mapping unit is more strongly sloping than Lakeland-Eustis-Cuthbert complex, 5 to 8 percent slopes. Most cleared areas have moderate sheet erosion, or many shallow gullies and a few deep ones. A few areas are severely eroded.

This mapping unit is too strongly sloping and erodible for cultivation. It is on highly dissected hillsides and is low in fertility and available moisture-holding capacity. Improved pasture of bahiagrass is a moderately good use, but the best uses are woodland and wildlife habitats. Capability unit VIes–1.

Lakeland-Eustis-Cuthbert complex, 12 to 45 percent slopes (LtF)—This mapping unit is steeper than Lakeland-Eustis-Cuthbert complex, 5 to 8 percent slopes, and much more susceptible to erosion. Some areas have moderate sheet erosion, or a few deep gullies and many shallow ones. A few areas are severely eroded. Included in this unit are some areas with slopes of 45 to 65 percent.

This mapping unit is highly dissected and is not suited to tilled crops or pasture. It is best suited as woodland and makes a good habitat for wildlife. Capability unit VIIes–1.

Leaf series

In the Leaf series are poorly drained, strongly acid soils that are on stream terraces in nearly level areas. These soils have a small total acreage that is mostly along the Ochlockonee River. A few small areas are along other large streams. These soils formed from fine-textured sediments that washed from acid soils on the Coastal Plain uplands.

Leaf soils have very dark gray to gray, very fine sandy loam or fine sandy loam surface layers, 7 to 12 inches thick. From the surface layers, the transition is abrupt to a plastic, fine sandy clay to clay subsoil. The subsoil is gray, distinctly mottled with yellow, yellowish red, strong brown, reddish yellow and red. Underlying the subsoil is distinctly mottled sandy clay to clay parent material.

Leaf soils are closely associated on terraces with Myatt, Kalmia, and Izagora soils. They are finer textured than the Myatt soils. They are finer textured and less well

drained than the Kalmia soils and are more intensely mottled. They are more poorly drained and less friable than the Izagora soils and have less textural development. Their gray subsoil differs in color from that in the Izagora soils, which is yellow to light yellowish brown.

The native vegetation is chiefly blackgum, cypress, water oaks, and shrubs. These soils are not suited to cultivation and remain in native vegetation.

Excessive water is in the profile and is difficult to remove. Periodic flooding is likely. Leaf soils are moderately permeable in the surface soil and are very slowly permeable in the subsoil. Surface runoff and internal drainage are very slow.

Leaf very fine sandy loam is the only soil in the Leaf series mapped in Gadsden County.

Leaf very fine sandy loam (Lv).—This is a poorly drained soil on terraces along streams. It has very fine sandy loam surface layers and a gray, plastic clayey subsoil.

Profile in a nearly level, undisturbed area where the vegetation is blackgum, cypress, and sweetgum (*location:* NE¼SE¼ sec. 24, R. 2 W., T. 2 N.):

A_{11} 0 to 3 inches, very dark gray (10YR 3/1) very fine sandy loam; moderate, medium, crumb structure; very friable; high content of organic matter; common fine roots; strongly acid; boundary abrupt and smooth.

A_{12} 3 to 10 inches, dark-gray (10YR 4/1) very fine sandy loam; moderate, medium, crumb structure; very friable; common fine roots; few fine pores; strongly acid; boundary abrupt and smooth.

B_{1g} 10 to 19 inches, gray (10YR 5/1) fine sandy clay with common, fine, distinct, reddish-yellow (7.5YR 6/8) mottles and few, fine, distinct, strong-brown (7.5YR 5/6) mottles; massive (structureless); firm when moist, plastic when wet, and hard when dry; very few fine roots and root channels; strongly acid; boundary clear and wavy.

B_{2g} 19 to 32 inches, gray (10YR 5/1) fine sandy clay with common, medium, distinct, brownish-yellow (10YR 6/8) mottles and common, fine, prominent, yellowish-red (5YR 5/8) mottles; massive (structureless); firm; plastic when wet, hard when dry; strongly acid; boundary gradual and wavy.

C_{1g} 32 to 40 inches, light-gray (10YR 7/1) fine sandy clay with few, fine, prominent, yellowish-red (5YR 5/8) mottles, few, medium, distinct, brownish-yellow (10YR 6/8) mottles, and few, fine, distinct streaks of gray (10YR 5/1); massive (structureless); firm when moist, plastic when wet, and hard when dry; strongly acid; boundary gradual and wavy.

C_{2g} 40 to 58 inches +, light-gray (10YR 7/1) sandy clay loam with few, fine, distinct, yellow (10YR 8/6) mottles; moderate, medium, subangular blocky structure; friable when moist, slightly sticky when wet; strongly acid.

The surface layer of this soil ranges from 3 to 6 inches in thickness. It is gray to very dark gray, mainly gray. In a few small areas, a very thin layer of organic matter is on the surface. The subsoil is gray with mottles of various shades of brown, red, and yellow. The texture of the subsoil ranges from fine sandy clay to clay. It is plastic to very plastic when wet, firm when moist, and hard when dry. In some places this fine-textured subsoil grades to slightly coarser textured materials at depths of about 40 inches.

Included within this soil are a few small areas that have a surface layer of heavy fine sandy clay or fine sandy loam. This soil has a shallow poorly aerated root zone. The content of organic matter is medium, and the natural fertility is moderate to low.

This soil is poorly suited to tilled crops, and it occurs with other soils that also are poorly suited. Its surface layer is thin, and the plastic clay subsoil is difficult to till. If drained, this soil is well suited to pasture of clovers and and grasses. Pine trees grow moderately well, particularly on drained areas. Capability unit Vws–1.

Leon series

In the Leon series are deep, somewhat poorly drained to poorly drained, strongly acid to very strongly acid soils. These soils occur on uplands in nearly level areas. They have a small total acreage that is mostly in the southwestern part of the county. These soils formed from moderately thick beds of acid sand and loamy sand.

Leon soils have a gray to dark-gray sand surface layer, 3 to 7 inches thick. The surface soil grades to a subsurface layer of light-gray sand, 6 to 12 inches thick. At depths of 14 to 30 inches, this material is abruptly transitional to a dark-brown, dark reddish-brown, or black pan layer. The layer is weakly cemented and stained dark by organic matter. It is underlain by brown to light-gray sand to depths of 42 inches or more.

Leon soils are associated with the Plummer, Rutlege, and Blanton soils. They are better drained than the Plummer and Rutlege soils but are more poorly drained than Blanton soils. They do not have a thick, black surface layer like that in the Rutlege soils. The dark-brown pan layer in the Leon soils is missing in the Blanton, Plummer, and Rutlege soils.

The native vegetation consists mainly of turkey oaks, runner oaks, sparse stands of longleaf and slash pines, palmetto, and wiregrass. All the acreage of Leon soils is still in native vegetation.

Leon soils have slow surface runoff and slow internal drainage. Normally, the water table fluctuates in the upper part of the profile. Because they are coarse textured, these soils do not retain plant nutrients well; their natural fertility is low.

Leon sand is the only soil in the Leon series mapped in Gadsden County.

Leon sand (0 to 2 percent slopes) (Lw).—This somewhat poorly drained, nearly level, sandy soil is on uplands. At depths of 14 to 30 inches, it has a weakly cemented pan layer that is stained with organic matter.

Profile in a nearly level, undisturbed area where the vegetation is mainly palmetto, runner oak, longleaf pine, myrtle, and sparse wiregrass (*location:* SW¼NE¼ sec. 10, R. 5 W., T. 1 N.):

A_1 0 to 6 inches, gray (10YR 5/1) sand; single grain (structureless); loose; common fine and medium roots; low content of organic matter; strongly acid; boundary clear and smooth.

A_2 6 to 18 inches, light-gray (10YR 7/1) sand; single grain (structureless); loose; common fine and medium roots; strongly acid; boundary clear and wavy.

B_{2h} 18 to 24 inches, dark reddish-brown (5YR 3/2) sand; single grain (structureless); very friable; weakly cemented pan stained with organic matter; very strongly acid; boundary gradual and wavy.

B_{3h} 24 to 30 inches, reddish-brown (5YR 4/3) sand; single grain (structureless); loose; very few medium roots; very strongly acid; boundary gradual and wavy.

C_1 30 to 36 inches, brown (10YR 5/3) sand; single grain (structureless); loose; very strongly acid; boundary gradual and wavy.

C_{2g} 36 to 48 inches +, light-gray (10YR 7/1) sand; single grain (structureless); loose; strongly acid.

The surface layer of this soil ranges from 3 to 6 inches in thickness. It is mainly gray but ranges from gray to

dark gray. The subsurface layer is light gray and is 6 to 12 inches thick. In some areas a dark grayish-brown to grayish-brown layer (B_1 horizon), 2 to 6 inches thick, is between the light-gray subsurface layer and the pan layer. The texture ranges from sand to coarse sand but is sand in most places. The pan layer generally is at depths of 14 to 30 inches. It is normally weakly cemented, but the degree of cementation varies greatly within short distances. Compaction also varies. In places, especially where this soil grades to other soils, there is a strongly stained layer instead of a pan layer. The color of the pan layer ranges from dark brown or dark reddish brown to black but is predominantly dark reddish brown. Included with this soil are a few small areas that have better drainage, a lighter color, and a deeper pan than the soil described.

This soil is poorly suited to most cultivated crops. It is fairly well suited to deep-rooting row crops that tolerate a fluctuating water table. It is in small areas surrounded by other soils that are poorly suited to crops. Yields are low unless practices of soil improvement are intense. This soil is well suited to pasture of bahiagrass, to trees, and to wildlife habitats. Capability unit IVsw-1.

Lynchburg series

The Lynchburg series consists of deep, somewhat poorly drained, strongly acid soils that are on uplands in nearly level to gently sloping areas. They have a small total acreage that is distributed through all parts of the county except the extreme southern part. They developed from thick beds of acid sandy loam and sandy clay loam.

Lynchburg soils have gray to very dark gray loamy fine sand to loamy sand surface layers. The subsoil (B horizon) is normally at a depth of about 18 inches. It is very pale brown to light gray, friable fine sandy loam to fine sandy clay loam mottled with yellow, brown, and red. It grades gradually to light gray, highly mottled fine sandy clay loam parent material.

Lynchburg soils are associated with the Norfolk, Goldsboro, Rains, Klej, and Plummer soils. They are less well drained than the Norfolk, Goldsboro, and Klej soils; somewhat better drained than the Rains soils; and better drained than the Plummer soils. Their subsoil is lighter colored than the upper part of the subsoil in Goldsboro soils. It is more yellow and less gray than that in the Rains soils. Lynchburg soils are finer textured in the subsoil than the Klej soils and finer textured throughout the profile than the Plummer soils.

The native vegetation consists mainly of longleaf and slash pines, hickory, various oaks, sweetgum, gallberry, low shrubs, and native grasses. Most of the acreage is in forest, but some is cleared and in pasture. A few small areas are in corn and small grains.

Lynchburg soils have slow surface runoff and slow internal drainage. Permeability is moderately rapid to rapid in the surface soil and moderate in the subsoil. Aeration is poor because the water table is normally high and rises to the surface in wet periods. In drier periods the soil above the water table is moderately well aerated. These soils have moderate natural fertility.

Lynchburg loamy fine sand, 0 to 2 percent slopes (LyA).—This somewhat poorly drained, deep, nearly level soil is on uplands. It has a friable, moderately fine textured subsoil.

Profile in a nearly level, undisturbed area where the vegetation is mainly gallberry, slash pine, wiregrass, and briars (*location:* SW¼NE¼ sec. 26, R. 5 W., T. 2 N.):

A_1 0 to 4 inches, dark-gray (10YR 4/1) loamy fine sand; weak, medium, crumb structure; very friable; medium in organic matter; common fine and few medium roots; few fine root channels; strongly acid; boundary abrupt and smooth.

A_2 4 to 7 inches, gray (10YR 5/1) loamy fine sand; weak, fine, crumb structure; very friable; common fine and medium roots and root channels; strongly acid; boundary clear and smooth.

B_1 7 to 15 inches, very pale brown (10YR 8/3) fine sandy loam with few, fine, distinct, yellow (10YR 7/8) mottles; weak, medium, crumb structure; very friable; common fine and few medium roots and root channels; some channels filled with gray (10YR 5/1) material from horizon above; strongly acid; boundary clear and wavy.

B_2 15 to 28 inches, very pale brown (10YR 8/3), light fine sandy clay loam with common, medium, distinct, yellow (10YR 7/8) mottles; mostly weak, medium, crumb structure but some weak, fine, subangular blocky structure; friable; few fine to medium roots and root channels; strongly acid; boundary clear and wavy.

B_3 28 to 32 inches, gray (10YR 6/1), light fine sandy clay loam with few, large, distinct, yellow (10YR 8/6) mottles; few, medium, prominent, firm, yellowish-red (5YR 5/8) concretions; weak, fine, subangular blocky structure; friable when moist and slightly sticky when wet; strongly acid; boundary gradual and wavy.

C_{1g} 32 to 47 inches, light-gray (10YR 7/1) fine sandy clay loam with few, medium, distinct, strong-brown (7.5YR 5/8) mottles and few, medium, prominent, yellowish-red (5YR 5/8) mottles; weak, fine and medium, subangular blocky structure; slightly sticky when wet and friable when moist; strongly acid; boundary gradual and wavy.

C_{2g} 47 to 54 inches, light-gray (10YR 7/1) fine sandy clay loam with common, medium, distinct, yellow (10YR 8/6) mottles; common, medium, prominent, very firm, yellowish-red (5YR 5/8) concretions and few, medium, prominent, firm, red (2.5YR 4/8) concretions; moderate, medium, angular and subangular blocky structure; friable when moist and slightly sticky when wet; strongly acid.

The surface layer ranges from dark gray to gray in color and from 2 to 7 inches in thickness. In a few areas it is very dark gray. The subsurface layer is gray to light grayish brown and 4 to 8 inches thick. The depth to the finer textured subsoil ranges from 7 to 30 inches but in most places is about 18 inches. The subsoil is generally light fine sandy clay loam, but in some areas it ranges from fine sandy loam to fine sandy clay loam. It is normally very pale brown and is mottled brown and gray in the upper part. The lower part is more grayish in color than the upper part and more distinctly mottled below a depth of 30 inches.

Included with this soil are a few small areas that are more poorly drained than normal. In these areas the soil profile is similar to that in the Rains soils.

This soil is rapidly permeable in the surface layers and moderately permeable in the subsoil. It has a high capacity for holding available moisture. The content of organic matter is medium.

Much of this soil is in small areas or in long, narrow bands adjacent to poorly drained soils along drainageways. These small areas are poorly suited to cultivation. The larger areas that can be drained and otherwise well managed are suited to most general crops. This soil is well suited to improved pastures of local grasses and clo-

vers, including whiteclover. It is well suited as woodland and makes a good habitat for wildlife. Capability unit IIIws–1.

Lynchburg loamy fine sand, 2 to 5 percent slopes (LyB).—This soil has stronger slopes and more rapid runoff than Lynchburg loamy fine sand, 0 to 2 percent slopes. Its subsoil is slightly thicker than in that soil and is pale brown instead of very pale brown and less strongly mottled. The water table is at a slightly greater depth than in Lynchburg loamy fine sand, 0 to 2 percent slopes.

This soil is in narrow bands around small depressions or is in long, narrow areas adjacent to poorly drained soils along streams. Few areas are favorably located for cultivation. Because this soil is somewhat poorly drained, it is best suited to crops that tolerate wetness. If properly drained, however, most general crops can be grown. This soil is well suited to improved pasture of bahiagrass and clovers and as woodland and habitats for wildlife. Capability unit IIIws–1.

Lynchburg loamy sand, thick surface, 0 to 2 percent slopes (LzA).—This soil has coarser textured, much thicker surface layers than Lynchburg loamy fine sand, 0 to 2 percent slopes. These layers are generally 18 to 30 inches thick but in some places are slightly thicker. The surface soil is normally about the same thickness as that in the loamy fine sand, but the sandy subsurface soil is much thicker in most places. The water table is only a few inches from the surface during wet season. Leaching is more rapid than in Lynchburg loamy fine sand, 0 to 2 percent slopes, and natural fertility and cation-exchange capacity are lower.

When intensively managed, this soil is well suited to cultivated crops. It is well suited to improved pasture of bahiagrass, as woodland, and to wildlife habitats. Capability unit IIIws–1.

Lynchburg loamy sand, thick surface, 2 to 5 percent slopes (LzB).—This soil has stronger slopes than Lynchburg loamy fine sand, 0 to 2 percent slopes, and thicker, coarser textured surface layers. The surface layers are 18 to 30 inches thick in most places, but, in a few small areas they are thicker than 30 inches. The surface soil has about the same thickness as that in Lynchburg loamy fine sand, 0 to 2 percent slopes, but the sandy subsurface soil is thicker. In many areas this soil has a pale-brown subsoil that is slightly thicker and less intensely mottled than that in the loamy fine sand. Leaching is more rapid in this soil than in the loamy fine sand, and mottles are more numerous. The natural fertility and the capacity for holding available moisture are lower in this soil.

This soil is in small depressions and in small, narrow areas adjacent to streams. It is best suited to crops that tolerate wetness but is fairly well suited to other cultivated crops if properly drained and otherwise well managed. It is moderately well suited to improved pasture, to woodland, and to wildlife habitats. Capability unit IIIws–1.

Made land

This miscellaneous land type is in areas where the soil conditions have been changed by soil-moving machinery.

Made land (Ma).—This land is in areas where geologic materials are exposed in cuts and where materials have been hauled into fills and leveled. Included with this unit are areas where the overburden on fuller's earth has been brought in and leveled.

Magnolia series

The Magnolia series consists of deep, well-drained, strongly acid soils that are on uplands in nearly level to strongly sloping areas. These soils have a small total acreage that is in intricate patterns with other well-drained soils in the central and west-central parts of the county. Small areas are scattered throughout the county except the southern part. These soils developed from thick beds of acid sandy clay and heavy sandy clay loam.

Magnolia soils have dark-gray to dark-brown loamy fine sand to fine sandy loam surface layers not more than 18 inches thick. The surface layers grade abruptly to a subsoil of red, friable, heavy fine sandy clay loam or fine sandy clay. The subsoil grades gradually to a thick bed of prominently mottled sandy clay or heavy sandy clay loam parent material.

Magnolia soils are closely associated with Red Bay, Ruston, Orangeburg, Carnegie, and Faceville soils. They are similar to the Orangeburg soils in color. They are less permeable in the surface layers than the Orangeburg soils and are finer textured, firmer, and less permeable in the subsoil. They have a less gradual transition from the surface layers to the subsoil than the Orangeburg soils. Magnolia soils have lighter brown surface layers than the Red Bay soils and, in most places, a lighter red and finer textured subsoil. In texture they are similar to the Faceville and Carnegie soils in most places but are redder in the subsoil. They are less friable, finer textured, and redder in the subsoil than the Ruston soils and have a more rapid transition in texture from the surface soil to the subsoil.

The native vegetation was chiefly longleaf pine, shrubs, and wiregrass but is now mainly longleaf and loblolly pines, various oaks, hickory, dogwood, low shrubs, and wiregrass. But most of the acreage is cleared and is in shade tobacco, corn, small grains, peanuts, and pasture.

Magnolia soils have medium surface runoff and medium internal drainage. Permeability is moderately rapid in the surface soil and moderately slow in the subsoil. Tilth is good. These soils are well aerated and have a high to moderately high capacity for holding available moisture. They retain plant nutrients and respond well to fertilizers.

Magnolia loamy fine sand, 2 to 5 percent slopes, eroded (MgB2).—This is a deep, well-drained soil on uplands. It has a friable, red, moderately fine textured subsoil.

Profile in a gently sloping, cultivated area that is moderately eroded (*location:* NW¼NE¼ sec. 8, 1R. 2 W., T. 2 N.):

- A_p 0 to 6 inches, dark-brown (10YR 4/3) loamy fine sand; moderate, medium, crumb structure; very friable; many fine roots; medium content of organic matter; strongly acid; boundary abrupt and smooth.
- A_3 6 to 8 inches, dark-brown (7.5YR 4/4) fine sandy loam; moderate, medium, crumb structure; very friable; many fine roots; strongly acid; boundary clear and wavy.
- B_1 8 to 12 inches, red (2.5YR 4/8) fine sandy clay loam; moderate, fine, subangular blocky structure that breaks readily into moderate, medium, crumb structure; friable; many fine roots and few fine root channels; few fine pores; strongly acid; boundary clear and wavy.
- B_2 12 to 48 inches, red (10R 4/8), heavy fine sandy clay loam; moderate, medium, angular and subangular blocky structure; slightly firm; common fine roots and few fine root channels; common fine pores; strongly acid; boundary gradual and irregular.

B_1 48 to 100 inches, red (10R 4/8), heavy fine sandy clay loam; moderate, medium, angular and subangular blocky structure; friable to firm; common fine pores; strongly acid; boundary gradual and wavy.

C_1 100 to 128 inches, red (10R 4/8) fine sandy clay loam with common, medium, prominent, yellow (10YR 7/6) mottles; moderate, fine, angular and subangular blocky structure; friable; few fine pores; strongly acid; boundary gradual and irregular.

C_2 128 to 168 inches +, red (10R 4/8) fine sandy clay loam with few, medium, prominent, white (10YR 8/1) mottles, many, medium, prominent, brownish-yellow (10YR 6/6) mottles, and few, medium, prominent, gray (10YR 6/1) mottles; moderate, fine, angular and subangular blocky structure; friable; strongly acid.

Most of the erosion is sheet erosion. Such eroded areas have surface layers 3 to 10 inches thick. Some areas have a few deep gullies or many shallow ones. Between the gullies the surface layers are 10 to 18 inches thick. The surface layers are grayish brown to dark brown except in a few areas where the subsoil is exposed. Here they are reddish brown. The subsoil ranges from heavy fine sandy clay loam to fine sandy clay in texture and is friable or firm in consistence. Mottles are normally at depths of 48 inches but may be as shallow as 44 inches or as deep as 72 inches or more.

Included with this soil are a few small areas that have a fine sandy loam surface layer. Some areas have a dark-red subsoil.

This soil has a deep root zone and good aeration through most of the subsoil. It is moderately high in organic matter and is loamy enough to have good tilth. The available moisture-holding capacity of the surface layers is moderate and that of the subsoil is high. Permeability is moderate in the surface layers and moderately slow in the subsoil. The sand has a moderately high cation-exchange capacity and responds well to fertilizers.

This soil is well suited to all locally grown general crops. It is especially well suited to shade tobacco if erosion is controlled. It occurs among other good soils, and most of it is in cultivated crops. This soil is well suited to improved pasture of all locally grown pasture plants, including whiteclover. It is also suitable as woodland and as wildlife habitats. Capability unit IIe–2.

Magnolia loamy fine sand, 0 to 2 percent slopes (MgA).—This soil is more nearly level than Magnolia loamy fine sand, 2 to 5 percent slopes, eroded, and, therefore, has slower runoff and is less susceptible to erosion. It is thicker and less brown in the surface soil than the eroded soil. The depth to the moderately fine textured subsoil ranges from 10 to 18 inches.

This soil is well suited to all general crops grown in the area. It is one of the better soils for shade tobacco. It is in large areas with other productive soils and can be managed with them in a good field layout. Most of this soil is cleared and in cultivated crops. It is well suited to improved pastures and supplies enough moisture to grow whiteclover. Capability unit I–2.

Magnolia loamy fine sand, 0 to 2 percent, eroded (MgA2).—This soil is more nearly level than Magnolia loamy fine sand, 2 to 5 percent slopes, eroded, and is less brown in the surface layers. It is well suited to shade tobacco and to all other crops grown in the county. Much of this soil is in shade tobacco. These areas are cultivated and irrigated frequently. Because the soil in these areas is loose and moist, runoff after rains and erosion are greater than in other areas. This soil occurs among other productive soils and can be managed with them in a good field layout. It is well suited to pasture. Capability unit IIe–2.

Magnolia loamy fine sand, 2 to 5 percent slopes (MgB).—This soil is less severely eroded than Magnolia loamy fine sand, 2 to 5 percent, eroded, and is thicker in the surface layers. The surface layers are 10 to 18 inches thick. Surface runoff and internal drainage are medium. This soil is one of the best soils in the county for growing shade tobacco. It occurs among other productive soils and can be managed with them in a good field layout. It is well suited to pasture and woodland. Capability unit IIe–2.

Magnolia loamy fine sand, 5 to 8 percent slopes (MgC).—This soil has stronger slopes and thicker surface layers than Magnolia loamy fine sand, 2 to 5 percent slopes, eroded. It is less eroded than that soil but, because it has stronger slopes and more rapid runoff, is more susceptible to erosion. The surface layers range from 10 to 18 inches in thickness; they are less than 15 inches thick in most places. This soil has good tilth, a deep root zone, and moderately high moisture-holding capacity. It is fairly well suited to all general crops grown in the county. Because it has a high hazard of erosion, this soil should not be cultivated intensively. It is well suited to all locally grown pasture plants as well as to trees and to wildlife habitats. Capability unit IIIe–2.

Magnolia loamy fine sand, 5 to 8 percent slopes, eroded (MgC2).—This soil has stronger slopes than Magnolia loamy fine sand, 2 to 5 percent slopes, eroded. In some areas it is mottled nearer the surface than that soil. In these areas the depth to mottling is 48 inches. Because it is susceptible to further erosion, this eroded soil is only moderately well suited to tilled crops. It occurs in small areas on sloping hillsides where a good field layout is not practical. It is well suited to pasture and as woodland. Capability unit IIIe–2.

Magnolia loamy fine sand, 8 to 12 percent slopes (MgD).—This soil has stronger slopes, less erosion, and generally thicker surface layers than Magnolia loamy fine sand, 2 to 5 percent slopes, eroded. The surface layers range from 10 to 18 inches in thickness but are 10 to 14 inches thick in most places. In some areas mottles are at depths of 42 to 48 inches. Since it is steeper than Magnolia loamy fine sand, 2 to 5 percent slopes, eroded, this soil is more susceptible to erosion. Included with this soil are a few moderately eroded areas.

Because of the strong slope, rapid runoff, and erosion hazard, this soil is poorly suited to frequent cultivation. It is in small, highly dissected areas among other soils that generally are not well suited to cultivation. This soil is best suited to pasture and as woodland. Capability unit IVe–2.

Magnolia fine sandy loam, 2 to 5 percent slopes, severely eroded (MfB3).—This soil is more severely eroded than Magnolia loamy fine sand, 2 to 5 percent slopes, eroded, and is thinner in the original surface soil. It has had nearly all of the surface soil removed through erosion, or it is dissected by many shallow gullies or a few deep ones. In areas where sheet erosion is uniform, the surface soil is less than 3 inches thick. The surface soil is redder than normal in eroded areas where the original surface soil and the subsoil are mixed or where the subsoil is exposed.

This soil is well suited to all general crops and to shade tobacco. Most of the acreage is in shade tobacco and is cultivated and irrigated frequently. Because the soil in these areas is loose and moist, runoff after rains and erosion are greater than in other areas. Because the available moisture-holding capacity is high, this soil is well suited to whiteclover and other pasture plants that need much moisture. It is also well suited as woodland. Capability unit IIIe–2.

Magnolia fine sandy loam, 5 to 8 percent slopes, severely eroded (MfC3).—This soil is on stronger slopes and is more severely eroded than Magnolia loamy fine sand, 2 to 5 percent slopes, eroded. Nearly all the surface layer has been removed in most areas. In these areas the surface layer is reddish brown instead of dark brown because part of the red subsoil has been mixed with the original surface layer. Many shallow gullies and a few deep ones occur in places. In these areas the surface layer is slightly more than 3 inches thick between the gullies. Mottles normally are at depths below 40 inches. A few small areas have a fine sandy clay loam surface layer. This soil is poorly suited to frequent cultivation. It is best used as pasture or as woodland. Capability unit IVe–2.

Magnolia fine sandy loam, 8 to 12 percent slopes, severely eroded (MfD3).—This soil has much stronger slopes and more severe erosion than Magnolia loamy fine sand, 2 to 5 percent slopes, eroded. Nearly all the original surface layer is gone. The red subsoil is either exposed or mixed with what remains of the original surface layer. Where it is mixed, the surface layer is reddish brown. Many shallow gullies and a few deep ones occur in places. Mottles normally are at depths below 40 inches. Included with this soil are small areas that have a fine sandy clay loam surface layer. Because of the severe erosion, this soil is not suited to cultivation. It is best suited to pasture, woodland, and wildlife habitats. Capability unit VIes–1.

Mines, pits, and dumps

This miscellaneous land type consists of areas that have been disturbed by strip mining and quarrying, and areas that are used as city dumps.

Mines, pits, and dumps (Mp).—This mapping unit is on city dumps and on land where, in preparation to mining and quarrying, soil and underlying materials have been removed and deposited nearby. This excavation has left many pits and channels. The spoil banks are irregular in shape and are generally steep. They consist of many kinds of mixed material.

Areas of this land type range from less than 3 acres to more than 100 acres in size. Most of these areas are in the central and northern parts of the county. They have little or no agricultural value. Some areas could be reclaimed by leveling and planting to trees or by natural seeding. After vegetation is established, these areas will furnish cover and some food for wildlife. No capability classification has been assigned to this unit.

Myatt series

In the Myatt series are deep, poorly drained, strongly acid soils. These soils are on stream terraces in nearly level areas. They have a small total acreage that is mostly along the Ochlockonee River on the eastern side of the county; a few small areas are along other large streams. These soils formed from medium-textured sediments that washed from acid soils on uplands of the Coastal Plain.

Myatt soils have gray to very dark gray loamy fine sand surface layers that are less than 18 inches thick in most places. The subsoil is slightly sticky fine sandy clay loam mottled with yellow, strong brown, brownish yellow, and yellowish red. It is underlain by distinctly mottled fine sandy clay loam parent material.

These soils are closely associated on terraces with Blanton, Kalmia, Leaf, and Izagora soils. Their parent materials are similar to those of the Kalmia and Izagora soils. The Myatt soils are more poorly drained than the Kalmia soils. They are coarser textured throughout the profile than the Leaf soils. They are more poorly drained than the Blanton soils, and are finer textured in the subsoil. Myatt soils are more poorly drained than the Izagora soils and are grayer throughout the profile.

The native vegetation consists chiefly of water-tolerant hardwoods, scattered slash pine, and many shrubs. These soils are poorly suited to cultivated crops and are still in native vegetation.

Myatt soils have very slow surface runoff and very slow to slow internal drainage. Permeability is moderately rapid in the surface layers and moderately slow in the subsoil. Because of their clayey subsoil, aeration is poor. Their capacity to supply available moisture to plants is low. These soils are low in natural fertility. Their content of organic matter is medium to low.

Myatt loamy fine sand, 0 to 5 percent slopes, is the only soil in the Myatt series mapped in Gadsden County.

Myatt loamy fine sand, 0 to 5 percent slopes (MyB).—This is a poorly drained soil on terraces along streams. It has a moderately fine textured, gray, poorly aerated subsoil.

Profile in a nearly level, undisturbed area where the vegetation is mainly slash pine, holly, sweetgum, maple, and blackgum (*location:* SE¼SE¼ sec. 23. R. 2 W., T. 2 N.):

- A_{1g} 0 to 3 inches, dark-gray (10YR 4/1) loamy fine sand; moderate, fine, crumb structure; very friable; medium content of organic matter; many fine and common medium roots; strongly acid; boundary abrupt and smooth.
- A_2 3 to 8 inches, gray (10YR 5/1) loamy fine sand; moderate, fine, crumb structure; very friable; common fine to medium roots and root channels; strongly acid; boundary clear and wavy.
- B_{1g} 8 to 16 inches, gray (10YR 5/1), light fine sandy clay loam with few, fine, distinct, yellow (10YR 8/6) mottles; moderate, medium, crumb structure; friable; few fine and medium roots and pores; strongly acid; boundary clear and wavy.
- B_{2g} 16 to 22 inches, gray (N 5/0) fine sandy clay loam with few, medium, distinct, strong-brown (7.5YR 5/8) mottles and few, medium, distinct, brownish-yellow (10YR 6/8) mottles; weak, medium, blocky structure; friable when moist, slightly sticky when wet; very few fine roots and pores; strongly acid; boundary gradual and wavy.
- B_{3g} 22 to 28 inches, gray (10YR 5/1) fine sandy clay loam with common, medium, faint, gray (10YR 6/1) mottles; weak, medium, blocky structure; slightly sticky when wet, friable when moist; strongly acid; boundary gradual and wavy.
- C_{1g} 28 to 32 inches, dark-gray (N 4/0) fine sandy clay loam with common, medium, faint, gray (10YR 6/1) mottles, few, fine, distinct, brownish-yellow (10YR 6/8) mottles, and few, fine, distinct, yellowish-red

(5YR 5/8) mottles; weak, medium, blocky structure; slightly sticky when wet; strongly acid; boundary gradual and irregular.

C_{2g} 32 to 46 inches +, dark-gray (N 4/0) fine sandy clay loam with few, fine, distinct, gray (10YR 6/1) mottles and few, fine, distinct, yellowish-red (5YR 5/8) mottles; weak, medium, blocky structure; sticky when wet, firm when moist; strongly acid.

The surface layer ranges from 2 to 6 inches in thickness and from gray to very dark gray in color. The A horizon is slightly more than 18 inches thick in a few areas. The subsoil ranges from fine sandy loam to fine sandy clay loam. In places it is gradually transitional from sandy clay loam in the upper part to fine sandy loam in the lower part.

Included with this soil are a few small areas that have a fine sand or a fine sandy loam surface soil. Also included are a few small areas that have a thicker, darker colored surface soil than normal.

Except in extremely dry periods, the water table stays at or near the surface.

Because they are covered with water from the adjacent large streams most of the time, these soils are poorly suited to crops. They are in small, isolated areas surrounded by other soils poorly suited to crops. If drained, they are suited to row crops and improved pasture. Drainage, however, generally is difficult because ditches are hard to dig and maintain. These soils are suited to hardwoods but generally must be drained before they are suited to pines. Capability unit IVws–1.

Norfolk series

The Norfolk series consists of deep, well-drained, strongly acid soils that are on uplands in nearly level to strongly sloping areas. They have a large total acreage that occurs throughout the county except in the extreme southern and southwestern parts. Much of this acreage is in the west-central part of the county. These soils developed from thick beds of acid sandy clay loam material.

They have a dark-gray to light brownish-gray loamy sand surface layer, 4 to 10 inches thick. The loamy sand extends to depths of 20 inches in some places. The subsoil is yellow to yellowish-brown, porous, friable fine sandy clay loam. It is underlain by distinctly mottled sandy clay loam parent material.

Norfolk soils are closely associated with Ruston, Orangeburg, Goldsboro, Tifton, and Lakeland soils. Their subsoil is yellow or brownish yellow instead of strong brown or yellowish red like that in Ruston soils, or red like that in Orangeburg soils. Norfolk soils are better drained than the Goldsboro soils and are deeper to mottling. They have finer textured subsoil than Lakeland soils and a more yellowish brown subsoil than Tifton soils. Their subsoil is coarser textured and less sticky than that in the Tifton soils. In most places Norfolk soils do not have so many iron pebbles throughout the profile as in the Tifton soils.

The native vegetation was mainly longleaf pine, low shrubs, and wiregrass, but now it is chiefly longleaf and loblolly pines, hickory, various oaks, shrubs, and wiregrass. Much of the acreage is in corn, cotton, shade tobacco, peanuts, forage, and other cultivated crops.

Norfolk soils have medium surface runoff and medium internal drainage. Permeability is rapid to moderately rapid in the surface soils and moderate in the subsoil. These soils are well aerated throughout and have good tilth. They have a high capacity for holding available moisture. They retain plant nutrients well and respond well to fertilizers. Where the slopes are mild, they are well suited to a wide variety of cultivated crops.

Norfolk loamy fine sand, 0 to 2 percent slopes (NfA).—This is a well-drained, deep soil that has a friable, moderately fine textured, yellow to yellowish-brown subsoil.

Profile in a nearly level, wooded area where the vegetation is mainly slash and longleaf pines, live oak, red oak, and hickory (*location:* SE¼NW¼ sec. 14, R. 2 W., T. 3 N.):

A_1 0 to 2 inches, dark-gray (10YR 4/1) loamy fine sand; weak, very fine, crumb structure: very friable; many fine and common medium roots; medium content of organic matter; strongly acid; boundary abrupt and smooth.

A_2 2 to 8 inches, gray (10YR 5/1) loamy fine sand; weak, fine, crumb structure; very friable; many fine and common medium roots; common fine root channels; strongly acid; boundary clear and smooth.

A_3 8 to 13 inches, pale-brown (10YR 6/3) loamy fine sand: weak, fine, crumb structure; very friable; common fine roots and very few medium roots; few fine root channels; few fine pores; strongly acid; boundary clear and wavy.

B_1 13 to 16 inches, brownish-yellow (10YR 6/8) fine sandy loam; moderate, fine, subangular blocky structure that breaks readily to moderate, coarse, crumb structure; friable; few fine roots and very few fine root channels; common fine pores; strongly acid; boundary clear and wavy.

B_2 16 to 47 inches, yellowish-brown (10YR 5/8) fine sandy clay loam, moderate, medium, subangular blocky structure; friable; few fine roots and root channels; common fine pores; strongly acid; boundary clear and wavy.

B_{31} 47 to 53 inches, yellow (10YR 7/8) fine sandy clay loam with common, medium, faint, brownish-yellow (10YR 6/8) mottles and few, medium, distinct, yellowish-red (5YR 5/8) mottles; moderate, medium, subangular blocky structure; friable; very few fine root channels; few fine pores; strongly acid; boundary gradual and wavy.

B_{32} 53 to 64 inches, yellow (10YR 7/8) fine sandy clay loam with common, medium, distinct, strong-brown (7.5YR 5/8) mottles, few, medium, distinct, light-gray (10YR 7/1) mottles, and few, common, prominent, slightly firm, red (10R 5/8) mottles; moderate, medium, subangular blocky structure; friable; few fine pores; strongly acid; boundary gradual and irregular.

C 64 to 85 inches +, mottled white (N 8/0), red (10R 4/8), and reddish-yellow (7.5YR 7/8) sandy clay loam; moderate, medium, subangular blocky structure; friable; strongly acid.

The surface layers range from 12 to 18 inches in thickness and from dark gray to gray and pale brown in color. In a few cultivated areas, the surface layer is slightly eroded and is pale brown. Although the surface layers are less than 18 inches thick in most places, they are slightly thicker than 18 inches in some small areas. The subsoil generally is friable fine sandy clay loam, but in a few small areas it is less friable and finer textured than normal. Mottles generally are at a depth of about 42 inches. In some areas near Havana, however, few to common mottles of strong brown and yellowish red occur at depths of 24 to 30 inches. In these areas the subsoil is normally reddish yellow at depths below 30 inches. The mottled parent material is normally at depths ranging from 48 to 65 inches, but in some areas the depth to the parent material is slightly less than 48 inches.

Included with this soil are small areas that have a loamy sand surface soil. Also included are a few small

areas that have many iron pebbles throughout the profile.

This soil has a deep, well-aerated root zone that extends to the underlying mottled material. It has a moderately high cation-exchange capacity and responds well to fertilizers. Permeability is moderately rapid in the surface layers and moderate in the subsoil. The available moisture-holding capacity of the subsoil is high and that of the surface soil is moderate.

This soil contains a moderate amount of organic matter and is loamy enough to have good tilth. It is well suited to all general crops grown in the county and to shade tobacco. Irrigation is needed if tobacco and other crops of high value are grown. This soil generally adjoins other good soils and can be managed together with them in a good field layout. It is suited to most pasture plants grown locally, but whiteclover may be damaged by drought. It is well suited as woodland and wildlife habitats. Capability unit I–1.

Norfolk loamy fine sand, 2 to 5 percent slopes (NfB).—This soil is more sloping than Norfolk loamy fine sand, 0 to 2 percent slopes, and has, therefore, more rapid runoff and a greater hazard of erosion. In a few small areas the subsoil is finer textured than normal.

This soil is well suited to all locally grown general crops. Shade tobacco can be produced, but irrigation is needed for high yields. This soil is in large areas surrounded by other good soils and can be managed with them in a good field layout. It is well suited to most pasture plants, but whiteclover is sometimes damaged by drought. It is well suited as woodland and to wildlife habitats. Capability unit IIe–1.

Norfolk loamy fine sand, 2 to 5 percent slopes, eroded (NfB2).—This soil has stronger slopes and more severe erosion than Norfolk loamy fine sand, 0 to 2 percent slopes. It is thinner in the surface layers than that soil in most places. Most damage to the soil has been by sheet erosion and shallow gullying. A few areas have many shallow gullies. Between the gullies the surface layers are 4 to 12 inches thick. Included are a few small, scattered, severely eroded areas and a few areas that have a slightly sticky subsoil that is finer textured than normal.

This soil is well suited to all general crops and, if irrigated, to shade tobacco. It occurs in fairly large areas with other good soils and can be managed with them in a good field layout. This soil is well suited to improved pasture of crimson clover, bahiagrass, and coastal bermudagrass. It is also well suited as woodland and to wildlife habitats. Capability unit IIe–1.

Norfolk loamy fine sand, 5 to 8 percent slopes (NfC).—This soil has stronger slopes and more rapid runoff than Norfolk loamy fine sand, 0 to 2 percent slopes, and a greater hazard of erosion. It is slightly thinner in the surface layers than that soil in most places. The surface layers are generally 11 to 16 inches thick but may be as much as 18 inches thick. In some places the parent material is at depths of 42 to 56 inches.

This soil adjoins gently sloping soils that are somewhat similar to it. It is suited to the crops commonly grown in the county, but because of the erosion hazard, is suited to only moderately intensive use. This soil is well suited to improved pasture, as woodland, and to wildlife habitats. Capability unit IIIe–1.

Norfolk loamy fine sand, 5 to 8 percent slopes, eroded (NfC2).—This soil has stronger slopes, a thinner surface soil and more severe erosion than Norfolk loamy fine sand, 0 to 2 percent slopes. In most areas, it is uniformly sheet eroded and there are no gullies. In these areas the depth to the finer textured subsoil ranges from 4 to 12 inches. In some areas a few deep gullies occur, and between the gullies the depth to the subsoil ranges from 11 to 18 inches. In some sheet eroded areas where the original surface layers and the subsoil have been mixed, the surface layer is slightly browner than the original surface soil. In many places the mottled parent material is at depths of only 38 to 50 inches. Included with this soil are a few small, severly eroded areas.

This soil is only moderately well suited to crops. It generally adjoins more gently sloping soils that are somewhat similar to it. This soil, however, has lower yields than these soils and needs more intensive management. It is well suited to improved pasture, as woodland, and to wildlife habitats. Capability unit IIIe–1.

Norfolk loamy fine sand, 8 to 12 percent slopes (NfD).—This soil is steeper than Norfolk loamy fine sand, 0 to 2 percent slopes, and has, therefore, more rapid runoff and a greater erosion hazard. In most places the depth to mottled parent material is 40 to 48 inches. Included are a few areas that are moderately eroded.

Although most general crops can be grown occasionally, this soil is poorly suited to cultivation. It is on strongly sloping hillsides and in relatively small areas that adjoin more gently sloping soils. Its best uses are pasture, woodland, and wildlife habitats. Capability unit IVe–1.

Norfolk loamy fine sand, pebbly, 0 to 2 percent slopes (NpA).—This soil is similar to Norfolk loamy fine sand, 0 to 2 percent slopes, but it has many small iron pebbles throughout the profile. It is deep, well drained, and has good tilth. It is well suited to all locally grown general crops and is one of the better soils for shade tobacco, cotton, and peanuts. Irrigation is needed for high yields of tobacco. This soil is in rather broad areas and is well suited to a good field layout. It is well suited to improved pastures of most locally grown plants and to trees and wildlife habitats. Capability unit I–1.

Norfolk loamy fine sand, pebbly, 2 to 5 percent slopes (NpB).—This soil is steeper than Norfolk loamy fine sand, 0 to 2 percent slopes, and, therefore, has more rapid runoff and a greater erosion hazard. Small iron pebbles are abundant throughout the profile. This soil is suited to all crops grown in the county. It is one of the better soils for shade tobacco, peanuts, and cotton. Irrigation is needed for highest yields of tobacco. This soil is adjacent to other good soils and can be managed with them. It is well suited to improved pasture, as woodland, and to wildlife habitats. Capability unit IIe–1.

Norfolk loamy fine sand, pebbly, 2 to 5 percent slopes, eroded (NpB2).—This soil is steeper and more eroded than Norfolk loamy fine sand, 0 to 2 percent slopes, and generally is thinner in the surface soil. Small iron pebbles are abundant throughout the profile. Because of sheet erosion, the surface layers, in most places, are only 4 to 12 inches thick. A few areas have many shallow gullies. Between the gullies the erosion is usually slight.

This soil is well suited to all crops grown in the county, but it needs to be irrigated where tobacco is grown. It is in small areas adjacent to other good soils and can be managed with them in a good field layout. It is well suited to improved pasture, but whiteclover may be damaged by drought. It is also well suited as woodland and to wildlife habitats. Capability unit IIe–1.

Norfolk loamy sand, thick surface, pebbly, 0 to 2 percent slopes (NtA).—This soil has much thicker surface layers than Norfolk loamy fine sand, 0 to 2 percent slopes, and has many iron pebbles throughout the profile. The surface layer is about the same thickness as that in Norfolk loamy fine sand, 0 to 2 percent slopes, but the subsurface layer is much thicker. The surface layers are from 18 to 30 inches thick. Water moves rapidly through these layers and leaching is rapid. The available moisture-holding capacity and the cation-exchange capacity are lower in this soil than in Norfolk loamy fine sand, 0 to 2 percent slopes.

Included with this soil are small areas that have loamy fine sand surface soil. In some same areas, the fine sandy loam subsoil is at depths slightly more than 30 inches.

This soil is well suited to corn, small grains, and peanuts. If well fertilized and irrigated, it is suited to shade tobacco. It is generally adjacent to other good soils in areas large enough for a good field layout. It has a deep, well-aerated root zone, medium internal drainage, and responds well to fertilizer. It is well suited to improved pasture of bermudagrass and bahiagrass, to trees, and to wildlife habitats. Capability unit IIse–1.

Norfolk loamy sand, thick surface, pebbly, 2 to 5 percent slopes (NtB).—This soil is more sloping than Norfolk loamy sand, thick surface, pebbly, 0 to 2 percent slopes. It has a deep, well-aerated root zone and medium internal drainage. It responds well to fertilizer. Included with this soil are small, scattered areas that have moderate sheet erosion.

This soil is well suited to corn, small grains, peanuts, and cotton. If well fertilized and irrigated, it is suited to shade tobacco. It is in small areas adjacent to other good soils that are well suited to a good field layout. Improved pasture of bermudagrass and bahiagrass, woodland, and wildlife habitats are suitable uses. Capability unit IIse–1.

Norfolk loamy sand, thick surface, pebbly, 5 to 8 percent slopes (NtC).—This soil has stronger slopes than Norfolk loamy sand, thick surface, pebbly, 0 to 2 percent slopes, and in some areas is shallower to the parent material. It has a deep, well-aerated root zone and responds well to fertilizer. Included with this soil are a few areas that are moderately eroded.

This soil normally occurs in small areas adjacent to more nearly level soils that are somewhat similar to it. Because it is somewhat droughty and erosion is a hazard, this soil is suited only to moderately intensive cultivation. It is well suited to improved pasture of bahiagrass and bermudagrass, as woodland, and to wildlife habitats. Capability unit IIIes–1.

Norfolk loamy sand, thick surface, 0 to 2 percent slopes (NsA).—This soil has thicker surface layers than Norfolk loamy fine sand, 0 to 2 percent slopes. The surface layer is about the same thickness as in that soil, but the subsurface layer is much thicker. The available moisture-holding capacity and the cation-exchange capacity are lower in this soil than in Norfolk loamy fine sand, 0 to 2 percent slopes.

Profile in a nearly level, undisturbed area (*location:* SE¼SE¼ sec. 8, R. 2 W., T. 2 N.):

A_1 0 to 2 inches, dark-gray (10YR 4/1) loamy sand; weak, fine, crumb structure; loose; medium content of organic matter; few fine and medium roots; strongly acid; boundary abrupt and smooth.

A_2 2 to 8 inches, gray (10YR 5/1) loamy sand; weak, fine, crumb structure; very friable; few fine and medium roots; strongly acid; boundary clear and wavy.

A_3 10 to 20 inches, yellow (10YR 8/6) loamy sand; weak, fine, crumb structure; very friable; few fine roots and root channels; few fine pores; strongly acid; boundary clear and wavy.

B_1 20 to 27 inches, yellow (10YR 7/6) fine sandy loam; moderate, medium, crumb structure; friable; few fine and medium roots; few fine root channels; common fine and few medium pores; strongly acid; boundary clear and wavy.

B_2 27 to 43 inches, yellow (10YR 7/8) fine sandy clay loam; moderate, medium, subangular blocky and crumb structure; friable; few fine and medium roots; few fine root channels: common fine and medium pores; strongly acid: boundary gradual and wavy.

B_3 43 to 65 inches, yellow (10YR 7/8) fine sandy clay loam with common, fine, distinct, yellowish-red (5YR 5/8) mottles; moderate, medium, subangular blocky structure; friable; few fine root channels; common fine pores; strongly acid; boundary gradual and wavy.

C 65 to 76 inches +, mottled light-gray (10YR 7/2), yellow (10YR 8/8), strong-brown (7.5YR 5/8), and red (2.5YR 4/8), light fine sandy clay loam; moderate, medium, angular and subangular blocky structure; friable; strongly acid.

This soil has a deep root zone and medium internal drainage. The available moisture-supplying capacity is moderate.

This soil is well suited to all general crops grown in the county, particularly corn, peanuts, and small grains. If it is irrigated, it is also well suited to shade tobacco. It is in fairly large areas adjacent to other good soils that are suited to a good field layout. This soil is well suited to improved pasture and produces good yields of bahiagrass and bermudagrass. It is also well suited as woodland and to wildlife habitats. Capability unit IIse–1.

Norfolk loamy sand, thick surface, 2 to 5 percent slopes (NsB).—This soil is more sloping than Norfolk loamy sand, thick surface, 0 to 2 percent slopes. It has medium internal drainage and a deep, well-aerated root zone. It is moderately low in available moisture-holding capacity, but responds well to fertilizer. Included with this soil are a few small areas that are moderately eroded and a few that are severely eroded.

This soil is well suited to corn, small grains, peanuts, and other general crops. If it is well fertilized and irrigated, it is suited to shade tobacco. It is generally adjacent to other good soils in areas large enough for a good field layout. It is well suited to improved pasture, woodland, and to wildlife habitats. Capability unit IIse–1.

Norfolk loamy sand, thick surface, 5 to 8 percent slopes (NsC).—This soil has stronger slopes and a greater erosion hazard than Norfolk loamy sand, thick surface, 0 to 2 percent slopes. Its mottled parent material is nearer the surface, in some areas, than in that soil. It has a deep root zone and responds well to fertilizer but is somewhat droughty. A few small areas that have moderate sheet erosion are included.

This soil is generally in small areas adjacent to more nearly level soils that are similar to it. Because it is susceptible to erosion, it is suited to only moderately intensive cultivation. It is well suited to pasture of bermudagrass and bahiagrass and to trees and wildlife habitats. Capability unit IIIes–1.

Norfolk loamy sand, thick surface, 8 to 12 percent slopes (NsD).—This soil has stronger slopes than Norfolk loamy sand, thick surface, 0 to 2 percent. Generally the depth

to the clayey subsoil and mottled parent material is slightly less than in that soil. Most areas have little or no erosion but are highly susceptible to erosion. Some widely scattered areas have moderate sheet erosion, and there are a few deep gullies or many shallow ones. Although most general crops can be grown, this soil is poorly suited to them. Its best uses are for pasture, woodland, and wildlife habitats. Capability unit IVes–1.

Orangeburg series

In the Orangeburg series are deep, well-drained, strongly acid soils that are on uplands in nearly level to strongly sloping areas. They have a large total acreage that occurs throughout the county except in the extreme southern and southwestern parts. These soils developed mainly from stratified sediments, chiefly of acid sandy clay loam texture.

Orangeburg soils have dark-gray to grayish-brown loamy sand to loamy fine sand surface layers 14 to 30 inches thick. The subsoil is red, friable, porous fine sandy clay loam. It is moderately permeable and is underlain by distinctly mottled sandy clay loam parent material.

Orangeburg soils are closely associated with Ruston, Norfolk, Red Bay, and Magnolia soils. They are similar to Ruston, Norfolk, and Red Bay soils in texture of the surface soil but differ slightly in color. Their subsoil differs in color from that in the Ruston soils, which is yellowish red, and from that in the Norfolk soils, which is yellowish brown. Their surface layer is less brown than that in the Red Bay soils, and their subsoil is slightly lighter red. Orangeburg soils have a more friable, coarser textured subsoil than the Magnolia soils.

The native vegetation was mainly longleaf pine, low shrubs, and wiregrass. It is now mainly longleaf, loblolly, and slash pines, red and water oaks, hickory, dogwood, wiregrass, and shrubs. Much of the acreage is cleared (fig. 13) and is in shade tobacco, corn, peanuts, cotton, and pasture.

Orangeburg soils have medium surface runoff and medium internal drainage. Permeability is rapid to moderately rapid in the surface soil and moderate in the subsoil. These soils are well aerated throughout the profile and have good tilth. Their capacity for holding available moisture is high to moderately high. The natural fertility and content of organic matter are moderate. These soils retain plant nutrients and respond well to fertilizers. Where the slopes are mild they are well suited to most general crops.

Orangeburg loamy fine sand, 0 to 2 percent slopes (OfA).—This is a well-drained, deep soil that has a friable, red, moderately fine textured subsoil.

Profile in a nearly level, slightly eroded, cultivated area (*location:* SW¼NW¼ sec. 34, R. 2 W., T. 3 N.):

A_1 0 to 5 inches, dark-gray (10YR 4/1) loamy fine sand; weak, fine to very fine, crumb structure; loose; few fine roots and root channels; medium content of organic matter; strongly acid; boundary clear and smooth.

A_2 5 to 10 inches, gray (10YR 5/1) loamy fine sand; weak, fine, crumb structure; loose; few fine roots; few fine to medium root channels filled with light brownish-gray (10YR 6/2) material; very few, small, hard concretions; strongly acid; boundary abrupt and smooth.

A_3 10 to 13 inches, yellowish-red (5YR 5/8) loamy fine sand; weak, fine, crumb structure; very friable; few fine roots and few to common fine root channels; few, fine, hard iron concretions; strongly acid; boundary abrupt and smooth.

B_1 13 to 18 inches, red (2.5YR 5/8) light fine sandy clay loam; moderate, medium, crumb structure; friable; few fine roots and common fine to medium root channels; few fine pores; strongly acid; boundary clear and wavy.

B_2 18 to 47 inches, red (2.5YR 4/8) fine sandy clay loam; moderate, medium, subangular blocky structures that breaks readily to moderate, medium, crumb structure; friable; few fine roots and root channels; common fine pores; strongly acid; boundary clear and wavy.

B_3 47 to 70 inches, red (2.5YR 4/8) fine sandy clay loam with few, medium, prominent, yellow (10YR 8/8) mottles and few, fine, distinct, strong-brown (7.5YR 5/8) mottles; moderate, medium, subangular blocky structure, that breaks readily to moderate, medium, crumb structure; friable; few fine roots; common fine pores; strongly acid; boundary gradual and irregular.

C 70 to 82 inches +, yellow (10YR 8/8) fine sandy clay loam with few, fine, distinct, strong-brown (7.5YR 5/8) mottles, common, medium, prominent, red (10R 4/8) mottles, common, medium, faint, very pale brown (10YR 8/3) mottles, and common, medium, distinct, yellowish-red (5YR 4/8) mottles; weak, medium, angular blocky structure and moderate, medium, subangular blocky structure; firm; strongly acid.

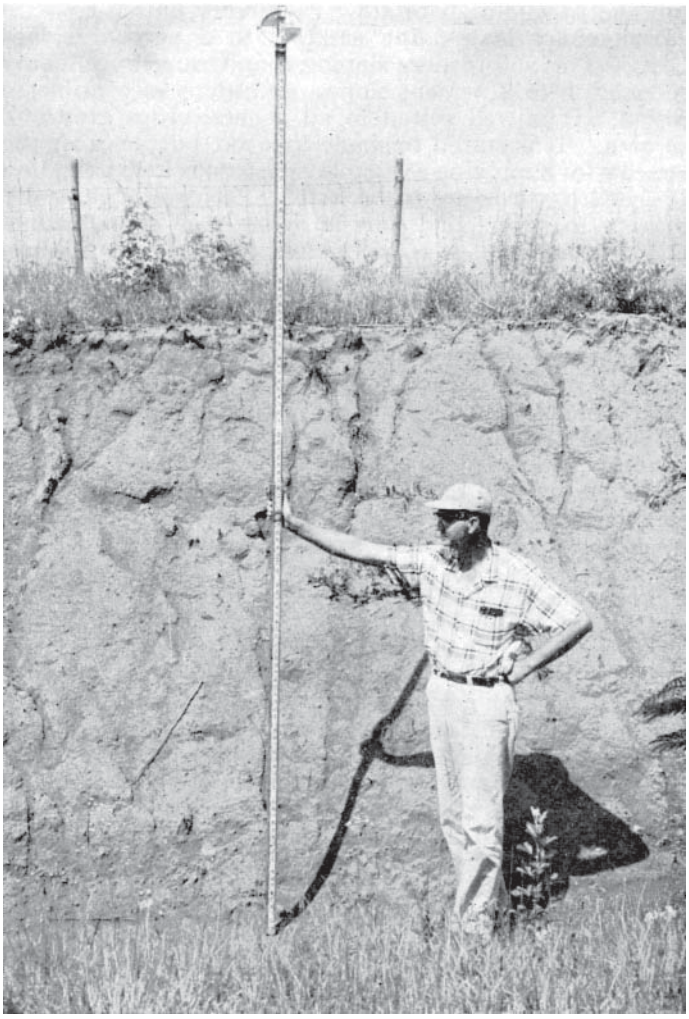

***Figure 13.*—Orangeburg loamy fine sand, 0 to 2 percent slopes. These soils are among the best in the county.**

The surface layer of this soil ranges from gray to dark gray. It is grayish brown in a few cultivated areas where it is slightly eroded and is mixed with subsurface material. The surface layers range from 12 to 18 inches in thickness. The normal depth to finer textured subsoil is less than 18 inches, but in some small areas this depth is slightly more than 18 inches. The subsoil is friable fine sandy clay loam in most places, but in a few small areas it is less friable and finer textured than normal in the lower part. In a few small areas iron pebbles are abundant throughout the profile. There are also a few small areas that have a loamy sand surface soil. The depth to the mottled parent material normally is more than 60 inches.

The deep, well-aerated root zone extends to the mottled parent material. The cation-exchange capacity is moderately high. Permeability is moderately rapid in the surface soil. The available moisture-holding capacity of the surface soil is moderate, and that of the subsoil is high.

This soil is well suited to all locally grown general crops and, if irrigated, to shade tobacco. Most of it is adjacent to other good soils in areas large enough for a good field layout. This soil is well suited to improved pastures of most pasture plants grown locally, but whiteclover may be damaged by drought. It is also well suited to woodland and to wildlife habitats. Capability unit I–1.

Orangeburg loamy fine sand, 2 to 5 percent slopes (OfB).—This soil is more sloping than Orangeburg loamy fine sand, 0 to 2 percent slopes, and more susceptible to erosion. It is well suited to all general crops grown in the area. It is suited to shade tobacco, but, because the capacity for supplying available moisture is low, irrigation is needed if yields are to be high. This soil is generally adjacent to other good soils in areas large enough for a good field layout. It is well suited to improved pasture, but whiteclover is sometimes damaged by drought. This soil is well suited as woodland and as wildlife habitats. Capability unit IIe–1.

Orangeburg loamy fine sand, 2 to 5 percent slopes, eroded (OfB2).—This soil is more sloping and more severely eroded than Orangeburg loamy fine sand, 0 to 2 percent slopes, and thinner in the surface layers. The erosion is mostly sheet erosion. In most places the surface layers are 4 to 12 inches thick. Many shallow gullies occur in a few areas. Between the gullies in these areas, the erosion is slight and the surface layers are 12 to 18 inches thick.

This soil is well suited to all general crops grown in the county, but erosion is a hazard. If irrigated, it is well suited to shade tobacco. This soil is generally in fairly large areas adjacent to other good soils that are well suited to a good field layout. It is well suited to improved pasture of most pasture plants locally grown, and to trees and wildlife habitats. Capability unit IIe–1.

Orangeburg loamy fine sand, 5 to 8 percent slopes (OfC).—This soil is on stronger slopes than Orangeburg loamy fine sand, 0 to 2 percent slopes, and is thinner in the surface soil. The surface layers range from 11 to 18 inches in thickness, but are less than 16 inches thick in most places. In some places this soil is shallower than Orangeburg loamy fine sand, 0 to 2 percent slopes, and the depth to the mottled parent material is 50 to 60 inches.

This soil is on slopes adjacent to soils similar to it. It is suited to most crops grown in the county, but because of the erosion hazard, cultivation should be only moderately intensive. This soil is well suited to improved pasture, trees, and to wildlife habitats. Capability unit IIIe–1.

Orangeburg loamy fine sand, 5 to 8 percent slopes, eroded (OfC2).—This soil is on stronger slopes and is normally more eroded than Orangeburg loamy fine sand, 0 to 2 percent slopes. It is thinner in the surface soil than that soil. The erosion is mostly sheet erosion. In most places the surface layers are 4 to 12 inches thick. A few deep gullies or many shallow ones occur in a few places. Between the gullies, sheet erosion is slight and the surface layers are 11 to 18 inches thick. In many places this soil is shallower than Orangeburg loamy fine sand, 0 to 2 percent slopes, and the depth to parent material is 48 to 60 inches.

This soil occurs with soils similar to it in small areas on hillsides. Mainly because of erosion, yields are low. This soil is well suited to pasture, trees, and to wildlife habitats. Capability unit IIIe–1.

Orangeburg loamy fine sand, 8 to 12 percent slopes (OfD).—This soil is more strongly sloping than Orangeburg loamy fine sand, 0 to 2 percent slopes. On the steeper slopes, it is generally thinner than elsewhere and ranges from 42 to 50 inches in depth to parent material. Included with this soil are a few moderately eroded areas.

Because of slow permeability and rapid surface runoff, this soil is highly susceptible to erosion. It is suited to only moderately intensive use. It is best suited to pasture, trees, and to wildlife habitats. Capability unit IVe–1.

Orangeburg loamy sand, thick surface, 0 to 2 percent slopes (OtA).—This is a deep, well-drained, nearly level soil on uplands. It has thick surface layers and a red, moderately fine textured subsoil.

Profile in a nearly level, cultivated area (*location:* SE¼NE¼ sec. 26, R. 2 W., T. 3 N.):

- A_p 0 to 7 inches, dark-gray (10YR 4/1) loamy sand; weak, medium, crumb structure; loose; few fine roots; medium content of organic matter; strongly acid; boundary abrupt and smooth.
- A_1 7 to 13 inches, grayish-brown (10YR 5/2) loamy sand; weak, medium, crumb structure; loose; few fine roots and few fine pores; strongly acid; boundary clear and smooth.
- A_3 13 to 19 inches, brown (7.5YR 5/4) loamy sand; weak, medium, crumb structure; very friable; few fine roots and few medium to fine pores; strongly acid; boundary clear and wavy.
- B_1 19 to 24 inches, red (2.5YR 4/8) fine sandy loam; moderate, medium, crumb structure; very friable; common fine to medium pores; strongly acid; boundary gradual and wavy.
- B_2 24 to 53 inches +, red (10R 4/8) fine sandy clay loam; moderate, medium, subangular blocky structure; friable; common fine and medium pores; strongly acid; boundary gradual and wavy.

This soil is coarser textured than Orangeburg loamy fine sand, 0 to 2 percent slopes, and much thicker in the surface layers. These layers range from 18 to 30 inches in thickness. Leaching is rapid because the soil is coarse textured and water moves rapidly through it. This soil has a low capacity for holding available moisture and a low cation-exchange capacity.

Included with this soil are small areas that have a loamy fine sand surface soil. Other small areas have a finer textured subsoil than normal that occurs at depths more than 30 inches. Also included are a few small areas of Red Bay soils.

This soil is well suited to most farm crops grown in the county. It is generally adjacent to other good agricultural soils in large areas that are well suited to a good field layout. It is best suited to corn, small grains, and peanuts. Because of the moderately low moisture-supplying capacity, irrigation is needed if shade tobacco is grown. This soil is well suited to improved pastures of bermudagrass and bahiagrass. It is also well suited as woodland and for wildlife habitats. Capability unit IIse–1.

Orangeburg loamy sand, thick surface, 2 to 5 percent slopes (OtB).—This soil is more sloping than Orangeburg loamy sand, thick surface, 0 to 2 percent slopes, but is similar to that soil in most other characteristics. Included with this soil are a few small, moderately eroded areas. Also included are a few small areas of Red Bay loamy fine sands.

This soil is well suited to all locally grown cultivated crops, particularly corn, small grains, and peanuts. It is generally adjacent to other good agricultural soils in large areas well suited to a good field layout. It is suited to shade tobacco, but because the moisture-supplying capacity is moderately low, irrigation is needed. It is well suited to improved pastures, as woodland, and to wildlife habitats. Capability unit IIse–1.

Orangeburg loamy sand, thick surface, 5 to 8 percent slopes (OtC).—This soil is more strongly sloping than Orangeburg loamy sand, thick surface, 0 to 2 percent slopes, but is similar to that soil in most other characteristics. In a few areas the mottled parent material is nearer the surface than the more nearly level soil. Included with this soil are a few moderately eroded areas.

This soil has a deep, well-aerated root zone and responds well to fertilizer. It is somewhat droughty, however, and susceptible to erosion.

This soil generally occurs in small areas adjacent to soils that are somewhat similar to it. It is suited only to moderately intensive use. It is well suited to improved pasture of bermudagrass and bahiagrass, to trees, and to wildlife habitats. Capability unit IIIes–1.

Orangeburg loamy sand, thick surface, 8 to 12 percent slopes (OtD).—This soil is more strongly sloping than Orangeburg loamy sand, thick surface, 0 to 2 percent slopes. The clayey subsoil and the mottled parent material are nearer the surface than in that soil. In most areas there is little or no erosion, but because permeability is slow and surface runoff is rapid, this soil is very susceptible to erosion. Included with this soil are widely scattered areas that have moderate sheet erosion. In a few areas there are a few deep gullies or many shallow ones.

This soil is poorly suited to cultivation, but most general crops can be grown from time to time. Its best uses are pasture, woodland, and wildlife habitats. Capability unit IVes–1.

Plummer series

The Plummer series consists of deep, somewhat poorly drained to poorly drained, strongly acid to very strongly acid soils. These soils occur on uplands in nearly level and gently sloping areas. They have a small total acreage distributed throughout the county, mostly adjacent to streams. Broad, flat areas occur near Greensboro and in the southwestern part of the county. These soils developed from sediments of acid sand and loamy sand in thick beds that are underlain by finer textured sediments at depths below 30 inches.

Plummer soils have a thin, gray to very dark gray fine sand to sand surface soil. No B horizon has developed. The surface soil grades to a C horizon of gray to light-gray sand or coarse sand that occurs at depths of 42 to 72 inches. The substratum has a sandy loam to sandy clay loam texture.

Plummer soils are associated with Rutlege, Leon, Blanton, Rains, and Lynchburg soils. They do not have a thick, black surface layer like that in the Rutlege soils. They are more poorly drained than Leon soils and do not have a pan layer stained dark with organic matter. Plummer soils are more poorly drained than Blanton and Lynchburg soils. Their subsoil is coarser textured than that in the Lynchburg soils. They are in positions similar to those of the Rains soils but have coarser textured subsoils than the Rains soils.

The native vegetation is mainly slash and pond pines, blackgum, gallberry, pitcher plants, sweetgum, low shrubs, and native grasses. Most of the acreage is still in native vegetation but some is cleared and in pasture.

The surface runoff of Plummer soils is slow, and the internal drainage is slow to very slow. Permeability and the leaching of plant nutrients is rapid. Tilth is poor.

Plummer sand, 0 to 2 percent slopes (PsA).—This soil is poorly drained, deep, and acid. It contains a small amount of organic matter. Profile in a nearly level, undisturbed area, where the vegetation is slash pine, gallberry, and palmetto (*location:* SE¼SE¼ sec. 76, R. 3 W., T. 1 N.):

A_1 0 to 3 inches, very dark gray (10YR 3/1) sand; single grain (structureless); loose; medium content of organic matter; a very small part of the organic matter is partly decomposed; many fine and few medium roots; strongly acid; boundary clear and smooth.

C_g 3 to 60 inches +, gray (10YR 5/1) sand, single grain (structureless); loose; common small roots that decrease in number with increasing depth; strongly acid.

The surface layer is 2 to 5 inches thick and is dominantly grayish in color. In a few areas it is very dark gray, and in some small areas it is almost white. The subsoil ranges from gray to white in color and from fine sand to sand in texture. It is slightly mottled with yellow to yellowish brown in places. The depth to moderately fine textured material normally ranges from 42 inches to more than 72 inches. A few areas have a subsoil of fine sandy loam or light fine sandy clay loam beginning at depths of 30 to 42 inches. Included with this soil are small areas that have a fine sand surface soil.

This soil has a high water table at or near the surface most of the time. It is very low in organic matter and natural fertility. It has a low available moisture-holding capacity. Permeability is rapid, and the cation-exchange capacity is very low. Plant nutrients leach rapidly.

The size and number of the areas of this soil range from a few broad, flat areas to many small or long and narrow ones. This soil is not suited to cultivated crops. If they are drained, the larger areas are well suited to improved pastures. This soil is suited as woodland and wildlife habitats. Capability unit Vws–2.

Plummer sand, 2 to 5 percent slopes (PsB).—This soil has stronger slopes and more rapid surface runoff than Plummer sand, 0 to 2 percent slopes. Nevertheless, the surface soil is wet in many places because of seepage from adjacent hillsides. This soil has low fertility, and plant

nutrients leach rapidly. Much of it is in narrow, gently sloping areas. A few areas with slopes steeper than 5 percent are included.

This soil is not suited to cultivated crops. It is suited to improved pastures if fertilized and otherwise well managed. It generally does not need to be drained if it is in pasture. This soil is well suited as woodland and to wildlife habitats. Capability unit Vws–2.

Plummer sand, high, 0 to 2 percent slopes (PhA).—This is a somewhat poorly drained, deep, acid soil that is low in organic matter. It is in higher positions than Plummer sand, 0 to 2 percent slopes.

Profile in a nearly level, undisturbed area where the vegetation is mainly slash and longleaf pines, myrtle, water oak, gallberry, and wiregrass (*location*: SE¼SE¼ sec. 11, R. 3 W., T. 1 N.):

A_1 0 to 4 inches, dark-gray (10YR 4/1) sand; single grain (structureless); loose; many fine and common medium roots; strongly acid; boundary abrupt and smooth.

A_3 4 to 10 inches, grayish-brown (10YR 5/2) sand; single grain (structureless); loose; common fine and medium roots; strongly acid; boundary abrupt and smooth.

C_1 10 to 22 inches, grayish-brown (10YR 5/2) sand with few, fine, distinct, light yellowish-brown (10YR 6/4) mottles and few, fine, faint, gray (10YR 6/1) mottles; single grain (structureless); loose; few fine and medium roots; strongly acid; boundary clear and wavy.

C_2 22 to 28 inches, light brownish-gray (10YR 6/2) sand with common, medium, faint, light yellowish-brown (10YR 6/4) mottles, few, fine, distinct, strong-brown (7.5YR 5/8) mottles, and common, medium, distinct, gray (10YR 6/1) mottles; single grain (structureless); loose; strongly acid; boundary clear and wavy.

C_{3g} 28 to 42 inches +, light-gray (10YR 7/2) sand with common, fine, distinct, strong-brown (7.5YR 5/8) mottles, common, medium, faint, light-gray (10YR 7/1) mottles, and common, medium, distinct, light yellowish-brown (10YR 6/4) mottles; single grain (structureless).

The surface layer ranges from 3 to 5 inches in thickness. It is dark gray in most places but ranges from very dark gray to gray. The subsurface layer is gray to grayish-brown and is 3 to 6 inches thick. The subsoil ranges from grayish brown to pale brown from its upper part to depths of not more than 30 inches. It is dominantly light gray below 30 inches. The subsoil is mottled with pale brown, light yellowish brown, and gray and, in most areas, also with yellowish brown or strong brown. A gleyed layer occurs at depths of 12 to 30 inches. The water table normally fluctuates between 24 and 42 inches.

This soil is low in organic matter. The cation-exchange capacity and natural fertility are very low. Permeability and leaching of plant nutrients are rapid.

This soil is in many small and a few large areas. Most general crops that tolerate wetness can be grown, but yields are low unless management is intensive. Pasture of bahiagrass and other deep-rooting plants do well under good management. This soil is well suited to trees and as wildlife habitats. Capability unit IVsw–1.

Plummer sand, high, 2 to 5 percent slopes (PhB).—This soil has stronger slopes than Plummer sand, high, 0 to 2 percent slopes, but is similar to that soil in most other characteristics. It has more rapid surface runoff than the more nearly level soil and a slightly lower water table. The available water-holding capacity and natural fertility are low. Plant nutrients leach rapidly.

This soil normally occurs in small areas. Because it is usually wet, it is not suited to most general crops. Under intensive management, crops that tolerate wetness have fair yields. Improved pasture of bahiagrass does well under good management. This soil also is well suited as woodland and to wildlife habitats. Capability unit IVsw–1.

Plummer coarse sand, high, 0 to 2 percent slopes (PcA).—This soil is coarser in texture to a greater depth than is Plummer sand, high, 0 to 2 percent slopes. The natural fertility, cation-exchange capacity, and organic matter are very low. This soil is very rapidly permeable, and plant nutrients leach rapidly. Included with this soil are a few areas that have slopes of 2 to 5 percent.

This soil is not suited to cultivated crops. Most of it is in small areas adjacent to flat, wet soils that are also poorly suited. It is suited to pastures of bahiagrass and other deep-rooted grasses, but intensive management is needed for good yields. The soil is well suited as woodland and for wildlife habitats. Capability unit Vws–2.

Portsmouth series

The Portsmouth series consists of deep, very poorly drained, very strongly acid soils that are on uplands in depressions or ponded areas. These soils have a small total acreage that is mostly in the central and north-central parts of the county. They developed from thick sediments, chiefly of beds of acid sandy clay loam texture.

Portsmouth soils have black sandy loam surface layers 8 to 16 inches thick. The subsoil is gray to light-gray fine sandy clay loam mottled with strong brown, brownish yellow, and yellow.

Portsmouth soils occur with Grady, Rains, Lynchburg, and Rutlege soils. Their surface soil is thicker and higher in organic matter than that in the Grady soils, and their subsoil is coarser textured and less plastic. They are thicker and darker colored in the surface soil than the Rains soils. Portsmouth soils are more poorly drained than the Lynchburg soils and are grayer and less yellow in the subsoil. They have a finer textured subsoil than that in the Rutlege soils.

The native vegetation consists chiefly of water-tolerant hardwoods and grasses. Most of the acreage is poorly suited to tilled crops and is still in native vegetation. Surface runoff and internal drainage are very slow.

Portsmouth fine sandy loam is the only soil in the Portsmouth series mapped in Gadsden County.

Portsmouth fine sandy loam (0 to 2 percent slopes) (Pt).—This is a very poorly drained, nearly level soil on uplands. It has a slightly sticky sandy clay loam subsoil.

Profile in a nearly level, undisturbed area, where the vegetation is mainly cypress and blackgum (*location:* SE¼SW¼ sec. 16, R. 4 W., T. 3 N.):

A_{11} 0 to 11 inches, black (10YR 2/1) fine sandy loam; moderate, fine, crumb structure; friable; high content of organic matter; many fine and few medium roots; very strongly acid; boundary abrupt and smooth.

A_{12} 11 to 15 inches, very dark gray (N 3/0) fine sandy loam; moderate, fine, crumb structure; friable; high in organic matter; many fine and few medium roots; very strongly acid; boundary abrupt and smooth.

B_{1g} 15 to 23 inches, gray (N 6/0) fine sandy clay loam; moderate, medium, subangular blocky structure; friable; very strongly acid; boundary clear and wavy.

B_{2g} 23 to 32 inches, gray (N 6/0) fine sandy clay loam with few, fine, distinct, brownish-yellow (10YR 6/8) mottles and few, fine, distinct, yellow (10YR 8/8) mottles; weak, medium, blocky structure; friable when moist; slightly sticky and plastic when wet; very strongly acid; boundary clear and wavy.

B_{3g} 32 to 44 inches +, light-gray (N 7/0) fine sandy clay loam with few, coarse, distinct, strong-brown (7.5YR 5/8) mottles, few, fine, distinct, brownish-yellow (10YR 6/8) mottles, and few, fine, prominent, red (2.5YR 4/8) mottles; weak, medium, blocky structure; friable when moist; slightly sticky and slightly plastic when wet; very strongly acid.

The surface layer ranges in color from black to very dark gray but is predominantly black. It is 8 to 16 inches thick. The subsoil is mottled gray to light gray. The depth to mottles, and the intensity of the mottles vary. The moderately fine textured subsoil normally occurs at about 18 inches, but in a few areas it is at depths slightly more than 18 inches. Included with this soil are small areas that have loamy fine sand surface soil.

Surface runoff and internal drainage are very poor. In most areas the water table is at or near the surface throughout the year. Many areas are covered with water except in long dry periods. The soil is high in organic matter but low in natural fertility. Permeability is moderate in the surface soil and moderately slow in the subsoil.

This soil is poorly suited to tilled crops unless it is drained. It is well suited to corn and truck crops if adequately drained and otherwise properly managed. If it is drained, it is well suited to improved pasture of grasses and clovers. Most of this soil has never been cleared and is still in a heavy growth of water-tolerant hardwood trees. It is suited to pine trees if adequately drained. Capability unit IIIws–2.

Rains series

In the Rains series are deep, poorly drained, strongly acid soils. These soils occur on uplands in nearly level depressions and in poorly defined drainageways. They have a small total acreage that is distributed throughout the county except in the southwestern part. These soils developed from thick beds of acid sediments chiefly of sandy clay loam texture.

Rains soils have very dark gray to gray fine sandy loam surface layers, 3 to 8 inches thick. The subsoil is gray to light-gray fine sandy clay loam mottled very pale brown, yellow, and reddish yellow. The parent material is mottled fine sandy clay loam.

The Rains soils occur with Portsmouth, Grady, Lynchburg, and Plummer soils. Their surface soil is not so thick as that in the Portsmouth soils and is not so high in organic matter. Their subsoil is not so fine textured, sticky, or plastic as that in the Grady soils. Rains soils, are finer textured in the surface soil and subsoil than Plummer soils. They are more poorly drained than the Lynchburg soils, which have a yellow instead of a gray subsoil.

The native vegetation consists of water-tolerant hardwood trees, native grasses, scattered slash pine, and low shrubs. Most of the acreage is still in native vegetation, but a few areas are cleared and in pasture.

Rains fine sandy loam is the only soil in the Rains series mapped in Gadsden County.

Rains soils have very slow surface runoff and very slow internal drainage. They have a moderately permeable surface soil and a slow to very slowly permeable subsoil. Because the subsoil is clayey and poorly aerated, the root zone is shallow. These soils are low in available moisture-holding capacity and in natural fertility.

Rains fine sandy loam (0 to 2 percent slopes) (Ra).—This poorly drained soil on uplands has a thin surface layer. Its subsoil is slightly sticky, plastic, and moderately fine textured.

Profile in a nearly level, undisturbed area, where the vegetation is mainly sweetgum, slash pine, and dogfennel (*location:* SE¼SE¼ sec. 25, R. 5 W., T. 2 N.):

A_1 0 to 5 inches, very dark gray (N 3/0) fine sandy loam; moderate, medium, crumb structure; friable; high content of organic matter; few fine and very few medium roots; many fine pores; strongly acid; boundary clear and smooth.

A_2 5 to 8 inches, gray (N 5/0) fine sandy loam with few, medium, faint, gray (N 6/0) mottles; moderate, fine and medium, crumb structure; friable when moist, slightly sticky when wet; few fine pores; strongly acid; boundary clear and smooth.

B_{1g} 8 to 24 inches, gray (N 6/0) fine sandy clay loam; weak, medium, blocky structure; slightly sticky when wet, firm when moist, and slightly hard when dry; very few fine and medium roots; few fine pores; strongly acid; boundary clear and wavy.

B_{2g} 24 to 32 inches, light-gray (N 7/0) fine sandy clay loam with few, medium, distinct, very pale brown (10YR 8/4) mottles; weak, medium, blocky structure; firm when moist, slightly sticky and slightly plastic when wet, hard when dry; very few fine roots and pores; strongly acid; boundary clear and wavy.

B_{3g} 32 to 44 inches, light-gray (10YR 7/1) fine sandy clay loam with common, fine, distinct, reddish-yellow (7.5YR 6/8) mottles; weak, medium, blocky structure; friable when moist, slightly sticky and plastic when wet, slightly hard when dry; strongly acid; boundary clear and wavy.

C_g 44 to 48 inches +, light-gray (10YR 7/1) fine sandy loam with common, fine, distinct, reddish-yellow (7.5YR 6/8) mottles; weak, medium, subangular blocky structure; very friable when moist and nonsticky when wet; strongly acid.

The surface layer ranges from gray to very dark gray in color, and from 3 to 8 inches in thickness. The subsoil is gray to light gray mottled with very pale brown to reddish yellow. In a few places the texture of the subsoil ranges from fine sandy clay loam in the upper part to a fine sandy loam in the lower part.

This soil has poor aeration and a shallow root zone. Permeability is moderate in the surface soil and slow to very slow in the subsoil. The natural fertility and content of organic matter are low. The available moisture-holding capacity is moderate. This soil has a high water table that is at or near the surface except in extreme dry periods.

Because it is wet, this soil is not suited to general crops. It is fairly well suited to truck crops and is well suited to improved pasture if excess water is removed during wet periods. This soil is suited as woodland and to wildlife habitats. Capability unit IVws–1.

Red Bay series

The Red Bay series consists of deep, well-drained, strongly acid soils. These soils occur on uplands in nearly level to strongly sloping areas. They have a small total acreage that is scattered throughout the county except the extreme southern and southwestern parts. Most of the acreage is in the central part. These soils formed from thick beds of acid sediments chiefly of sandy clay loam texture.

Red Bay soils have a dark-brown to dark reddish-brown loamy fine sand to fine sandy loam surface soil. Their subsoil is dark-red to red fine sandy loam to fine sandy clay

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loam. It is underlain by distinctly mottled, friable, fine sandy clay loam parent material.

Red Bay soils occur with Orangeburg, Ruston, and Magnolia soils. They have a darker brown surface soil than that in Orangeburg, Ruston, and Magnolia soils and a darker red subsoil than that in Orangeburg and Ruston soils. Their subsoil is more friable and coarser textured than that in Magnolia soils.

The native vegetation was mainly longleaf pine, low shrubs, and wiregrass. It is now longleaf, slash, and loblolly pines, various oaks, hickory, low shrubs, and wiregrass. Much of the acreage of this soil is cleared and is in corn, cotton, peanuts, shade tobacco, forage, and other cultivated crops.

Red Bay soils have medium surface runoff and medium internal drainage. Permeability is moderately rapid to rapid in the surface soil and moderate in the subsoil. These soils are well aerated and have good tilth. They have a high capacity for holding available moisture. They retain plant nutrients and respond well to fertilizers. On mild slopes they are well suited to a wide variety of cultivated crops.

Red Bay loamy fine sand, 0 to 2 percent slopes (ReA).—This is a well-drained, deep soil on uplands. It has a moderately fine textured, friable, dark-red subsoil.

Profile in a nearly level, cultivated field (*location:* SW¼SW¼ sec. 10, T. 2 N., R. 4 W.):

- A_p 0 to 6 inches, dark-brown (7.5YR 3/2) loamy fine sand; weak, medium, crumb structure; very friable; few fine roots; medium in organic matter; strongly acid; boundary clear and smooth.
- A_3 6 to 13 inches, dark reddish-brown (5YR 3/4) loamy fine sand; weak, medium, crumb structure; very friable; few fine roots; few fine pores; strongly acid; boundary clear and wavy.
- B_1 13 to 16 inches, dark-red (2.5YR 3/6) fine sandy loam; moderate, medium, crumb structure; friable; few fine roots and root channels; common fine pores; strongly acid; boundary clear and wavy.
- B_{21} 16 to 27 inches, dark-red (10R 3/6) fine sandy clay loam; moderate, medium, subangular blocky structure; friable; common fine and few medium pores; strongly acid; boundary gradual and wavy.
- B_{22} 27 to 94 inches, dark-red (10R 3/6) fine sandy clay loam; moderate, medium, subangular blocky structure; friable; common fine pores; strongly acid; boundary gradual and irregular.
- B_{31} 94 to 135 inches, red (2.5YR 4/6) fine sandy clay loam; moderate, medium, subangular blocky structure; friable; common fine pores; strongly acid; boundary gradual and irregular.
- B_{32} 135 to 144 inches +, red (2.5YR 4/8) fine sandy clay loam; friable; few fine pores; strongly acid.

The surface layers range from 12 to 18 inches in thickness. They are dark brown to very dark brown in the upper 4 to 6 inches. In a few cultivated areas the surface layer is slightly eroded and is mixed with the dark reddish-brown subsurface layer. In these areas the surface soil is dark reddish brown. In some places where this soil adjoins Magnolia and other finer textured soils, the subsoil is heavy fine sandy clay loam. The subsoil is normally dark red, but in places it is red in the lower part. Mottles generally occur at depths below 60 inches but in a few places are at depths of 48 to 60 inches. In a few areas the moderately fine textured subsoil is at depths of 18 to 30 inches.

This soil has a deep, well-aerated root zone that extends through the subsoil. It contains a moderate amount of organic matter and is loamy enough to have good tilth. The available moisture-holding capacity of the surface soil is moderate and that of the subsoil is high. This soil has moderate natural fertility. Permeability is moderately rapid in the surface soil and moderate in the subsoil. The cation-exchange capacity is moderately high, and response to fertilizer is good.

This soil occurs in broad, flat areas that are suited to a good field layout. It is well suited to all general crops grown in the county and, if irrigated, to shade tobacco. Most pasture plants do well, but whiteclover may be damaged by drought. This soil is well suited as woodland and for wildlife habitats. Capability unit I–1.

Red Bay loamy fine sand, 2 to 5 percent slopes (ReB).—This soil has stronger slopes and more rapid surface runoff than Red Bay loamy fine sand, 0 to 2 percent slopes, and is more susceptible to erosion. It is well suited to all general crops and, if irrigated, to shade tobacco. It is generally in small areas adjacent to other good soils and can be managed together with them in a good field layout. This soil is well suited to improved pastures of bahiagrass and bermudagrass and as woodland and habitats for wildlife. Capability unit IIe–1.

Red Bay loamy fine sand, 2 to 5 percent slopes, eroded (ReB2).—This soil has stronger slopes and is more eroded than Red Bay loamy fine sand, 0 to 2 percent slopes. It has thinner surface layers than the more nearly level, uneroded soil but is similar to that soil in most other characteristics. The surface layers are 4 to 12 inches thick. Most of the erosion is sheet erosion. In a few areas many shallow gullies occur, and the erosion between the gullies is slight. In these areas the depth to finer textured subsoil is 12 to 18 inches.

Though this soil has been damaged by erosion, it is suited to all general crops. It is suited to shade tobacco, but irrigation is needed for good yields. This soil generally is in small areas adjacent to other good soils suited to a good field layout. It is suited to improved pasture of bahiagrass and other locally grown pasture plants. It is well suited as woodland and for wildlife habitats. Capability unit IIe–1.

Red Bay loamy fine sand, 5 to 8 percent slopes (ReC).—This soil has stronger slopes and more rapid surface runoff than Red Bay loamy fine sand, 0 to 2 percent slopes, and a greater hazard of erosion. Its surface layers range from 11 to 18 inches in thickness but are less than 16 inches in most places.

This soil occurs in small areas together with many other sloping soils somewhat similar to it. Though it is suited to most farm crops grown in the county, it is too steep and too susceptible to erosion for intensive cultivation. It is well suited to improved pasture, woodland, and to wildlife habitats. Capability unit IIIe–1.

Red Bay loamy fine sand, 5 to 8 percent slopes, eroded (ReC2).—This soil has stronger slopes and thinner surface layers than Red Bay loamy fine sand, 0 to 2 percent slopes. It is more eroded than that soil. Most of this soil is uniformly sheet eroded. The surface layers range from 4 to 11 inches in thickness. A few deep gullies or many shallow ones occur in some areas. Between the gullies in these areas, the depth to the fine-textured subsoil ranges from 11 to 18 inches. In some sheet-eroded areas where the original surface soil and the subsoil have been mixed, the surface layer is darker brown than it was before mixing. Because it is eroded, this soil is only moderately well suited to cultivated crops and crop

yields are low. This soil is generally in small, highly-dissected areas that are not well suited to a good field layout. It is well suited to pasture, woodland, and to wildlife habitats. Capability unit IIIe–1.

Red Bay loamy fine sand, 8 to 12 percent slopes (ReD).—This soil has stronger slopes and more rapid surface runoff than Red Bay loamy fine sand, 0 to 2 percent slopes, and is more susceptible to erosion. The surface layers range from 11 to 18 inches in thickness but are less than 16 inches thick in most places. Included with this soil are a few areas that are moderately eroded.

Mainly because it is susceptible to erosion, it is poorly suited to frequent cultivation. This soil is in small areas on dissected, strongly sloping hillsides. Its best uses are for improved pasture, woodland, and wildlife habitats. Capability unit IVe–1.

Red Bay fine sandy loam, 2 to 5 percent slopes, severely eroded (RbB3).—This soil is more strongly sloping and more eroded than Red Bay loamy fine sand, 0 to 2 percent slopes. Nearly all of the original surface soil has been removed in most areas, and the subsoil is exposed or has been mixed with the original surface soil. These areas have a finer textured, redder surface soil than areas of Red Bay loamy fine sand, 0 to 2 percent slopes. In some places part of the original surface soil remains, but there are many shallow gullies and a few deep ones. Between the gullies, the surface layers are 4 to 12 inches thick.

Included with this soil are small areas that have a fine sandy clay loam surface layer. Also included are small severely gullied areas of Orangeburg soil.

This soil occurs on the lower parts of slopes in small, highly dissected areas. It is suited to most general crops grown in the county but must be protected from further erosion. Improved pasture, woodland, and habitats for wildlife are the best uses for this soil. Capability unit IIIe–1.

Red Bay fine sandy loam, 5 to 8 percent slopes, severely eroded (RbC3).—This soil is steeper and more eroded than Red Bay loamy fine sand, 0 to 2 percent slopes. Nearly all of the original surface layers have been removed in most areas, and the subsoil is either exposed or has been mixed with the remaining surface soil. These areas have a finer textured, redder surface layer than areas of Red Bay loamy fine sand, 0 to 2 percent slopes. In places the part of the original surface soil remains, but there are many shallow gullies and a few deep ones. Between the gullies, the surface layers are 4 to 11 inches thick. This soil has poor tilth and slow permeability.

Included with this soil are small areas that have a fine sandy clay loam surface soil. Also included are some severely gullied areas of Orangeburg soil.

This soil is in small areas generally on the lower part of slopes. Because it is severely eroded and susceptible to further erosion, it is not suited to frequent cultivation. Its best uses are for pasture, woodland, and wildlife habitats. Capability unit IVe–1.

Red Bay fine sandy loam, 8 to 12 percent slopes, severely eroded (RbD3).—This soil is more strongly sloping and is more eroded than Red Bay loamy fine sand, 0 to 2 percent slopes. It has more rapid surface runoff than the more nearly level, uneroded soil and is more susceptible to further erosion. Nearly all the original surface layers have been removed in most areas, and the subsoil is either exposed or is mixed with the remaining surface soil. These areas have redder, finer textured surface layers than areas of Red Bay loamy fine sand, 0 to 2 percent slopes. In some places many shallow gullies and a few deep ones occur. The surface layers between the gullies are 4 to 10 inches thick.

Included with this soil are small areas that have fine sandy clay loam surface soils and some severely gullied areas of Orangeburg soil.

This soil is on strongly sloping hillsides in small highly dissected areas. Because it is severely eroded and is susceptible to further erosion, it is not suited to cultivated crops. If well managed, it is suited to improved pastures of bahiagrass and bermudagrass. Woodland and wildlife habitats are the best uses for this soil. Capability unit VIes–1.

Ruston series

The Ruston series consists of deep, well-drained, strongly acid soils on uplands in nearly level to strongly sloping areas. These soils have a large total acreage that is distributed throughout the county except the extreme southwestern part. Large areas of these soils occur in the central and northeastern parts. Ruston soils developed from thick beds of unconsolidated acid materials that have a sandy clay loam texture.

These soils have dark-gray to grayish-brown loamy sand to fine sandy loam surface layers, 10 to 30 inches thick. The subsoil is strong-brown to yellowish-red, friable, porous fine sandy clay loam. The parent material is distinctly mottled sandy clay loam.

Ruston soils occur with the Norfolk, Orangeburg, Faceville, and Eustis soils. Their subsoil is redder than that in the Norfolk soils but is not so red as that in the Orangeburg soils. They are about the same color as the Eustis soils but are finer textured in the subsoil. Ruston soils have a coarser textured, more friable subsoil than Faceville soils.

The native vegetation was chiefly longleaf pine, low shrubs, and wiregrass, but is now longleaf and loblolly pines, red, water, and live oaks, hickory, shrubs, and wiregrass. Much of the acreage is cleared and in corn, cotton, peanuts, shade tobacco, forage, and other cultivated crop.

Ruston soils have medium surface runoff and medium internal drainage. Permeability is moderately rapid to rapid in the surface soil and moderate in the subsoil. These soils have a high capacity for holding available moisture. They are well aerated and have good tilth. They have moderate natural fertility. These soils retain plant nutrients and respond well to fertilizers. Where they occur on mild slopes, they are well suited to a wide variety of cultivated crops.

Ruston loamy fine sand, 0 to 2 percent slopes (RmA).—This is a well-drained, deep soil on uplands. It has a friable, moderately fine textured subsoil that is at depths less than 18 inches.

Profile in a nearly level, cultivated field (*location:* SW¼NE¼ sec. 21, R. 2 W., T. 3 N.):

A_p 0 to 3 inches, dark-gray (10YR 4/1) loamy fine sand; weak, very fine, crumb structure; loose; many fine roots; medium content of organic matter; strongly acid; boundary abrupt and smooth.

A_2 3 to 10 inches, grayish-brown (10YR 5/2) loamy fine sand; weak, very fine, crumb structure; loose; many fine roots and few fine root channels; strongly acid; boundary clear and wavy.

A_3 10 to 14 inches, reddish-yellow (7.5YR 6/8) fine sandy loam; weak, fine, crumb structure; friable; many fine roots and few fine root channels and pores; strongly acid; boundary clear and wavy.

B_1 14 to 18 inches, yellowish-red (5YR 5/8) light fine sandy clay loam; weak, fine and medium, subangular blocky structure that breaks readily to moderate, medium, crumb structure; friable; many fine roots; common fine pores; strongly acid; boundary gradual and wavy.

B_2 18 to 32 inches, yellowish-red (5YR 4/8) fine sandy clay loam; moderate, medium, subangular blocky and crumb structure; friable; few fine roots; common fine pores; strongly acid; boundary gradual and irregular.

B_3 32 to 44 inches, red (2.5YR 5/8) fine sandy clay loam with common, medium, distinct, strong-brown (7.5YR 5/6) mottles and common, medium, prominent, yellow (10YR 7/8) mottles; moderate, medium, subangular blocky structure; friable; few fine pores; strongly acid; boundary gradual and irregular.

C 44 to 56 inches +, reddish-yellow (5YR 6/6) fine sandy clay loam with common, medium, distinct, light-gray (10YR 7/1) mottles, common, medium, distinct, reddish-yellow (7.5YR 6/6) mottles, and few, medium, distinct, yellow (10YR 7/8) mottles; moderate, medium, subangular blocky and moderate, fine, angular blocky structure; strongly acid.

The surface layer of this soil, in most areas, ranges from gray to dark gray in color. It is brown in cultivated areas where it is slightly eroded and is mixed with subsurface material. The surface layers range from 12 to 18 inches in thickness. In most places the moderately fine textured subsoil is at depths less than 18 inches, but it is at depths slightly more than 18 inches in some small areas. The subsoil is normally strong brown to yellowish red. It is mottled below a depth of 36 inches. The depth to the mottled parent material is at about 46 inches in most places.

Included are a few small areas that have a loamy sand surface soil. Also included are a few areas that have reddish-yellow and red subsoil. In the northeastern part of the county, a few areas have mottles at depths of 20 to 36 inches. Small iron pebbles are abundant throughout the profile in a few places.

This soil contains a moderate amount of organic matter and is moderately fertile. It is loamy enough to have good tilth. It has a deep, well-aerated root zone that extends to the parent material. The available moisture-holding capacity of the surface soil is moderate, and that of the subsoil is high. Permeability is moderately rapid in the surface soil and moderate in the subsoil. This soil has a moderately high cation-exchange capacity and responds well to fertilizers.

This soil is well suited to all general crops and is one of the better soils for growing shade tobacco. It is on nearly level slopes in fairly large areas along with other good agricultural soils that are well suited to a good field layout. It needs to be irrigated to produce high yields of tobacco. This soil is well suited to improved pastures of bermudagrass, bahiagrass, and crimson clover but white clover may be damaged by drought. It is well suited as woodland and for wildlife habitats. Capability unit I–1.

Ruston loamy fine sand, 2 to 5 percent slopes (RmB).—This soil has slightly stronger slopes and more rapid runoff than Ruston loamy fine sand, 0 to 2 percent slopes, and a greater hazard of erosion. It is similar to the more nearly level soil in most other characteristics.

This soil is well suited to all general crops grown in the county. It is well suited to shade tobacco but needs irrigation for best yields. In most places it is in large areas adjacent to other good agricultural soils and can be managed with them in a good field layout. This soil is well suited to improved pasture of most locally grown pasture plants, but, whiteclover may be damaged by drought. Woodland and wildlife habitats are good uses for this soil. Capability unit IIe–1.

Ruston loamy fine sand, 2 to 5 percent slopes, eroded (RmB2).—This soil is more sloping and more eroded than Ruston loamy fine sand, 0 to 2 percent slopes, and generally it is thinner in the surface layers. The surface layers are 4 to 12 inches thick. Most of the erosion is sheet erosion, but there are some gullies. In areas where the gullies are shallow, the soil between the gullies is only slightly eroded and the depth to the finer textured subsoil is 12 to 18 inches.

Although erosion is a hazard, this soil is well suited to all locally grown general crops and to shade tobacco. It needs to be irrigated for best yields of tobacco. It generally adjoins other good agricultural soils in areas large enough for a good field layout. This soil is well suited to improved bermudagrass and bahiagrass pasture. It also is well suited as woodland and for wildlife habitats. Capability unit IIe–1.

Ruston loamy fine sand, 5 to 8 percent slopes (RmC).—This soil is more sloping and more susceptible to erosion than Ruston loamy fine sand, 0 to 2 percent slopes. It is similar to the more nearly level soil in most other characteristics. The surface layers range from 11 to 18 inches in thickness, but they are generally less than 16 inches thick. In some areas this soil is shallower than normal, and the mottled parent material is at depths of 42 to 48 inches.

This soil is in long, fairly large sloping areas. It occurs with other sloping soils that are somewhat similar to it. It is suited to most general crops grown in the county, but because of the erosion hazard, it is not suited to intensive use. This soil is well suited to improved pasture of bahiagrass and bermudagrass and to woodland and wildlife habitats. Capability unit IIIe–1.

Ruston loamy fine sand, 5 to 8 percent slopes, eroded (RmC2).—This soil is more sloping and more eroded than Ruston loamy fine sand, 0 to 2 percent slopes. Generally it is thinner in the surface layers. In most areas sheet erosion is uniform and no gullies have formed. The depth to moderately fine textured subsoil ranges from 4 to 12 inches. In a few areas many shallow gullies and a few deep ones have formed. The depth to the subsoil is 11 to 18 inches. Where the original surface soil has been eroded and the subsoil is mixed with it, the surface layer is browner than it used to be. On the steeper, more severely eroded slopes, the mottled parent material is at depths of 38 to 46 inches.

This soil is well suited to most general crops grown in the county, but because it is susceptible to severe erosion, it cannot be used intensively. Good management is needed to control erosion and to maintain good yields. This soil is well suited to improved pasture of bahiagrass and bermudagrass. Woodland and wildlife habitats are good uses. Capability unit IIIe–1.

Ruston loamy fine sand, 8 to 12 percent slopes (RmD).—This soil has much stronger slopes, more rapid runoff, and a greater erosion hazard than Ruston loamy fine sand, 0 to 2 percent slopes. It occurs in small areas on strongly sloping, highly dissected hillsides. On the steeper slopes the mottled parent material is normally at depths of 38

to 48 inches. Included with this soil are a few moderately eroded areas.

This soil is suited to most general crops grown in the county, but because of a severe erosion hazard, it ought not be cultivated intensively. Most common crops can be produced from time to time if erosion is controlled. This soil is well suited to improved pasture of bahiagrass and bermudagrass, and to woodland and wildlife habitats. Capability unit IVe–1.

Ruston loamy sand, thick surface, 0 to 2 percent slopes (RsA).—This soil is thicker in the surface layers than Ruston loamy fine sand, 0 to 2 percent slopes, but is similar to that soil in most other characteristics. The surface layers range from 18 to 30 inches in thickness. The surface layer is about the same thickness as that in Ruston loamy fine sand, 0 to 2 percent slopes, but the subsurface layer is much thicker. Water moves rapidly through the surface layers, and leaching is rapid. The cation-exchange capacity and moisture-holding capacity of this soil are lower than those in Ruston loamy fine sand, 0 to 2 percent slopes. Included with this soil are small areas of loamy fine sand and small areas that have a moderately fine textured subsoil at depths below 30 inches.

This is a deep, well-drained soil on uplands. It has a friable fine sandy clay loam subsoil.

Profile in a nearly level, disturbed area (*location*: NW¼NE¼ sec. 8, R. 4 W., T. 2 N.):

A_p 0 to 10 inches, gray (10YR 5/1) loamy sand; weak, fine, crumb structure; loose; medium content of organic matter, common fine roots; strongly acid; boundary clear and wavy.

A_2 10 to 20 inches, reddish-yellow (7.5YR 6/8) loamy sand; weak, fine, crumb structure; loose; common fine roots and pores; strongly acid; boundary clear and wavy.

A_3 20 to 24 inches, reddish-yellow (5YR 6/8) loamy fine sand; moderate, medium, crumb structure; very friable; common fine roots; common fine pores and few medium pores; very few, fine, iron concretions; strongly acid; boundary gradual and wavy.

B_1 24 to 30 inches, yellowish-red (5YR 5/8) light fine sandy clay loam; moderate, medium, crumb structure; friable; few fine roots; common fine and few medium pores; very few fine iron concretions; strongly acid; boundary gradual and wavy.

B_2 30 to 40 inches, yellowish-red (5YR 5/8) fine sandy clay loam; moderate, medium, subangular blocky structure; friable; few fine roots; common fine pores; very few, fine, iron concretions; strongly acid; boundary gradual and wavy.

B_3 40 to 52 inches +, yellowish-red (5YR 5/8) fine sandy clay loam with few, fine, faint, reddish-yellow (7.5YR 6/8) mottles and few, fine, distinct, red (2.5YR 5/8) mottles; moderate, medium, subangular blocky structure; friable; few fine roots and pores; strongly acid.

This soil is suited to most cultivated crops grown in the county but is best suited to corn, small grains, and peanuts. Irrigation is needed for good yields of shade tobacco. This soil is well suited to improved pastures of bermudagrass and bahiagrass and as woodland and wildlife habitats. Capability unit IIse–1.

Ruston loamy sand, thick surface, 2 to 5 percent slopes (RsB).—This soil is more sloping and more susceptible to erosion than Ruston loamy sand, thick surface, 0 to 2 percent slopes. It is similar to the more nearly level soil in most other characteristics. The available water-holding capacity is moderately low, but response to fertilizer is good. Included with this soil are a few, scattered, moderately eroded areas.

This soil is well suited to most crops generally grown in the area, but it needs to be irrigated for high yields of tobacco. It generally occurs next to other good agricultural soils in areas large enough for a good field layout. Erosion needs to be controlled in cultivated fields. This soil is well suited to improved pasture of bermudagrass and bahiagrass. It is also well suited as woodland and for wildlife. Capability unit IIse–1.

Ruston loamy sand, thick surface, 5 to 8 percent slopes (RsC).—This soil has stronger slopes, more rapid runoff, and a greater erosion hazard than Ruston loamy sand, thick surface, 0 to 2 percent slopes. It is shallower to mottled parent material than the more nearly level soil. The capacity for holding available moisture is moderately low, but response to fertilizer is good. Included with this soil are a few moderately eroded areas.

This soil is in small areas on long hillsides and occurs with other soils somewhat similar to it. It is well suited to most crops locally grown if erosion is controlled. It is also well suited to improved pasture of bermudagrass and bahiagrass. Woodland and wildlife habitats are good uses. Capability unit IIIes–1.

Ruston loamy sand, thick surface, 8 to 12 percent slopes (RsD).—This soil is on stronger slopes than Ruston loamy sand, thick surface, 0 to 2 percent slopes. It has more rapid surface runoff than that soil and is much more susceptible to erosion. In most areas, however, erosion is slight. The depths to clayey subsoil and the mottled parent material are less than in the coarser textured, more nearly level soil. Included with this soil are a few areas that have moderate sheet erosion and a few areas that have a few deep gullies or many shallow ones.

This soil is in small areas on highly dissected strongly sloping hillsides. It is suitable for only occasional cultivation. Most general crops can be grown if management is intense. This soil is well suited to improved pasture of bermudagrass and bahiagrass. It is also well suited as woodland and for wildlife habitats. Capability unit IVes–1.

Ruston fine sandy loam, 5 to 8 percent slopes, severely eroded (RfC3).—This soil is more sloping and more severely eroded than Ruston loamy fine sand, 0 to 2 percent slopes. Nearly all of the original surface soil has been lost, and the brown, finer textured subsoil is either exposed or is mixed with the remaining 1 to 4 inches of surface soil. This surface layer is brown or yellowish brown in places. A few areas have many shallow gullies or a few deep ones. The surface soil between the gullies in these areas may be slightly more than 4 inches. In some areas, mottled parent material is at 34 to 46 inches.

Included with this soil are small areas of fine sandy clay loam soil, and a few areas on slopes ranging from 8 to 12 percent. Also included are a few small areas that have moderately fine textured subsoil.

This soil is on the lower parts of slopes that have been cultivated continuously for many years. It can be cultivated occasionally if erosion is controlled. It is well suited to improved pasture of bermudagrass and is also well suited as woodland and for wildlife habitats. Capability unit IVe–1.

Ruston-Orangeburg-Lakeland complex, 5 to 8 percent slopes (RtC).—This mapping unit consists of deep, well-drained, strongly acid soils on sloping hillsides along drainageways. These soils occur in such intricate patterns that it is not feasible to map them separately. About 40 to 50 percent of the total acreage is in Ruston

soils, 30 to 40 percent is in Orangeburg soils, and 15 to 25 percent is in Lakeland soils. Also in this mapping unit are small areas of Norfolk, Red Bay, Carnegie, and Eustis soils. A soil representative of each of these series is described for the corresponding series.

The texture of the surface layer of these soils ranges from fine sand to loamy fine sand. Areas of these soils that have not been cleared are generally slightly eroded whereas areas that are cleared and cultivated are generally moderately eroded. Included with these soils are small areas with slopes of 8 to 12 percent.

Most of these soils have not been cleared. The native vegetation consists mainly of oaks, hickory, and pines. The cleared areas are in pasture.

Surface runoff is rapid, and internal drainage varies according to the texture of the underlying material. The natural fertility, available moisture-holding capacity, and permeability vary according to the soils in the mapping unit. These soils generally have good tilth and respond well to fertilizer.

These soils are suited to most general crops grown in the area, but because they are susceptible to erosion, they cannot be cultivated intensively. They are well suited to improved pasture of bermudagrass and bahiagrass, as woodland, and for wildlife habitats. Capability unit IIIes–1.

Ruston-Orangeburg-Lakeland complex, 8 to 12 percent slopes (RtD).—This mapping unit is more sloping and more susceptible to erosion than Ruston-Orangeburg-Lakeland complex, 5 to 8 percent slopes. A few areas are moderately sheet eroded or have many shallow gullies or a few deep ones.

Though these soils may be cultivated occasionally, their suitability for cultivation is restricted by the erosion hazard and low permeability. They are well suited to improved pasture of bahiagrass and bermudagrass and are also well suited as woodland and for wildlife habitats. Capability unit IVes–1.

Ruston-Orangeburg-Lakeland complex, 12 to 50 percent slopes (RtF).—This mapping unit is much steeper and much more susceptible to erosion than Ruston-Orangeburg-Lakeland complex, 5 to 8 percent slopes. Some small areas have slopes with gradients as much as 65 percent. Many areas have moderate sheet erosion or have many shallow gullies or a few deep ones.

These soils occur on highly dissected slopes or in large, more uniform areas. They are not suited to cultivation and are only fairly well suited to pasture. Areas in improved pasture must be very carefully managed to prevent erosion. These soils are well suited as woodland and for wildlife habitats. Capability unit VIIes–1.

Ruston-Orangeburg-Lakeland complex, 12 to 50 percent slopes, severely eroded (RtF3).—This mapping unit is much steeper and is more severely eroded than Ruston-Orangeburg-Lakeland complex, 5 to 8 percent slopes. Some small areas have slopes with gradients as much as 65 percent. Nearly all the original surface soil has been lost in many places. Here the subsoil is either exposed or is mixed with the original surface soil. In these areas the surface layer is finer textured than that in Ruston-Orangeburg-Lakeland complex, 5 to 8 percent slopes. Surface runoff is very rapid. Many shallow gullies and a few deep ones occur throughout this unit.

This mapping unit occurs on severely eroded, steep hillsides in small areas normally surrounded by less severely eroded soils. It is not suited to cultivated crops or to pasture. It is best suited as woodland and for wildlife habitats. Capability unit VIIes–1.

Rutlege series

The Rutlege series consists of deep, poorly drained to very poorly drained, strongly acid soils. These soils are on uplands in low-lying positions on nearly level to gentle slopes. Some of the gentle slopes are kept wet by seepage from adjoining hillsides. These soils have a small total acreage that is distributed throughout the county in small areas except in the extreme western part. Most of the broader flat areas are in the southwestern part. These soils developed from thick beds of unconsolidated acid materials that have a sand and loamy sand texture.

Rutlege soils have a black fine sand surface soil high in organic matter. The surface layers are 8 to 18 inches thick and grade to a gray to white fine sand subsoil. Normally the fine sand extends to depths of 42 inches, but in some areas the finer textured material is at depths of 30 to 42 inches.

Rutlege soils occur with the Plummer, Klej, Blanton, and Lakeland soils on the same kinds of parent material as do those soils. But the thick, dark-colored surface layer that is present in the Rutlege soils does not occur in the Plummer, Klej, Blanton, or Lakeland soils. The Rutlege soils are similar to the Plummer soils in drainage but are more poorly drained than the Lakeland, Klej, and Blanton soils. Their subsoil is much lighter colored than that in Klej and Lakeland soils and somewhat lighter colored than that in Blanton soils. Rutlege soils are similar to Portsmouth soils in color of the surface soil and subsoil. Their surface soil has about the same thickness and content of organic matter as that in the Portsmouth soils, but their subsoil is coarser textured.

The native vegetation consists chiefly of cypress, blackgum, myrtle, slash pine, and water-loving grasses. A very small acreage of these soils is cleared and in pasture.

Rutlege soils have slow surface runoff and slow internal drainage. They are rapidly permeable and plant nutrients leach rapidly. Because they are excessively wet, aeration is poor.

Rutlege fine sand, 0 to 2 percent slopes (RuA).—This is a deep, poorly drained to very poorly drained soil. It has a thick surface soil and a fine sand subsoil.

Profile in a nearly level, undisturbed area where the vegetation is myrtle and water-loving grass (*location:* NE¼NW¼ sec. 3, R. 4 W., T. 3 N.):

A_1 0 to 11 inches, black (10YR 2/1) fine sand; single grain (structureless); loose; high content of organic matter; few fine roots and root channels; strongly acid; boundary clear and wavy.

A_2 11 to 15 inches, gray (10YR 5/1) fine sand; single grain (structureless); loose; few fine roots and root channels; strongly acid; boundary clear and wavy.

C_g 15 to 48 inches +, white (10YR 8/1) fine sand; single grain (structureless); loose; strongly acid.

The surface layers range from black to very dark gray in color and normally from 8 to 18 inches in thickness. Some areas have dark-colored organic surface layers as much as 24 inches thick. The subsoil ranges from gray to white in color but is mostly gray to light gray. In most areas the fine sand extends to depths greater than 42 inches, but in a few small areas finer textured material occurs between 30 and 42 inches. Included with this soil

are some areas that have a loamy fine sand texture. Also included are a few areas where the subsoil has yellow and yellowish-brown mottles.

This soil has a water table that is within a few inches of the surface. It is likely to be flooded from time to time. It is high in organic matter but low in natural fertility. Except where this soil is drained, aeration is poor and the growth of roots is restricted.

The suitability of this soil for crops varies according to local conditions. A few areas are large enough to be developed for the production of truck crops. These areas need a system of water control that provides drainage ditches and irrigation. Many small or long and narrow areas are surrounded by poor agricultural soils. These areas cannot be drained effectively. This soil is well suited to improved pasture if ditches are dug to remove excess water during wet periods. Clovers and grasses are suitable plants. This soil is well suited to woodland and to wildlife habitats. Capability unit IIIws–2.

Rutledge fine sand, 2 to 5 percent slopes (RbB).—This soil is more sloping than Rutlege fine sand, 0 to 2 percent slopes. Though water runs off the surface, seepage from adjacent hillsides keeps the soil saturated much of the time. Fertility is low because plant nutrients leach out rapidly. Included with this soil are small areas of loamy fine sand and a few small areas that have 5 to 8 percent slopes.

This soil is generally in small areas. If properly drained, it is well suited to truck crops. It is well suited to improved pasture of locally grown grasses and clovers, and as woodland and wildlife habitats. Pasture generally does not need to be drained. Capability unit IIIws–2.

Sawyer series

The Sawyer series are deep, well drained to moderately well drained, strongly acid soils. These soils are on uplands in small, nearly level to steep areas of irregular shape. They have a small total acreage that is distributed throughout the county except in the southern part. These soils developed from acid materials that have a sandy clay or clay texture.

Sawyer soils have very dark gray to grayish-brown loamy fine sand surface layers, 8 to 14 inches thick. The subsoil is light yellowish-brown to yellowish-brown, friable to firm, heavy fine sandy clay loam to fine sandy clay. The lower part of the subsoil is generally fine sandy clay that is plastic when wet and hard when dry. Mottles of brown, yellow, and red occur at depths of 14 to 24 inches and increase in intensity with increasing depth. The subsoil is underlain by mottled, plastic, clay parent material.

The Sawyer soils occur with the Susquehanna, Shubuta, and Norfolk soils. They have yellow subsoil instead of a red one like in the Shubuta soils and are underlain by more plastic material than Shubuta soils. They are thicker in the surface soil than Susquehanna soils and are more yellow in the subsoil. Sawyer soils are more plastic, more mottled, and finer textured in the subsoil than Norfolk soils and are underlain by plastic clay parent material unlike the parent material in Norfolk soils.

The native vegetation consists chiefly of longleaf, slash, and loblolly pines, hardwood trees, low shrubs, and native grasses. Much of the acreage is still in native vegetation, but a few small areas are cleared and in cultivated crops or pasture.

Sawyer soils normally have medium surface runoff and somewhat slow internal drainage. The clayey, poorly aerated subsoil is not favorable for good root development. Permeability is moderate in the surface soil and moderately slow to slow in the subsoil. The available moisture-holding capacity is moderately low in the surface soil and is high in the subsoil. The natural fertility of these soils is moderate. On mild slopes these soils are moderately well suited to shallow-rooted crops.

Sawyer loamy fine sand, 2 to 5 percent slopes (SaB).—This is a deep soil on uplands. It has a slightly plastic, yellowish-brown, heavy fine sandy clay loam or fine sandy clay subsoil.

Profile in a gently sloping, undisturbed area where the vegetation consists chiefly of slash pine, sweetgum, and waxmyrtle (*location:* SE¼NW¼ sec. 22, R. 3 W., T. 2 N.):

- A_1 0 to 3 inches, very dark gray (10YR 3/1) loamy fine sand; weak, medium, crumb structure; very friable; medium content of organic matter; many fine roots and few medium roots; strongly acid; boundary abrupt and smooth.
- A_3 3 to 8 inches, grayish-brown (10YR 5/2) fine sandy loam; moderate, medium, crumb structure; very friable; many fine pores; strongly acid; boundary clear and smooth.
- B_1 8 to 14 inches, yellowish-brown (10YR 5/4) fine sandy clay loam; moderate, medium, subangular blocky structure; friable when moist, slightly sticky when wet; few fine roots; many fine pores; few fine platelike quartz pebbles; strongly acid; boundary gradual and wavy.
- B_2 14 to 33 inches, yellowish-brown (10YR 5/6) heavy fine sandy clay loam with few, fine, prominent, red (10R 4/8) mottles and few, fine, distinct, strong-brown (7.5YR 5/8) mottles; moderate, medium, subangular blocky structure; friable when moist, slightly sticky and plastic when wet, hard when dry; many fine and few common pores; few fine and medium roots; few fine quartz pebbles; strongly acid; boundary gradual and irregular.
- B_3 33 to 46 inches, mottled red (10R 4/8), yellowish-red (5YR 4/8), reddish-yellow (7.5YR 6/8), and gray (10YR 5/1) fine sandy clay; strong, medium, subangular blocky structure; firm when moist, plastic when wet, hard when dry; very few fine roots; few fine pores; strongly acid; boundary gradual and irregular.
- C 46 to 54 inches +, gray (N 6/0) clay with few, medium, distinct, reddish-yellow (7.5YR 6/8) mottles and common, coarse, distinct, dark reddish-brown (5YR 3/4) mottles; strong, medium, blocky and subangular blocky structure; firm when moist, sticky and stiff when wet; very slowly permeable; very firm, dark reddish-brown (5YR 3/4) concretions; strongly acid.

The surface layer of this soil ranges from 3 to 6 inches in thickness and from very dark gray to grayish brown in color. The depth to the finer textured subsoil is less than 18 inches but generally ranges from 8 to 14 inches. The subsoil ranges from light yellowish brown to yellowish brown in color and from fine sandy clay to clay in texture. It is friable to firm and is generally firm in the lower part. Mottles of yellow, red, brown, and gray occur at depths of 14 to 24 inches.

Included with this soil are a few small areas that have a fine sandy loam and a loamy sand surface soil, and a few small areas with surface layers that are 18 to 30 inches thick. Also included are a few moderately eroded areas.

Mainly because it is slowly permeable in the subsoil, this soil has rapid runoff. The subsoil is poorly aerated,

and the root zone is shallow. This soil contains a small amount of organic matter and is low in natural fertility.

This soil is only moderately well suited to most locally grown general crops. It generally is in small areas adjacent to other soils that are only moderately well suited to cultivated crops. It is best suited to peanuts, cotton, and corn. If management is good, this soil is well suited to improved pastures of bermudagrass and bahiagrass. Growth, however, is stunted in dry seasons because root penetration is poor. This soil is well suited as woodland and for wildlife habitats. Capability unit IIIes–2.

Sawyer loamy fine sand, 5 to 8 percent slopes (SaC).—This soil is more sloping than Sawyer loamy fine sand, 2 to 5 percent slopes, and more susceptible to erosion. Some areas have a few shallow gullies. Included with this soil are a few areas with surface layers 18 to 30 inches thick and a few scattered areas that are moderately eroded.

Because its subsoil is shallow, dense, and poorly aerated, this soil is poorly suited to cultivated crops. It is suited to improved pasture of bermudagrass and bahiagrass. Most areas are best suited as woodland and for wildlife habitats. Capability unit IVes-2.

Shubuta series

The Shubuta series consists of deep, well-drained, strongly acid soils. These soils are on uplands in gently sloping areas. They have a small total acreage that occurs in small intricate patterns with other soils and is distributed throughout the county except in the southern part. These soils developed from thick beds of acid materials that have a sandy clay or clay texture.

Shubuta soils have dark-gray to light yellowish-brown fine sandy loam surface layers, 6 to 12 inches thick. These layers grade abruptly to a subsoil of strong-brown to red, friable to firm sandy clay loam to fine sandy clay. The subsoil is 6 to 14 inches thick and is mottled in the lower part. Mottles increase in intensity with increasing depth. The parent material is distinctly mottled, compact sandy clay to clay.

Shubuta soils occur with Cuthbert, Faceville, Ruston, and Sawyer soils. This subsoil is more uniform, less compact, and thicker than that in the Cuthbert soils. They have a redder subsoil than the Sawyer soils and more friable parent material. Shubuta soils have a thinner, finer textured, and less friable subsoil than Faceville soils. They have a much thinner, finer textured, and less friable subsoil than the Ruston soils.

The native vegetation consists chiefly of longleaf, slash, and loblolly pines, various hardwood trees, low shrubs, and native grasses. Most of the acreage is still in native vegetation, but a few areas are cleared and in cultivated crops or pasture.

Shubuta fine sandy loam is the only soil in the Shubuta series mapped in Gadsden County.

Shubuta soils have medium surface runoff and medium to somewhat slow internal drainage. Permeability is moderate to moderately slow in the surface soil, moderately slow in the upper part of the subsoil, and slow in the lower part. Most of the subsoil is clayey and poorly aerated and is not favorable for root development. The upper part of the subsoil has a high available moisture-holding capacity but is low in fertility. Where these soils occur on mild slopes, they are moderately well suited to a variety of shallow-rooted crops.

Shubuta fine sandy loam, 2 to 5 percent slopes (ShB).—This is a deep, well-drained soil on uplands. It has a firm, yellowish-red, clayey upper subsoil and a slowly permeable, mottled lower subsoil.

Profile in a sloping, moderately eroded, cultivated field (*location:* NW¼SE¼ sec. 19, R. 2 W., T. 3 N.):

- A_p 0 to 4 inches, dark-gray (10YR 4/1) fine sandy loam; weak, fine, crumb structure; very friable; common fine roots; strongly acid; boundary abrupt and smooth.
- A_2 4 to 9 inches, dark grayish-brown (10YR 4/2) fine sandy loam; weak, fine, crumb structure; common fine roots; strongly acid; boundary clear and wavy.
- B_1 9 to 15 inches, yellowish-red (5YR 5/8) fine sandy clay loam; moderate, medium, subangular blocky structure; friable; few fine roots; common fine pores; strongly acid; boundary clear and wavy.
- B_{21} 15 to 20 inches, yellowish-red (5YR 4/8) fine sandy clay; moderate, medium, angular and subangular blocky structure; firm when moist, moderately sticky and plastic when wet, and somewhat hard when dry; very few fine roots; few fine pores; strongly acid; boundary gradual and wavy.
- B_{22} 20 to 27 inches, yellowish-red (5YR 4/8) fine sandy clay; with common, medium, distinct, very pale brown (10YR 8/4) mottles; moderate, medium, angular and subangular blocky structure; firm when moist, slightly plastic and sticky when wet; very few fine roots; strongly acid; boundary gradual and irregular.
- B_{31} 27 to 34 inches, yellowish-red (5YR 4/8) fine sandy clay, with common, medium, distinct, red (2.5YR 4/8) mottles and common, medium, distinct, very pale brown (10YR 8/4) mottles; moderate, medium, angular and subangular blocky structure; firm when moist, slightly sticky and plastic when wet; strongly acid; boundary gradual and irregular.
- B_{32} 34 to 39 inches, red (2.5YR 5/8) heavy fine sandy clay loam, with common, coarse, distinct, yellow (10YR 8/8) mottles and common, medium, distinct, light-gray (10YR 7/1) mottles; moderate, fine, angular and moderate, medium, subangular blocky structure; friable; strongly acid; boundary gradual and irregular.
- C 39 to 54 inches +, mottled red (2.5YR 5/8), yellow (10YR 8/6), and light-gray (10YR 7/1) sandy clay loam; moderate, medium, angular structure; friable; strongly acid.

The surface layer of this soil ranges from 3 to 5 inches in thickness. It is mostly dark gray but ranges from dark gray to gray. The subsoil ranges from fine sandy clay loam to fine sandy clay but is generally fine sandy clay. It is strong brown to red. Mottles are normally at depths of 18 to 26 inches. The subsoil is friable to firm when moist and from slightly sticky to plastic when wet.

Included with this soil are a few small areas that have loamy fine sand surface soil and a few areas where the parent material is sandy clay loam. Also included are a few moderately eroded areas.

This soil has a poorly aerated subsoil and a shallow root zone. It has moderately low available moisture-holding capacity. The upper few inches of the subsoil has moderately slow permeability, and the lower part has slow permeability. This soil is very susceptible to erosion. It contains a small amount of organic matter and is low in natural fertility.

This soil is on short, choppy slopes in highly dissected areas. It is only moderately well suited to corn, small grains, peanuts, cotton, and other general crops. It is well suited to improved pastures of bahiagrass and burmudagrass but because the root zone is shallow, the growth of grasses is slow during dry periods. This soil is well suited as woodland and for wildlife habitats. Capability unit IIIes–2.

Susquehanna series

In this series are moderately well drained, strongly acid soils that are on uplands in gently sloping to sloping areas. These soils have a small total acreage that is distributed throughout the county except in the southern part. They occur in small areas in intricate patterns with other soils, normally on the lower part of slopes. These soils developed from thick beds of acid materials that have a clay texture.

Susquehanna soils have dark-gray to gray loamy fine sand surface layers, 6 to 10 inches thick. These layers grade abruptly to gray or grayish-brown fine sandy clay to clay subsoil that is highly mottled with red, yellowish red, and yellow. The subsoil is underlain by stiff, plastic parent material.

Susquehanna soils are associated with Sawyer and Boswell soils. They have thinner surface soil than Sawyer soils and their subsoil is not yellowish like in those soils. They do not have a thin, yellowish-red layer in the upper part of the subsoil like that in the Boswell soils.

The native vegetation consists chiefly of loblolly pine, oaks, waxmyrtle, sweetgum, and wiregrass. Most of the acreage is still in native vegetation, but a few small, isolated areas are cleared and in pasture.

Susquehanna soils have slow to medium surface runoff and very slow internal drainage. Their subsoil is clayey, poorly aerated, and not favorable to root growth. The capacity of these soils to hold available moisture is low. Even on mild slopes, these soils are suited to only a few shallow-rooted crops.

Susquehanna loamy fine sand, 2 to 5 percent slopes (SnB).—This is a moderately well drained soil that has a highly mottled, plastic, clayey subsoil. It occurs on uplands.

Profile in a gently sloping, undisturbed area where the vegetation consists chiefly of wiregrass, loblolly pine, waxmyrtle, broomsedge, and oak (*location*: SE¼ NE¼ sec. 4, R. 3 W., T. 2 N.):

- A_1 0 to 4 inches, dark-gray (10YR 4/1) loamy fine sand; weak, very fine, crumb structure; loose; few fine roots; medium content of organic matter; strongly acid; boundary abrupt and smooth.
- A_2 4 to 7 inches, gray (10YR 5/1) loamy fine sand with streaks of grayish-brown (10YR 5/2) infiltrated material; weak, very fine, crumb structure; very friable; few fine roots; strongly acid; boundary abrupt and smooth.
- B_1 7 to 37 inches, grayish-brown (10YR 5/2) fine sandy clay with many, coarse, prominent, red (10YR 4/8) mottles and common, medium, distinct, yellowish-red (5YR 5/8) mottles; moderate, medium, blocky structure; firm when moist, sticky when wet, hard when dry; few fine roots and root holes; strongly acid; boundary gradual and irregular.
- C_1 37 to 50 inches, gray (10YR 6/1) clay with common, medium, prominent, dark-red (10R 3/6) mottles and common, medium, distinct, strong-brown (7.5YR 5/8) mottles; strong, medium to coarse, blocky structure; firm when moist; plastic when wet, hard when dry; very few fine roots; very few fine root channels; strongly acid; boundary gradual and irregular.
- C_2 50 to 62 inches +, light-gray (N 7/0) clay with few, fine, prominent, dark-red (10R 3/6) mottles and few, fine, distinct, strong-brown (7.5YR 5/8) mottles; massive (structureless); very firm when moist; very plastic when wet; strongly acid.

The surface layer of this soil ranges from dark gray to gray in color and from 3 to 6 inches in thickness. The subsurface layer is gray to light gray and 3 to 5 inches thick. The subsoil and substratum are gray to grayish brown highly mottled with red, yellowish red, and yellow. They are fine sandy clay to clay and are from firm to very firm.

This soil is along the slopes of the most deeply cut drainageways, but most of it is along the lower parts of the slopes. In many areas this soil is underlain by fuller's earth generally below depths of 60 inches. In some places along the lower slopes, fuller's earth occurs at depths ranging from 36 to 42 inches. In a few small areas it occurs at depths of less than 30 inches.

This soil has a very shallow, poorly aerated root zone and a low available moisture-holding capacity. It is low in organic matter and natural fertility. The permeability of the subsoil is very slow.

This soil occurs generally in small rough areas. It is not suited to intensive cultivation and is only fairly well suited to a few row crops. It is suited to improved pasture of bermudagrass and bahiagrass. Most of this soil is still in woodland, which is its best use. Capability unit IVes–2.

Susquehanna loamy fine sand, 5 to 8 percent slopes (SnC).—This soil has stronger slopes than Susquehanna loamy fine sand, 2 to 5 percent slopes, and, therefore, more rapid runoff and a greater hazard of erosion. It has a plastic clay subsoil that causes poor tilth and poor aeration. Included with this soil are a few places that are moderately eroded.

This soil occurs in rough highly dissected areas and is not well suited to cultivation. With intensive practices of good management it can be used for pasture. It is suited as woodland and for wildlife habitats. Capability unit VIes–2.

Susquehanna-Sawyer complex, 5 to 12 percent slopes (SsD).—This mapping unit consists mainly of Susquehanna and Sawyer soils on sloping hillsides along drainageways. These soils are in such intricate patterns that it is not feasible to separate them on a map of the scale used. In most areas about 60 to 70 percent of the total acreage is in Susquehanna soils and about 30 to 40 percent is in Sawyer soils. A profile of a soil in the Susquehanna series and one in the Sawyer series are described elsewhere in this section. Included in this mapping unit are small areas of Ruston, Orangeburg, Shubuta, and Faceville soils.

The surface soil of these soils ranges from loamy fine sand to loamy sand but, in most places, is loamy fine sand. Included with these soils are a few small areas with slopes greater than 12 percent.

Most of these soils have not been cleared. The native vegetation consists mainly of oaks, pine, hickory, low shrubs, and vines.

Surface runoff and internal drainage for the different soils vary. In some places fuller's earth occurs at depths ranging from a few inches to more than 60 inches.

These soils generally occur on the lower part of slopes adjacent to streams. They are susceptible to erosion, and these soils are not suited to cultivated crops. They are fairly well suited to improved pastures if erosion control and other management are intensive. These soils are best suited as woodland and for wildlife habitats. Capability unit VIes–2.

Susquehanna-Sawyer complex, 12 to 50 percent slopes (SsF).—This mapping unit is steeper than Susquehanna-Sawyer complex, 5 to 12 percent slopes, and because runoff is more rapid, it is more susceptible to severe erosion. Included in this unit are areas that have moderate sheet erosion and areas with many shallow gullies or a few deep ones. These shallow soils are on steep, rough

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slopes and are not suited to cultivated crops or pasture. They are best suited as woodland and for wildlife habitats. Capability unit VIIes–2.

Susquehanna-Boswell-Binnsville complex, marly substratum, 5 to 12 percent slopes (SrD).—This mapping unit consists of Susquehanna, Boswell, and Binnsville soils in the extreme western part of the county. These soils are in such intricate patterns that it is not feasible to separate them on a map of the scale used. About 35 to 45 percent of the total acreage is in Susquehanna soils, about 30 to 35 percent is in Boswell soils, and about 20 to 30 percent is in Binnsville soils.

The surface soil of these soils ranges from loamy fine sand to fine sandy loam but is mainly fine sandy loam. Much of the complex is underlain by limestone materials at depths ranging from a few inches to as much as 48 inches. Included with these soils are small areas that have 2 to 5 percent slopes and a few moderately eroded areas.

A profile of Binnsville soil is described for the Binnsville series. A profile of a Susquehanna soil, marly substratum, and one of a Boswell soil, marly substratum, are described in the following paragraphs.

Profile of Susquehanna loamy fine sand that has a marly substratum and occurs on a slope of 5 to 12 percent in a disturbed area where the vegetation is mainly myrtle, wiregrass, sweetgum, and briars (*location:* SW¼SE¼ sec. 4, R. 6 W., T. 3 N.):

A_{p1} 0 to 2 inches, black (10YR 2/1) or very dark gray (10YR 3/1) loamy fine sand; single grain (structureless); loose; medium content of organic matter; few fine roots; strongly acid; boundary abrupt and smooth.

A_{p2} 2 to 8 inches, dark-gray (10YR 4/1) loamy fine sand; single grain (structureless); loose; few fine roots; strongly acid; boundary abrupt and smooth.

B_{11} 8 to 14 inches, brown (10YR 5/3) clay with common, fine, prominent, red (2.5YR 4/6) mottles; moderate, medium, angular structure and weak, medium, subangular blocky structure; firm when moist and plastic when wet; strongly acid; boundary gradual and wavy.

B_{12} 14 to 30 inches, pale-red (2.5YR 6/2) clay with many, fine, prominent, red (2.5YR 4/6) mottles; weak, medium, subangular blocky structure; firm and plastic; strongly acid; boundary gradual and irregular.

C 30 to 38 inches +, very pale brown (10YR 8/3) marly clays; very firm; with spots of free lime; neutral in reaction.

Profile of Boswell loamy fine sand that has a marly substratum and occurs on a slope of 5 to 12 percent in a disturbed area where the vegetation is chiefly myrtle, sweetgum, broomsedge, and native grasses (*location:* SW¼SE¼ sec. 4, R. 6 W., T. 3 N.):

A_{p1} 0 to 6 inches, black (10YR 2/1) loamy fine sand; single grain (structureless); loose; high content of organic matter; common fine roots; strongly acid; boundary abrupt and smooth.

B_2 6 to 11 inches, yellowish-red (5YR 4/6) clay with few, fine, distinct, red (2.5YR 4/6) mottles; moderate, medium, subangular blocky structure and weak, medium, angular blocky structure; firm when moist and plastic when wet; strongly acid; boundary gradual and wavy.

B_{31} 11 to 34 inches, mottled grayish-brown (10YR 5/2), reddish-brown (5YR 4/4), and red (2.5YR 4/6) clay; moderate, medium, angular structure; firm when moist and plastic when wet; strongly acid; boundary gradual and irregular.

B_{32} 34 to 38 inches +, mottled light brownish-gray (10YR 6/2) and red (2.5YR 4/6) clay with spots of strong brown (7.5YR 5/6); moderate, medium, angular structure; firm; strongly acid.

The native vegetation of this complex consists chiefly of loblolly pine, hickory, oaks, and native grasses. All the acreage is still in native vegetation.

Surface runoff is medium to rapid and internal drainage is slow to very slow. The subsoil is clayey, poorly aerated, and is not favorable for root development.

These soils occur in small areas on short, choppy slopes in rough, dissected areas. They are highly susceptible to erosion. These soils are not suited to tilled crops and are only fairly well suited to pasture. The best uses are woodland and wildlife habitats. Capability unit VIIes–2.

Susquehanna-Boswell-Binnsville complex, marly substratum, 12 to 50 percent slopes (SrF).—These soils occur on steep slopes and are highly susceptible to erosion. Some slopes are as steep as 65 percent. Limestone boulders outcrop in some places, and in other places limestone material is only 3 to 8 inches below the surface.

These soils are not suited to either cultivated crops or to pasture. The best uses are woodland and wildlife habitats. Capability unit VIIes–2.

Swamp

Swamp consists of very poorly drained soils that are wet most of the time. Only two areas are mapped in the county. One area is adjacent to Ochlockonee River in the eastern part of the county. The other is at the southern edge of Lake Talquin in the southeastern part.

Swamp (Sw).—Swamp is on first bottoms that flood frequently. Because of excess water and thick vegetation, it is not feasible to examine the soils in this unit thoroughly. The soils that make up the mapping unit have not been classified. They consist of a mixture of sediments deposited by flood waters from overflowing streams.

The surface layers in most places consist of dark, strongly acid soil material 6 to 12 inches thick. The underlying material varies in color and in texture.

The native vegetation consists chiefly of sweetgum, blackgum, cypress, scattered slash pine, white oak, water oak, bay, low shrubs, and vines. Because they are poorly drained and flood frequently, these areas are best suited as woodland.

Tifton series

The Tifton series consists of deep, well-drained, strongly acid soils that are on uplands in nearly level areas. They have a small total acreage that is widely distributed throughout the county except in the southern part. Much of this acreage is in the west-central part near Greensboro. These soils developed from thick beds of acid materials that have sandy clay or sandy clay loam texture.

Tifton soils have a very dark gray to grayish-brown loamy fine sand surface soil. The subsoil is fine sandy clay loam to fine sandy clay. It is brownish yellow to yellowish brown, and the yellowish brown increases in intensity with increasing depth. The parent material is distinctly mottled fine sandy clay loam and fine sandy clay. These soils have many small concretions of iron throughout the profile.

Tifton soils occur with Norfolk, Goldsboro, and Carnegie soils. Their subsoil is more yellow than that in the Carnegie soils and finer textured and more sticky than that in the Norfolk soils. They are better drained than Goldsboro soils and have a more yellow and finer textured subsoil. They contain many more iron concretions than most Norfolk and Goldsboro soils.

The native vegetation consisted chiefly of longleaf pine, wiregrass, and a few low shrubs but is now mainly longleaf and loblolly pines, oaks, dogwood, wiregrass, and a few low shrubs. Much of the acreage is cleared and in shade tobacco, corn, cotton, peanuts, forage, and other cultivated crops.

Tifton soils have medium surface runoff and medium internal drainage. Permeability is moderately rapid in the surface soil and is moderately slow in the subsoil. These soils are well aerated throughout and have good tilth. They have a high capacity for holding available moisture. They have moderately high natural fertility. These soils retain plant nutrients and respond well to fertilizer. Where they occur on mild slopes, they are well suited to a wide variety of cultivated crops.

Tifton loamy fine sand, 2 to 5 percent slopes, eroded (TfB2).—This is a well-drained, deep soil on uplands. It has a yellowish-brown, moderately fine textured subsoil.

Profile in a gently sloping, disturbed area where the vegetation is chiefly red oak, longleaf pine, dogwood, persimmon, and wiregrass. (*location:* SW¼NW¼ sec. 1, T. 2 N, R. 5 W.):

A_{p1} 0 to 3 inches, very dark gray (10YR 3/1) loamy fine sand; weak, fine, crumb structure; loose; common fine and medium roots; medium content of organic matter; common, medium, hard concretions of iron; strongly acid; boundary clear and smooth.

A_{p2} 3 to 6 inches, very dark grayish-brown (10YR 3/2) loamy fine sand; few streaks of very dark gray (10YR 3/1) material from the A_{p1} horizon in old root channels or worm borings; moderate, fine, crumb structure; loose; many, medium, hard concretions of iron; strongly acid; common, small, soft, black concretions; boundary clear and smooth.

A_3 6 to 8 inches, dark yellowish-brown (10YR 4/4) fine sandy loam; moderate, medium, crumb structure; very friable; many, medium and fine pores and roots; common, medium, hard, iron concretions; strongly acid; boundary gradual and wavy.

B_1 8 to 13 inches, yellowish-brown (10YR 5/6) fine sandy clay loam; weak, medium, subangular blocky structure and moderate, medium, crumb structure; friable; few, medium, hard iron concretions; many fine to medium and few large pores; strongly acid; boundary gradual and wavy.

B_2 13 to 40 inches, yellowish-brown (10YR 5/8) heavy fine sandy clay loam; moderate, medium, subangular blocky and crumb structure; firm to friable; common medium and fine pores; abundant, medium and large, hard concretions of iron; few, small to medium, moderately hard concretions of iron in the lower part; strongly acid; boundary diffuse and wavy.

B_{31} 40 to 60 inches, yellowish-brown (10YR 5/8) fine sandy clay loam, with common, medium and coarse, distinct, strong-brown (7.5YR 5/6) mottles and few, fine, faint, yellow (10YR 7/6) mottles; yellow mottles are in patches on ped surface; moderate, medium, subangular blocky and crumb structure; friable to slightly firm; common medium and large hard and slightly hard concretions of iron that have an irregular surface; few medium and large, soft, dark reddish-brown concretions; strongly acid; boundary diffuse and wavy.

B_{32} 60 to 72 inches, brownish-yellow (10YR 6/8) fine sandy clay loam with common, medium, distinct, strong-brown (7.5YR 5/8) mottles and common, fine prominent, yellowish-red (5YR 5/8) mottles and common, medium, prominent, red (10R 4/8) round mottles; material with red round mottles is slightly more brittle and coarser textured than rest of soil material; weak, medium, angular structure and few, medium, very weakly formed subangular peds that break readily to weak, fine, angular peds; slightly brittle and firm to friable; strongly acid.

The surface layers of this soil range from very dark gray to dark grayish brown in color, but is mainly dark grayish brown. They are 3 to 10 inches thick in most places. The subsoil is brownish yellow to yellowish brown. It is heavy fine sandy clay loam in most places. In a few areas the subsoil ranges from fine sandy clay loam to light fine sandy clay. Mottles of strong brown and yellow normally are at depths ranging from 34 to 44 inches, but in some areas these mottles are at 30 to 34 inches. The mottled parent material generally occurs at depths of 44 to 74 inches. Most of the erosion on this soil is sheet erosion, and there is little gullying. In a few areas where there are many shallow gullies or a few deep ones, the thickness of the surface layer between the gullies ranges from 10 to 18 inches. Also included are a few small, severely eroded areas.

Included with this soil are some areas with dark-brown surface layers. Also included are small patches that have fine sandy loam surface soil.

This soil contains a moderate amount of organic matter and is loamy enough to have good tilth. The available moisture-holding capacity in the surface soil is moderate, and that in the subsoil is high. This soil has a moderately high cation-exchange capacity and responds well to fertilizer.

This soil is well suited to all locally grown general crops, especially peanuts and cotton. It is one of the best soils in the county for shade tobacco, although erosion is a hazard. It is generally in relatively small areas, adjacent to other good agricultural soils that together with this soil are suited to a good field layout. This soil is well suited to pasture of whiteclover and other locally grown pasture plants. It is also well suited as woodland and for wildlife habitats. Capability unit IIe–2.

Tifton loamy fine sand, 0 to 2 percent slopes (TfA).—This soil is more nearly level and is less severely eroded than Tifton loamy fine sand, 2 to 5 percent slopes, eroded. Generally it is thicker in the surface layers. The depth to moderately fine textured subsoil ranges from 10 to 18 inches. Included with this soil are a few moderately eroded areas.

This soil is well suited to all general crops grown in the county. Partly because of the good aeration in the pebbly subsoil, it is very well suited to shade tobacco, cotton, and peanuts. It is also well suited to improved pasture of all locally grown pasture plants. Capability unit I–2.

Tifton loamy fine sand, 2 to 5 percent slopes (TfB).—This soil is less eroded and, therefore, is thicker in the surface layers than Tifton loamy fine sand, 2 to 5 percent slopes, eroded. It is similar to the eroded soil in most other characteristics. The surface layers range from 10 to 18 inches in thickness. Mottles are normally at depths of 36 to 46 inches, but in some areas they are

at depths of 32 to 35 inches. The depth to mottled parent material generally is 40 to 68 inches.

This soil is well suited to all farm crops grown in the county, especially peanuts and cotton. It is very desirable for shade tobacco. It occurs with other good agricultural soils and is well suited to a good field layout with those soils. This soil is well suited to improved pasture of all locally grown pasture plants. It is also well suited as woodland and for wildlife habitats. Capability unit IIe–2.

Tifton loamy fine sand, 5 to 8 percent slopes, eroded (TfC2).—This soil is on stronger slopes than Tifton loamy fine sand, eroded, 2 to 5 percent slopes, and has more rapid runoff and a greater hazard of erosion. It is similar to that soil in most other characteristics. Mottles generally occur at depths of 30 to 38 inches. The mottled parent material is normally at depths of 38 to 50 inches.

Included with this soil are a few areas that are not eroded. In these areas the depth to the moderately fine textured subsoil ranges from 10 to 18 inches. Also included are a few small severely eroded areas that have surface soil less than 3 inches thick.

Because of erosion, this soil is only moderately well suited to cultivated crops. It is well suited to pasture, as woodland, and for wildlife habitats. Capability unit IIIe–2.

Zuber series

The Zuber series consists of deep, well drained to moderately well drained, medium acid to strongly acid soils. These soils are on uplands in gently sloping to sloping areas. They have a small total acreage that occurs mostly along Rocky Comfort Creek; a few acres are in the central part of the county. These soils developed from phosphatic materials that have a sandy clay loam texture.

Zuber soils have a very dark gray to brown loamy sand surface soil. The subsoil is light yellowish-brown, brown, or yellowish-brown, friable sandy clay loam mottled with yellow, brown, and gray. The parent material is distinctly mottled, friable to firm sandy clay loam.

Zuber soils occur with Arredondo, Gainesville, and Fellowship soils. They are similar to the Arredondo soils in color but are finer textured in the subsoil than those soils. Their subsoil is finer textured and not so strong brown as that in Gainesville soils. They are more friable and slightly coarser textured in the subsoil than the Fellowship soils.

The native vegetation consists chiefly of longleaf and slash pines, water, live, and red oaks, hickory, low shrubs, and wiregrass. Some of the acreage is cleared and in corn, small grains, forage, and other cultivated crops.

Zuber soils have medium surface runoff and medium internal drainage. Permeability is moderately rapid in the surface soil and moderate in the subsoil. These soils have good aeration and good tilth. They have a medium capacity for holding available moisture. They have moderate natural fertility and respond well to fertilizer. Where these soils occur on mild slopes, they are suited to a variety of cultivated crops.

Zuber loamy sand, 2 to 5 percent slopes (ZuB).—This well-drained, deep soil is on uplands. It has been affected by phosphatic material.

Profile in a gently sloping, cultivated field. (*location:* NE¼NE¼ sec. 29, R. 3 W., T. 2 N.):

- A_p 0 to 4 inches, very dark gray (10YR 3/1) loamy sand; weak, very fine, crumb structure; loose; many fine roots; medium content of organic matter; few angular pebbles of moderately hard to soft sandstone rocks on the surface; medium acid; boundary clear and smooth.
- A_1 4 to 7 inches, dark-gray (10YR 4/1) loamy sand; weak, very fine, crumb structure; loose; many fine roots and few fine root channels; medium acid; boundary clear and smooth.
- A_3 7 to 13 inches, brown (10YR 5/3) loamy sand; weak, fine, crumb structure; very friable; many fine roots; medium acid; boundary clear and wavy.
- B_1 13 to 17 inches, brown (10YR 5/3) fine sandy loam; weak, fine, subangular blocky structure and moderate, fine, crumb structure; very friable; common fine roots; few fine pores; medium acid; boundary gradual and wavy.
- B_2 17 to 34 inches, yellowish-brown (10YR 5/4) sandy clay loam with few, fine, distinct, yellowish-red (5YR 4/8) mottles, few, fine, faint, yellow (10YR 7/8) mottles, and common, medium, faint, gray (10YR 6/1) mottles; moderate, fine, subangular blocky structure; friable; very few fine roots; few fine pores; few fine to medium, very firm, white and brown concretions of sandstone; strongly acid; boundary gradual and wavy.
- C 34 to 52 inches +, gray (10YR 6/1) sandy clay loam with many, coarse, distinct, yellowish-red (5YR 5/8) mottles, common, medium, distinct, yellowish-red (5YR 4/8) mottles, and fine, medium, faint, white (10YR 8/1) mottles; moderate, medium, subangular blocky structure; firm; few fine to medium, very firm, white and brown concretions; strongly acid.

The surface layer ranges from 3 to 6 inches in thickness and from very dark gray to dark grayish brown in color. The subsurface layer ranges from 6 to 12 inches in thickness and from gray to brown in color. In some cultivated areas the upper part of the subsurface layer is dark gray, but in a few small areas it is redder than normal. The depth to finer textured subsoil normally ranges from 12 to 18 inches. In a few areas the finer textured subsoil is at depths slightly below 18 inches. The subsoil is normally light yellowish brown to yellowish brown but in some areas it is olive yellow. Mottles normally occur at depths of 16 to 24 inches and increase in intensity with increasing depth. The subsoil is fine sandy loam to fine sandy clay loam. It is friable to firm. Weathered phosphatic pebbles occur on the surface and throughout the profile.

In most areas this soil has a deep root zone that is well aerated. In a few areas the drainage in the lower part of the subsoil is restricted. Permeability is moderately rapid in the surface soil and moderate in the subsoil. The available moisture-holding capacity and base-exchange capacity of the subsoil are high. This soil contains a moderate amount of organic matter and is moderately fertile.

This soil is well suited to most general crops locally grown but is best suited to corn and small grains. It is in small areas generally along the lower parts of long gentle slopes. Most areas are adjacent to other good soils, but some occur with poor soils. This soil is well suited to improved pastures of bermudagrass and bahiagrass but white-clover may be damaged by drought. It is well suited as woodland and for wildlife habitats. Capability unit IIe–1.

Zuber loamy sand, 5 to 8 percent slopes (ZuC).—This soil has stronger slopes than Zuber loamy sand, 2 to 5 percent slopes, and, therefore, has more rapid surface

runoff and a greater erosion hazard. It is similar to the more nearly level soil in most other characteristics. It is in small broken areas not well suited to a good field layout. Most of it is well drained, but some areas are only moderately well drained. This soil is somewhat droughty in dry periods. It is suited to most general farm crops grown in the county, but is best suited to corn and small grains. It is well suited to pasture, as woodland, and for wildlife habitats. Capability unit IIIe–1.

Formation and Classification of Soils [9]

In this section are discussed the factors of soil formation and the morphology, composition, and classification of the soils in Gadsden County.

Factors of Soil Formation

Soil is produced by forces of weathering and soil formation that act on the parent material deposited or accumulated by geologic agencies. The characteristics of the soil depend on five major factors: (1) The climate under which the soil material has accumulated and has existed since accumulation; (2) the physical and mineralogical composition of the parent material; (3) the relief or lay of the land; (4) the plant and animal life in and on the soil; and (5) the length of time these forces have acted on the material. The influences of climate on soil and plants depends not only on temperature, rainfall, and humidity but also on the physical characteristics of the soil or soil material and on the relief. Relief, in turn, strongly influences drainage, aeration, runoff, and exposure to sun and wind.

The five soil-forming factors are interdependent; each modifies the effect of the others. Any one of the five factors may have more influence than the others on the development of a soil and may account for most of its properties. For example, if the parent material is quartz sand, the soil generally has only weakly developed horizons. This strong effect of parent material, however, is modified greatly in some places by the effects of the climate, relief or lay of the land, and the plant and animal life in and on the soil. When a soil develops, more than one of the five factors influence the development, but in some places all but one factor may have little effect.

Climate

Climate is important in soil formation. Temperature and rainfall govern the rate that rocks weather and minerals decompose. They also influence leaching, eluviation, and illuviation. Climate also affects the kinds of plants and animals that live in a region. These organisms, in turn, are important in soil development.

The climate of Gadsden County is humid and temperate. Summers are long and warm, and winters are mild. Rainfall is abundant and generally is well distributed seasonally. Excessive rainfall usually occurs early in spring and in fall. Occasionally the soils are frozen to a very shallow depth for brief periods. Freezing and thawing in this county have little effect on weathering and the soil-forming processes. The mild climate induces biological activity, leaching, and the translocation of insoluble material throughout the year. This is one of the causes of the low content of organic material and soluble plant nutrient in the soils. Climate is relatively uniform throughout the county and is not a major factor in producing the differences that exist in the morphology of the soils.

Parent material

The parent materials of the soils in Gadsden County consist of (1) interbedded and unconsolidated sands and clays; (2) unconsolidated beds of marly clays with interbeds of consolidated limestone; and (3) materials washed from soils on these formations. The interbedded sands and clays of the upland are in the Hawthorn and Citronelle formations and make up the parent materials for most of the soils in the county. The unconsolidated beds of marly clays and consolidated limestone are of the Tampa formation. The materials washed from soils on these formations are transported by water and laid down as alluvial deposits in the valleys. Parts of these formations are covered with a blanket of Pleistocene sand that ranges in thickness from a few inches to more than 20 feet. All of these materials except the alluvial deposits in the valleys are principally of marine origin. Figure 14 shows the main geologic formations in a segment of Gadsden County.

The parent materials in the county differ widely in mineral and chemical composition and in their physical constitution. Most of the main differences, such as those between sand, silt, and clay, can be observed in the field. Other differences, such as mineralogical and chemical composition, are important to soil formation and to present physical and chemical characteristics. Most of these can be determined only by careful laboratory examination. The chemical and mineralogical nature of the sediments has not been studied enough to determine how it relates to differences among the soils. Many differences among soils of the county appear to reflect original differences in the geological materials. Thus, parent material seems to have been important in causing differences among the soils in the county.

Relief

The relief of the soils in the county is largely determined by the underlying formations of bedrock, the geologic history of the region, and the effects of dissection by rivers and streams. Relief influences soil formation through its effect on moisture relations, erosion, temperature, and plant cover. Its influence is modified by the other four factors of soil formation.

The topography of Gadsden County ranges from highly dissected areas with narrow ridgetops and steep side slopes to broad nearly level areas. The western part of the county is the most dissected. That area is characterized by steep hillsides and narrow ridgetops. Many intermittent streams and some perennial streams occur in the narrow V-shaped valleys. In the western part of the county, the streams flow westward into the Apalachicola River. Most of the other areas in the county are broad, nearly level and undulating and have sloping and strongly sloping side slopes. Adjacent to some of the drainageways, however, are long, narrow, moderately steep and steep slopes. These areas have many streams. Most of these streams flow southeastward, but a few flow southward.

[9] This section was written by B. P. THOMAS and H. H. WEEKS, soil scientists, Soil Conservation Service.

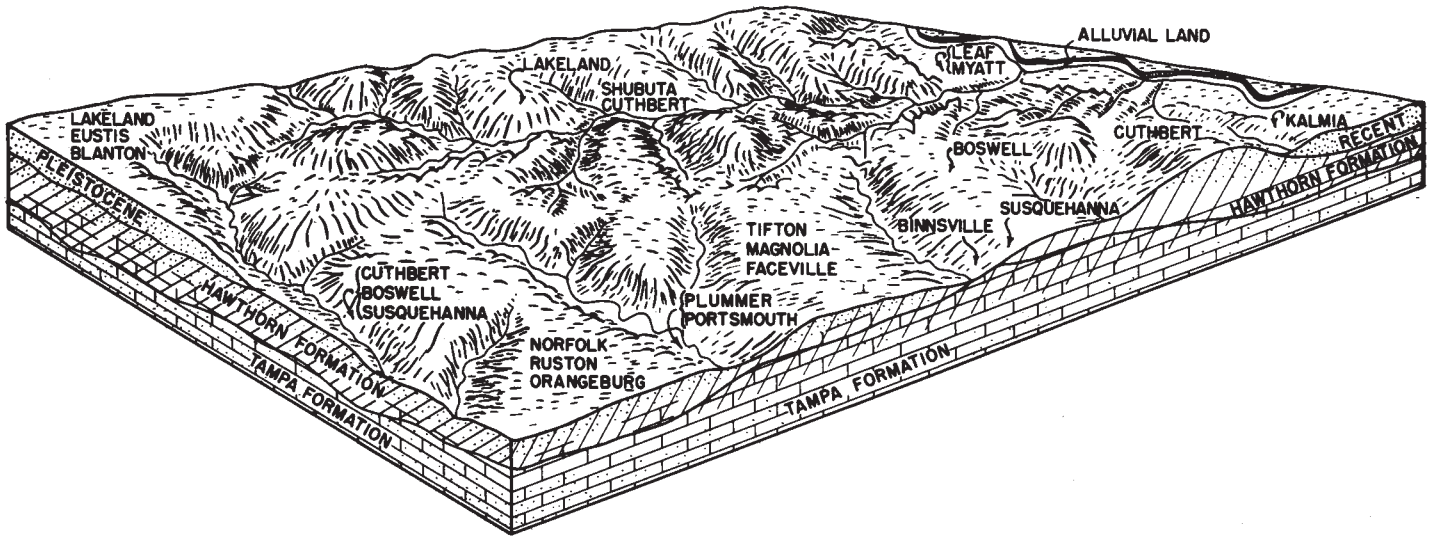


Figure 14.—**Main geologic formations and other topographic features in a segment of Gadsden County, and the positions of soils in some soil series.**

The elevation at Hardaway in the northwestern part of the county is 300.7 feet, and that at River Junction in the extreme northwestern part is 75.8 feet. Other elevations are Gretna, 290.4 feet; Havana, 247 feet; Quincy, 243 feet; and Mount Pleasant, 296 feet. The lowest elevation is 55 feet and is at the lower end of Lake Talquin in the extreme southern part of the county.

Living organisms

Trees, shrubs, grasses, burrowing animals, earthworms, micro-organisms, and other plant and animal life exist on and in the soil. These living organisms are active forces in the soil-forming processes. The changes that these forces bring about depend, among other things, on the kinds of life and the life processes peculiar to each. The kinds of plants and animals that live on and in the soil are determined by environmental factors, including climate, parent material, relief, age of the soil, and the associated organisms. From the standpoint of profile development, the chief functions of plants and animals are to furnish organic matter to the soil and to bring plant nutrients from the lower horizons to the upper horizons.

The original vegetation on the better drained soils of the county consisted mainly of longleaf pine, native grasses, low shrubs, vines, and some hardwoods. The natural vegetation on these soils now consists principally of longleaf, loblolly, and slash pines, oaks, hickory, dogwood, magnolia, maple, low shrubs, and grasses. The swampy areas consist of water-tolerant hardwoods such as blackgum, cypress, bay, magnolia, and scattered slash pine.

Organic matter derived from the various plants decomposes rather rapidly because of the favorable temperature and moisture conditions, the favorable character of the organic material itself, and the favorable micropopulation of the soil. Most soils of the county contain a small amount of organic matter, which is mostly in the upper part of the A horizon. Vegetation is relatively uniform in the county and, therefore, is not a major factor in producing differences in the soils.

Time

Time is required for soil to form. How much time depends on where the process of soil formation must start. Generally, much more time is needed for parent materials to accumulate than for different horizons to form in the profile. The length of time needed for soil to develop depends on the other factors of soil formation.

The age of soils varies considerably. Mature soils have well-developed profiles with clearly defined horizons, or layers. Except for those of the Regosol great soil group, soils on the less sloping relief generally have more mature development than those on stronger slopes. On the stronger slopes the surface material has been less stable. Geologic erosion has removed soil material so rapidly that the depth to bedrock in some places remains shallow and there has been little soil development. On the first bottoms, the soils have little profile differentiation, primarily because new soil material is deposited each time a stream overflows.

Classification of Soils

From the broadest category to the narrowest, soils are ordinarily classified by order, great soil group, series, type, and phase. Series, type, and phase are defined, in the section "Soil Survey Methods and Definitions." The category of the soil order consists of three classes—zonal, intrazonal, and azonal. Each of these orders has many great soil groups. In a great soil group are soils that have fundamental characteristics in common.

The zonal soil order consists of those great soil groups that have soils with well-developed characteristics that reflect the influence of the active factors of soil genesis. The active factors are climate and living organisms, chiefly vegetation. The great soil groups in the zonal order in Gadsden County are the Red-Yellow Podzolic and the Reddish-Brown Lateritic.

The intrazonal order consists of those great soil groups with distinct, genetically related horizons that reflect the dominating influence of some local factor of topography,

parent material, or time over the effects of climate and living organisms. The intrazonal soils of this county are members of the Ground-Water Podzol, Low-Humic Gley, Humic Gley, Rendzina, and Planosol great soil groups.

The azonal order consists of soils that lack well-developed profile characteristics reflecting the influence of age. The parent material or topography has prevented the development of normal soil profile characteristics. Azonal soils in Gadsden County belong to the Regosol and Alluvial great soil groups.

Gadsden County is entirely within the Gulf Coastal Plain. There are nine great soil groups in the county. The Red-Yellow Podzolic soils occupy about 53 percent of the county; the Reddish-Brown Lateritic soils, about 1 percent; the Low-Humic Gley soils, about 6 percent; and the Humic-Gley soils, about 1 percent. Ground-Water Podzols, Rendzina soils, and Planosols make up less than 1 percent of the county; Regosols, 34 percent; and Alluvial soils, less than 1 percent.

In table 8, the soil series are classified by soil orders and great soil groups, and some characteristics important in the development of soils are listed for each soil series. For a description of the profile of each soil series, turn to the section "Soils of Gadsden County." Each great soil group in Gadsden County is discussed in the following pages.

Red-Yellow Podzolic soils

This great soil group consists of well-developed, well-drained soils that formed under forest vegetation in a climate that ranges from warm-temperate humid to tropical humid. These soils have thin organic (A_0) and organic-mineral (A_1) horizons. The organic-mineral horizon is underlain by a light-colored, bleached (A_2) horizon that is underlain, in turn, by a red, yellowish-red, or yellow and more clayey B horizon. The parent materials are all more or less siliceous. Coarse reticulate streaks or mottles of red, yellow, brown, and light gray occur in the deeper horizons. The processes involved in the development of this group are laterization and podzolization.

The soils in this group generally have a low cation-exchange capacity. Kaolinite is the dominant clay mineral. These soils also contain smaller amounts of feldspar, vermiculate, gibbsite, and montmorillonite. The subsoil has moderate to strong, subangular blocky structure and colors of medium to high chroma.

The soils of this group in Gadsden County have a dark-colored, thin A_1 horizon and a well-defined A_2 horizon. The A_2 horizon has a weak crumb structure. Reaction in the A horizon is strongly acid to medium acid. The structure of the B_2 horizon ranges from moderate, medium, angular to moderate, medium, subangular blocky. The B_2 horizon is strongly acid to medium acid and contains more clay than the A_2 horizon. The C horizon is highly mottled and in structure is generally less strong than the B_2 horizon.

The Ruston and Faceville soils are good examples of the Red-Yellow Podzolic soils. They have a thick, strong-brown to yellowish-red subsoil with a moderate, medium, subangular blocky structure. The C horizon is highly mottled. The Faceville soils are finer textured, particularly in the B_1 and B_2 horizons, than the Ruston soils.

The Orangeburg soils are similar to Magnolia soils in their A and B horizons. Their B horizon is red instead of strong brown like that in the Ruston and Faceville soils, and they are mottled generally at greater depths than those soils. The Orangeburg soils are similar to Ruston soils in texture. The Magnolia soils are similar to Faceville soils in the A, B, and C horizons.

The Carnegie soils differ from the Faceville soils mainly in that they contain an abundance of ferruginous concretions through the profile.

Norfolk and Tifton soils differ from the Ruston and Faceville soils by having a yellow to yellowish-brown B horizon. Like the Carnegie soils, the Tifton soils also have an abundance of ferruginous concretions through their profile. The Norfolk soils are similar to the Ruston soils in texture, and the Tifton soils are similar to the Faceville soils in texture.

The Kalmia soils are similar to the Ruston soils in their A and B horizons, except that the B horizon of the Kalmia soils is yellow or yellowish brown. Kalmia soils developed from moderately young alluvium on stream terraces. They have a coarser textured C horizon, in many areas, than the C horizon in the Ruston soils.

The Zuber soils are less brown than the Ruston in the B horizon but are similar to the Ruston soils in texture and structure of the B horizon. Zuber soils developed from materials affected by phosphate and are normally slightly less acid than the Ruston soils.

The Shubuta and Cuthbert soils are similar to the Faceville soils in color of the A and B horizons. The A horizon of the Cuthbert and Shubuta soils is normally thinner than that in the Faceville soils, and the B_2 horizon is thinner, firmer, and finer textured. The depth to the C horizon is much less in the Shubuta and Cuthbert than that in the Faceville soils.

The Boswell, Goldsboro, and Sawyer soils are classified as Red-Yellow Podzolic soils though they are less well drained than is typical for the group. These soils, especially the Boswell and Sawyer soils, have a thinner solum and less distinct horizons than the Orangeburg, Ruston, and similar soils that are considered good examples of the Red-Yellow Podzolic group. The Boswell, Goldsboro, and Sawyer soils have gray mottles in the lower part of the B horizon and in the upper part of the C horizon, indicating that aeration is restricted somewhat more than in the Ruston, Orangeburg, and similar soils. The depth to the gray mottling or the evidence of gleying is greater in the Boswell, Goldsboro, and Sawyer soils than it is in soils considered intergrades toward the Low-Humic Gley group. Horizonation is more distinct than it is in the Susquehanna soils, which were formed from parent materials much the same as those of the Boswell and Sawyer soils.

The Izagora and Lynchburg soils are considered Red-Yellow Podzolic soils that have some characteristics of Low-Humic Gley soils. In the Izagora and Lynchburg series are somewhat poorly drained soils that normally have some gleying in the upper part of the B horizon. Evidence of wetness, in the form of mottles, may occur throughout the B horizon. Furthermore, the B horizon of these soils is less distinct than is that in good examples of the Red-Yellow Podzolic group.

The Susquehanna soils are also classified as Red-Yellow Podzolic soils intergrading toward the Low-Humic Gley group. The Susquehanna soils were formed from much the same kind of materials as the Boswell and Sawyer soils, and they have a thinner solum and a lower degree of horizonation than those soils. Furthermore, the

TABLE 8.—*Classification of the soil series by soil orders and great soil groups; and the relief, position, parent material, drainage, and degree of profile development of the soil series*

ZONAL

Great soil group and series	Relief	Position	Parent material	Drainage	Degree of profile development [1]
Red-Yellow Podzolic soils—					
Central concept:					
Boswell	Sloping to steep	Upland	Unconsolidated, acid sandy clay and clays.	Good	Moderate.
Carnegie	Nearly level to strongly sloping	Upland	Unconsolidated, acid sandy clay loams and sandy clays.	Good	Strong.
Cuthbert	Gently sloping to steep	Upland	Unconsolidated, acid sandy clays and clays.	Good	Moderate.
Faceville	Nearly level to strongly sloping	Upland	Unconsolidated, acid sandy clay loams and sandy clays.	Good	Strong.
Goldsboro	Nearly level to sloping	Upland	Unconsolidated, acid sandy loams and sandy clay loams.	Moderately good	Moderate.
Kalmia	Nearly level	Terrace	Sediments of acid sandy clay loams	Good	Strong.
Magnolia	Nearly level to strongly sloping	Upland	Unconsolidated, acid sandy clay loams and sandy clays.	Good	Strong.
Norfolk	Nearly level to strongly sloping	Upland	Unconsolidated, acid sandy clay loams	Good	Strong.
Orangeburg	Nearly level to strongly sloping	Upland	Unconsolidated, acid sandy clay loams	Good	Strong.
Ruston	Nearly level to strongly sloping	Upland	Unconsolidated, acid sandy clay loams	Good	Strong.
Sawyer	Nearly level to steep	Upland	Unconsolidated, acid sandy clays and clays.	Good to moderately good.	Moderate.
Shubuta	Gently sloping to steep	Upland	Unconsolidated, acid sandy clays and clays.	Good	Moderate.
Tifton	Nearly level to sloping	Upland	Unconsolidated, acid sandy clay loams and sandy clays.	Good	Strong.
Zuber	Gently sloping to sloping	Upland	Unconsolidated, phosphatic sandy clay loam materials.	Good	Strong.
Intergrades toward Low-Humic Gley soils:					
Izagora	Nearly level	Terrace	Sediments of acid sandy clay loams	Moderately good	Moderate.
Lynchburg	Nearly level to gently sloping	Upland	Unconsolidated, acid sandy clay loams	Somewhat poor	Moderate.
Susquehanna	Gently sloping to steep	Upland	Unconsolidated, acid clays	Moderately good	Weak.
Reddish-Brown Lateritic soils—					
Red Bay	Nearly level to strongly sloping	Upland	Unconsolidated, acid sandy clay loams	Good	Strong.

INTRAZONAL

Ground-Water Podzols—					
Leon	Nearly level	Upland	Unconsolidated, acid sands and loamy sands.	Somewhat poor to poor	Strong.
Low-Humic Gley soils—					
Central concept:					
Myatt	Nearly level	Terrace	Sediments of acid sandy clay loams	Poor	Moderate.
Plummer	Nearly level to gently sloping	Upland	Unconsolidated, acid sands and loamy sands.	Poor to somewhat poor	Weak.
Rains	Nearly level	Upland	Unconsolidated, acid sandy clay loams	Poor	Moderate.
Intergrades toward Humic Gley soils:					
Grady	Nearly level	Upland	Unconsolidated, acid sandy clays and clays.	Poor to very poor	Moderate.

Humic Gley soils—					
Fellowship	Strongly sloping to steep	Upland	Unconsolidated, phosphatic sandy clay and clay materials.	Moderately good	Moderate.
Portsmouth	Nearly level	Upland	Unconsolidated, acid sandy clay loams	Very poor	Moderate.
Rutlege	Nearly level to gently sloping	Upland	Unconsolidated, acid sands and loamy sands.	Poor to very poor	Weak.
Rendzina soils—					
Binnsville	Gently sloping to steep	Upland	Limestone material	Moderately good	Weak.
Planosols—					
Leaf	Nearly level	Terrace	Sediments of acid sandy clays and clays	Poor	Moderate.
AZONAL					
Regosols—					
Arredondo	Nearly level to very steep	Upland	Unconsolidated, phosphatic loamy sands.	Good	Weak.
Blanton	Nearly level to strongly sloping	Upland	Unconsolidated, acid sands	Moderately good to somewhat poor.	Weak.
Eustis	Nearly level to strongly sloping	Upland	Unconsolidated, acid sands and loamy sands.	Good	Weak.
Gainesville	Strongly sloping to steep	Upland	Unconsolidated, phosphatic loamy sands.	Good	Weak.
Huckabee	Nearly level to gently sloping	Terrace	Sediments of acid sands and loamy sands.	Good	Weak.
Klej	Nearly level to sloping	Upland	Unconsolidated, acid sands and loamy sands.	Moderately good	Weak.
Lakeland	Nearly level to steep	Upland	Unconsolidated, acid sands and loamy sands.	Good to excessive	Weak.
Alluvial soils—					
Congaree	Nearly level	Bottom land.	Silty clay loam micaceous sediments of recent alluvium.	Moderately good to good.	Weak.
Hannahatchee	Nearly level	Bottom land.	Fine sandy loam and fine sandy clay loam sediments of recent alluvium.	Moderately good	Weak.

[1] As indicated by number and contrast of major horizons.

gray mottling or gleying extends well up into the faint B horizon and may approach the surface in the Susquehanna soils.

The classification of Susquehanna soils as members of the Red-Yellow Podzolic group is open to some question because horizons in the profile are so indistinct. The B horizon is poorly expressed, at best, and it may be so faint that there is doubt that it is a B horizon. Because horizonation is faint in Susquehanna soils, the series has been placed in the Regosol group in times past when less emphasis was being given to a faint B horizon.

Reddish-Brown Lateritic soils

This great soil group consists of well-drained acid soils that have a dark-brown or dark reddish-brown surface soil, a red, friable, clayey B horizon, and red or reticulately mottled lateritic parent materials. These soils lack the distinct A_2 horizon that is characteristic of the Red-Yellow Podzolic soils. If the moisture content of the B horizon in the Reddish-Brown Lateritic soils changes from dry to moist, the color of this horizon does not change more than 1 in value. Under these conditions the color of the B horizon in the Red-Yellow Podzolic soils changes 2 or more in value.

Reddish-Brown Lateritic soils formed under forest vegetation in a climate that ranges from warm-temperate humid to tropical humid. The development of these soils has been dominated by laterization, and there has been little or no podzolization. Laterization is a process of silica removal from soils and consequent increases in the content of aluminum and iron and decreases in the cation-exchange capacity.

In Gadsden County, the dominant crystalline components of the clay fraction of this soil group are gibbsite and kaolinite, and there are lesser amounts of quartz, illite, montmorillonite, vermiculite, and feldspar.

The Red Bay soils are the only Reddish-Brown Lateritic soils in Gadsden County that occur in areas large enough to map. These soils are well drained, acid, and deep. The horizons in Red Bay soils differ very little from one another in color. The surface soil is dark brown to dark reddish brown, and the subsoil is dark red. These soils have a friable fine sandy clay loam subsoil with moderate, medium, subangular blocky structure.

Low-Humic Gley soils

The Low-Humic Gley soils are intrazonal. They are somewhat poorly drained to poorly drained and have a very thin surface horizon that is moderately high in organic matter. The surface soil overlies mottled gray and brown gleylike mineral horizons that differ very little in texture. These soils were developed under impeded drainage.

Low-Humic Gley soils in Gadsden County have thin surface layers that range from coarse sand to very fine sandy loam in texture. The structure of the surface soil is moderate, medium, crumb. In color the subsoil ranges from gray to predominantly gray with mottles, and in texture, from coarse sand to clay. These soils have fairly well developed characteristics that more strongly reflect the influence of nearly level relief, a high water table, and impeded drainage than they reflect the influence of climate and vegetation. The native vegetation is mainly swamp forest.

The Rains series is a good example of the Low-Humic Gley great soil group. The soils in this series are poorly drained and have thin, very dark gray to gray fine sandy loam surface layers. The subsoil is mainly fine sandy clay loam in texture and mottled gray to light gray in color. Structure ranges from medium, blocky to medium, subangular blocky.

The Myatt soils have A and B horizons similar to those in the Rains soils. Myatt soils are on low terraces bordering streams and are poorly drained.

In this county, Plummer soils of the central concept are similar to the Rains in drainage. They are normally thinner in the surface layers than the Rains soils and are coarser textured through the profile. The Plummer soils mapped at higher elevations in the county are similar to the Plummer of the central concept, but they are slightly better drained.

The Grady soils are Low-Humic Gley soils that have some characteristics of Humic Gley soils. Grady soils are poorly to very poorly drained and have dark gray to very dark gray surface layers, 3 to 6 inches thick. Their subsoil is gray, plastic sandy clay.

Ground-Water Podzols

This great soil group consists of intrazonal soils that have a thin organic layer over a strongly leached light-gray layer of sand, which is underlain by a dark-brown or dark reddish-brown to black organic pan. These soils have developed from sandy materials under the influence of a humid climate. They are in somewhat poorly drained, nearly level areas on uplands. These soils are moderately deep to deep and strongly acid to very strongly acid.

Leon sand is the only Ground-Water Podzol in Gadsden County. This soil has developed from moderately thick beds of acid sands and loamy sands. It has a gray to dark-gray sand surface layer and a light-gray sand subsurface layer. This soil contains a small amount of organic-content in the A_1 horizon. The A_2 horizon is highly leached. It is underlain by a weakly cemented organic pan that can be described as a B horizon in which organic matter and mineral constituents have accumulated. This organic pan is at depths of 14 to 30 inches and is underlain by brown to light-gray sand that extends to depths of more than 42 inches.

Humic Gley soils

These are intrazonal soils that are poorly drained and hydromorphic. They have moderately thick, dark-colored organic horizons underlain by mineral gleyed horizons.

The Humic Gley soils in Gadsden County are in the Rutlege, Fellowship, and Portsmouth series. The Rutlege and Portsmouth soils have surface soils similar in color, thickness, and content of organic matter. Their subsoils are also similar in color. The Portsmouth soils are slightly finer textured in the surface layers than the Rutlege soils and are finer textured in the subsoil. In the Portsmouth soils, the texture is fine sandy clay loam at a depth of less than 18 inches, whereas finer textured material normally occurs below 42 inches in the Rutlege soils. Some areas of Rutlege soils, however, have finer textured material at depths of 30 to 42 inches. The Fellowship soils are commonly on steep slopes. They have a loamy fine sand A horizon and a thin, plastic clay B horizon.

Rendzina soils

The Rendzina soils have a dark grayish-brown to black surface layer. This layer is underlain by gray or yellowish calcareous material that is soft in most places. These soils developed in areas where the vegetation consisted of grass and some broad-leaved trees and the climate was and continues to be hot and humid to semiarid. The process of soil development was calcification.

Binnsville soils are the only Rendzina soils mapped in Gadsden County. These soils are moderately well drained. They developed from limestone materials. The surface soil is dark-gray to black fine sandy loam to fine sandy clay loam. The subsoil is grayish-brown to light olive-brown fine sandy clay to clay underlain by calcareous marly clay or limestone.

Planosols

Planosols are intrazonal soils having one or more horizons that contrast sharply with adjacent horizons in compaction and cementation or high clay content. These soils formed under fairly varied climate and vegetation that were similar to those under which associated zonal soils formed. In most places, Planosols have a fluctuating water table.

The Leaf soils are the only Planosols in Gadsden County. They have a plastic to very plastic fine sandy clay to clay B horizon that contrasts sharply and abruptly with the A horizon in consistence and texture. Leaf soils are poorly drained and formed in alluvium on stream terraces.

Regosols

Regosols are in the azonal soil order. They consist of deep, unconsolidated materials in which few or no distinct soil characteristics have developed. These soils formed on thick beds of unconsolidated sands and loamy sands.

The Regosols in Gadsden County are in the Arredondo, Gainesville, Lakeland, Eustis, Blanton, Klej, and Huckabee series. The Arredondo and Gainesville soils developed from beds of unconsolidated sands and loamy sands that were mixed with phosphatic materials. The Arredondo soils have gray to dark grayish-brown loamy fine sand surface layers and a light yellowish-brown loamy fine sand subsoil that extends to a depth of 42 inches or more. Gainesville soils are somewhat similar to Arredondo soils but have a strong-brown to reddish-yellow subsoil instead of a light yellowish-brown one. The Gainesville and Arredondo soils are nearly level to steep, well drained, and strongly acid. The Arredondo soils are affected by or are underlain by phosphatic materials, but the Lakeland soils are not.

The Lakeland, Eustis, Blanton, Klej, and Huckabee soils developed from moderately thick to thick beds of unconsolidated acid sands and loamy sands that are underlain by finer textured sediments at depths of more than 30 inches. The well-drained Lakeland and Eustis soils are nearly level to steep. These soils have dark-gray to grayish-brown coarse sand to loamy sand surface layers. The Eustis soils differ from Lakeland soils primarily in having a strong brown to yellowish-red coarse sand to loamy sand subsoil instead of a yellow to yellowish-brown one. In the Eustis and Lakeland soils the coarse sands to loamy sands extend to depths of 42 inches to more than 60 inches, but in some areas finer textured materials are at depths of 30 to 42 inches.

The Blanton and Klej soils are deep, moderately well drained, and strongly acid. Their surface layers are gray to dark-gray coarse sands to loamy sands. The Blanton soils have a subsoil dominated by gray, whereas the subsoil of the Klej soil is dominated by yellow. The Klej soils are somewhat similar to the Lakeland soils but are less well drained and are mottled at depths much closer to the surface than the Lakeland soils. The Blanton soils have a lighter colored subsoil than the Lakeland soils and have been influenced by a water table that is normally less than 48 inches below the surface.

The Huckabee soils developed from alluvial material. They occur on stream terraces in level to gently sloping areas and are well drained. These soils formed from coarse-textured sediments that washed from acid soils on the uplands of the coastal plains. They have dark-gray to gray sand to fine sand surface layers. Their subsoil generally is fine sand and extends to depths greater than 42 inches, but in some places the finer textured material is at depths of 30 to 42 inches. Huckabee soils are similar to the Lakeland soils on uplands in profile characteristics.

Alluvial soils

This great soil group consists of soils that are developing from alluvium that was recently transported and deposited. This alluvium has been modified little or none by the soil-forming processes.

The Alluvial soils in Gadsden County are in the Congaree and Hannahatchee series. These soils are sometimes flooded. Areas in which the alluvium was deposited fairly recently have had little horizon differentiation. Where the deposits are older, horizon differentiation is slightly stronger.

The Congaree soils are friable and have very dark grayish-brown to dark-reddish brown silt loam surface layers. These layers are underlain by very dark grayish-brown or dark reddish-brown silty clay loam at depths as much as 18 inches. The Hannahatchee soils have dark reddish-brown to black fine sandy loam surface layers that extend to depths of 18 to 28 inches. The subsoil is mottled and ranges from red through yellowish brown to very dark gray. The texture of the subsoil ranges from fine sandy loam to fine sandy clay loam. Congaree and Hannahatchee soils occur on nearly level areas and are moderately well drained.

General Nature of the Area

This section was prepared for those seeking additional information about the county. It discusses climate, geology, agriculture, and other subjects of general interest.

Climate [10]

The agriculture in an area depends as much on local climate as it does on the soils. The average length of the growing season; the amount and distribution of rainfall; and the frequency, intensity, and timing of extremes in

[10] This subsection was written by K. D. Butson, State climatologist, U.S. Weather Bureau.

TABLE 9.—*Climatological summary*

[*Data from U.S. Weather Bureau Stations at Quincy and Mt. Pleasant, Gadsden County, and Tallahassee, Leon County, Fla. Data for temperature and precipitation for 28-year period, 1931–1958; data for condition of sky and relative humidity for 18-year period*]

Month	Temperature					Rainfall			Average number of days [1] temperature was—		Average number of days [2] sky was—			Average number of days [1] with precipitation of 0.1 inch or more	Average relative humidity [3]			
	Average maximum	Average minimum	Average	Absolute maximum	Absolute minimum	Average monthly	Greatest monthly	Greatest in 24 hours	90° or higher	32° or lower	Clear	Partly cloudy	Cloudy		1 a.m.	7 a.m.	1 p.m.	7 p.m.
	° F	*° F.*	*° F.*	*° F.*	*° F.*	*Inches*	*Inches*	*Inches*							*Percent*	*Percent*	*Percent*	*Percent*
January	65.5	42.7	54.1	85	14	3.64	[4] 8.60	[4] 3.95	0	6	10	10	11	6	86	88	58	73
February	67.3	43.8	55.6	86	15	3.77	[1] 8.30	[4] 4.33	0	4	8	8	12	6	84	86	53	67
March	72.4	48.6	60.5	89	21	5.20	[3] 16.48	[1] 6.77	0	2	9	10	12	6	84	85	51	64
April	78.9	54.6	66.8	96	31	4.78	[1] 14.25	[4] 6.77	1	[5]	10	11	9	6	85	85	49	62
May	86.4	61.8	74.1	102	43	4.07	[4] 11.35	[4] 3.99	9	0	11	12	8	6	85	85	48	62
June	90.6	68.3	79.5	105	52	5.52	[3] 14.64	[3] 4.40	19	0	5	14	11	8	89	87	56	70
July	90.6	70.1	80.3	102	54	7.32	[4] 18.26	[1] 4.91	19	0	3	16	12	11	92	91	64	77
August	90.7	69.9	80.3	102	58	6.44	[4] 14.62	[3] 7.07	21	0	6	15	10	10	91	92	61	78
September	87.8	66.6	77.2	100	46	5.08	[3] 20.32	[4] 5.91	13	0	7	10	13	6	89	91	61	79
October	81.7	56.6	69.2	94	30	2.27	[1] 8.41	[4] 6.35	2	[5]	14	10	7	3	86	89	51	74
November	72.1	46.7	59.4	89	19	2.57	[4] 12.86	[1] 4.32	0	3	12	8	10	4	86	87	52	75
December	66.0	42.7	54.4	82	15	3.67	[1] 10.10	[3] 4.44	0	6	9	8	14	6	86	87	59	77
Year	79.2	56.0	67.6	105	14	54.33	[3] 20.32	[3] 7.07	84	21	104	132	129	78	87	88	55	72

[1] Quincy Station. [2] Sunrise to sunset, Tallahassee Station. [3] Tallahassee Station. [4] Mt. Pleasant Station. [5] Less than 1.

temperature and precipitation affect the kinds of crops that can be grown, the yields that can expected, and the management practices needed.

The climate of Gadsden County is humid and temperate. Summers are long and warm, and winters are mild. Rainfall is abundant and usually has good seasonal distribution. A wide variety of crops can be grown although extremes of temperature and rainfall sometimes reduce crop yields. Soils are sometimes damaged by extreme rates of rainfall.

If he knows the frequency of late killing frosts, a farmer can choose less risky planting dates or at least know the risk he takes in planting early. If he knows how frequently droughts are likely to occur, and how long they will last, he can estimate the value of irrigation and plan the kind of irrigation system he needs. The farmer also needs to know how frequent and how intense heavy rains are likely to be so that he can properly design erosion control structures, farm ponds and spillways, and flood prevention structures.

Table 9 summarizes data on climate recorded at Quincy and Mt. Pleasant in Gadsden County and at Tallahassee in adjacent Leon County.

A farmer should know the likelihood of damaging or destructive low temperatures in spring and fall, for then he can select the safest planting dates. In table 10 are listed the chances that there will be freezing temperatures in spring after the dates named and in fall before the dates named.

At Quincy the last 32° F. temperature in spring has occurred as early as January 2 and as late as April 13. A 28° temperature has not occurred after January 1 in some years, but this temperature has occurred in spring as late as March 27. The first 32° temperature in fall has occurred as early as October 24, and the first 28° temperature, as early as November 3. There have been years when a 32° or a 28° temperature did not occur before January 1.

TABLE 10.—*Chance of last damaging cold temperature in spring and first in fall*

[Based on 33-year period extending from fall 1925 through spring 1958]

Chance [1]	Spring temperature of—		Fall temperature of—	
	32° F. after—	28° F. after—	32° F. before—	28° F. before—
1 in 4	Mar. 16	Mar. 2	Nov. 8	Nov. 23
2 in 4	Mar. 5	Feb. 12	Nov. 21	Nov. 28
3 in 4	Feb. 26	Jan. 26	Nov. 27	Dec. 17

[1] Chance that there will be temperatures of 32° F. or lower and 28° F. or lower in spring after date indicated and in fall before date indicated.

The Gulf of Mexico largely accounts for the mild, moist climate of Gadsden County. The county, however, is too far from the gulf for sea breezes to be noted regularly in summer. In June, July, and August, the daily maximum temperature averages between 90° and 91° and the daily minimum temperature averages between 69° and 70°. Because the Gulf of Mexico moderates most of the air masses affecting this area in summer, hot, dry winds and very high temperatures seldom occur. Though daily maximums of 90° or higher occur on 84 days in a year on the average, maximums of 100° or higher occur only about once or twice per year.

In December, January, and February, this area is affected by continental air masses much more frequently than it is in summer, and there is a wider temperature range. The daily high temperature averages about 66°, and daily low temperature averages about 43°. The U.S. Weather Bureau records at Quincy indicate that freezing temperature can be expected every year. In an average year, freezing temperature occurs about 21 times. A minimum temperature of 20° or less can be expected in about half of the years. Temperature of 20° or less has occurred about the same number of times in December, January, and February. Temperature of 20° or less has occurred several times in November. At Quincy, in the 28-year period from 1931 through 1958, the lowest temperature recorded was 14°. This was on January 27, 1940. The lowest temperature observed in Florida was at Tallahassee, where a temperature of 2° below zero was recorded on February 13, 1899. Cold spells in winter are usually short, and even on the colder days, temperature almost always rises above freezing.

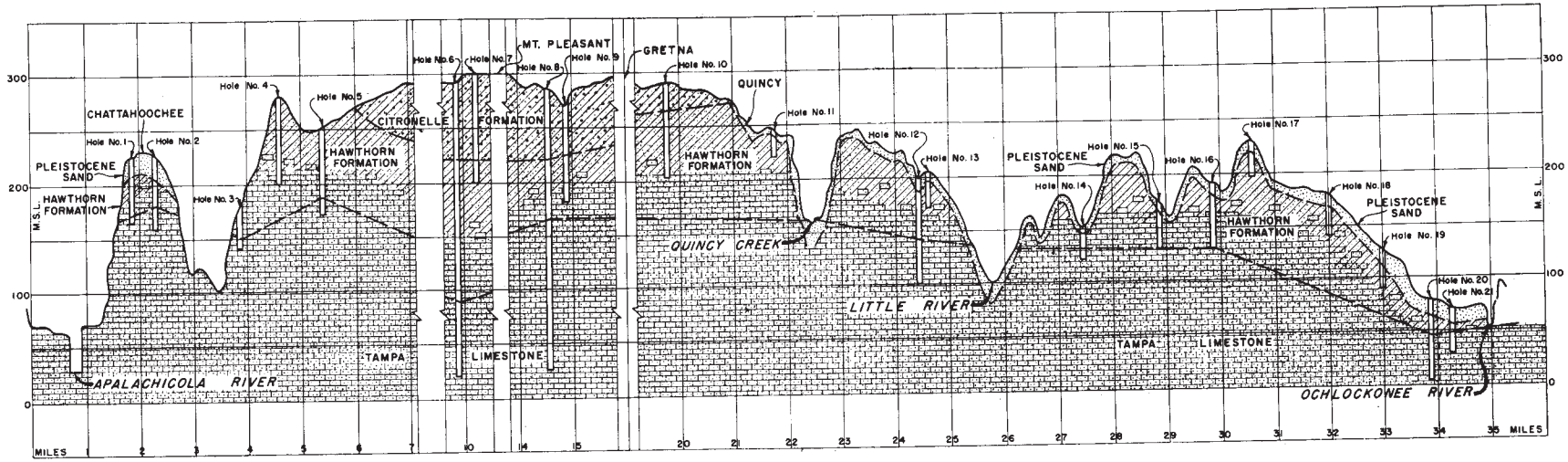
Precipitation varies greatly for any one month from year to year. However, on the basis of average monthly totals, there are two periods of maximum rainfall during the year. One period is in spring in about March and April; the other is in summer and extends from about June through September (see table 9). October and November have the lowest average rainfall. About 63 percent of the average annual rain falls in the 6 wettest months of the year; about 45 percent is in summer, and about 18 percent is in March and April.

Rainfall in summer comes mostly in short-lasting local showers or thundershowers that occur late in the afternoon or early in the evening. Thundershowers occur in all months of the year and average about 80 per year. Of this number, three-fourths are in summer. In June, July, and August, measurable amounts of rain can be expected on about half of the days. Showers in summer are sometimes heavy, and 2 or 3 inches of rain may fall in 1 or 2 hours. Rains in winter and early in spring are often more widespread, more gentle, and longer lasting than in summer. They are frequently associated with large-scale weather developments and last 12 to 36 hours.

Nearly all the precipitation in Gadsden County falls as rain. Hail falls occasionally and is almost always associated with the more violent thunderstorms. Snow is rare, but measurable amounts of snowfall have been reported.

This area normally has fairly good distribution of precipitation through the year, but droughts do occur that damage crops and make forest fires a serious hazard. Droughts may occur any time, but they are most frequent in fall and from late in April through the early part of June. The droughts in spring are generally shorter than those in fall. This area has received less than 1 inch of rain in about one-fourth of the Octobers and one-third of the Novembers. At Quincy, one of the longest periods without measurable rainfall was from October 11 through December 4, 1931, a period of 55 days.

Tropical storms are the principal cause of widespread



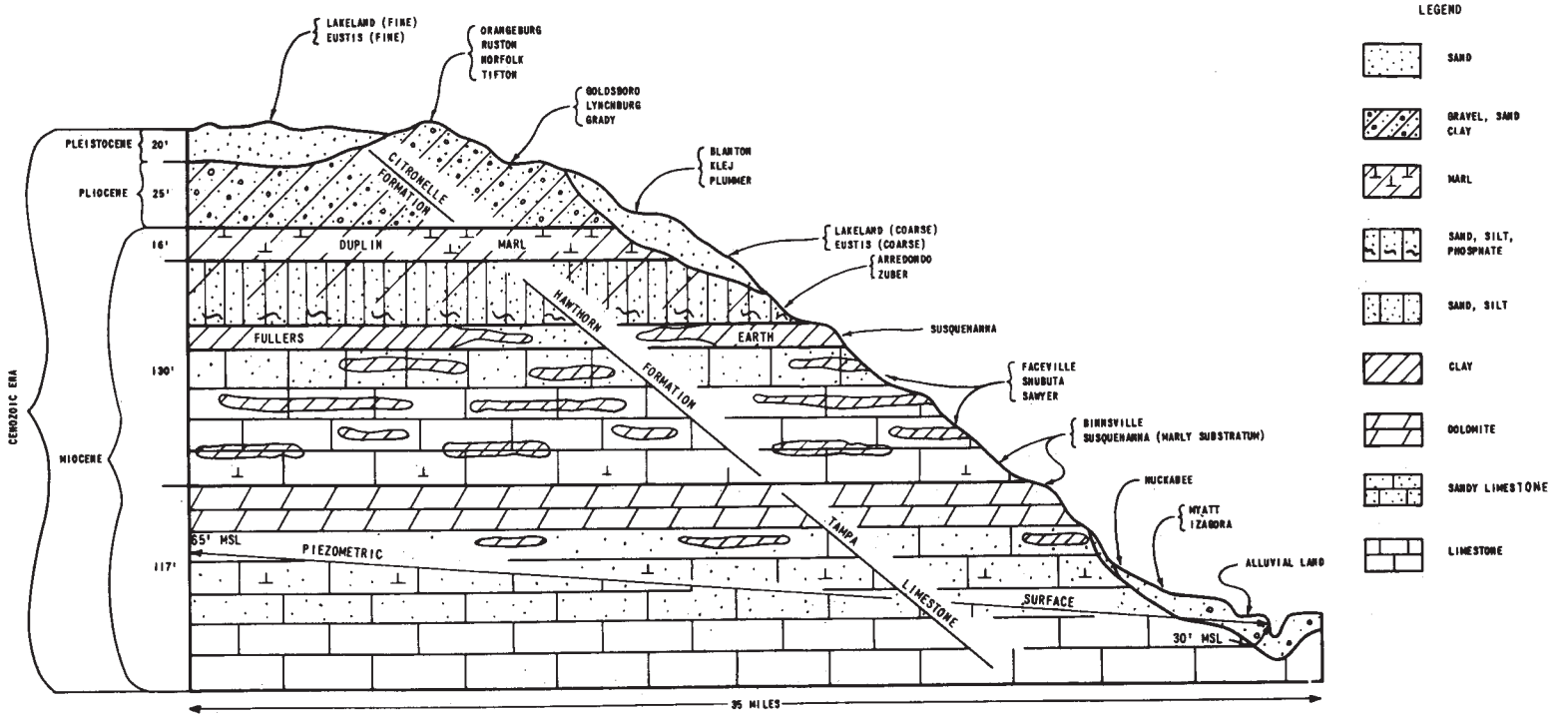


Figure 15,—Top, Geologic cross section, east-west along U.S. Highway No. 90; *bottom,* Geologic formations and some principal soils in relative positions.

excessive rainfall. They generally occur from June through October. These storms are not frequent, but when accompanied by heavy rainfall, they damage fields and crops by flooding and by erosion. Since these storms rapidly decrease in intensity as they move inland, winds of hurricane force (75 miles per hour or more) seldom occur in Gadsden County.

Prevailing winds in this area are generally southerly in summer and northerly in winter. The speed of wind by day usually ranges from 8 to 15 miles per hour but nearly always drops below 8 miles per hour at night. Average relative humidity at Tallahassee is listed in table 9. The relative humidity at Tallahassee is typical of the area.

Geology [11]

Four major geologic formations, all sedimentary, occur in Gadsden County at or near the surface of the ground. From the oldest at the lowest depth to the youngest at the top, these formations are Tampa limestone, the Hawthorn formation, Duplin marl, and the Citronelle formation. The Duplin marl and parts of other formations are covered with a blanket of Pleistocene sand that ranges from a few inches to more than 20 feet in thickness. Recent deposits of colluvium and alluvium cover these formations in the valleys.

At the top of figure 15 is a geologic cross section along U.S. Highway No. 90. Duplin marl is not shown in this cross section, because this formation occurs only in the southern part of the county. All of the main formations in the county and the relative positions of some soil series are shown in the diagram at the bottom of figure 15. The location of the main geologic formations in the county are shown in figure 16.

The Apalachicola River is part of the western boundary of the county, and the Ochlockonee River is the eastern boundary. The elevations of the county range from about 50 feet above mean sea level, along these rivers near their southernmost points on the county boundaries, to more than 300 feet above mean sea level, in the west-central part of the county. The area of greatest relief is from the vicinity of Chattahoochee southward along the eastern side of the Apalachicola River. A few miles south of Chattahoochee you can see the Tampa, Hawthorn, and Citronelle formations within a distance of less than 1 mile. In places these formations are covered with a blanket of Pleistocene sand that is 5 to 20 feet deep.

Lithologically, Tampa limestone consists of sand, silt, marl, dolomite, and limestone. Generally, the purer limestone is in the lower part of the formation. The upper part contains more sand, silt, and marl than the

[11] This subsection was written by L. O. ROWLAND, geologist, Soil Conservation Service.

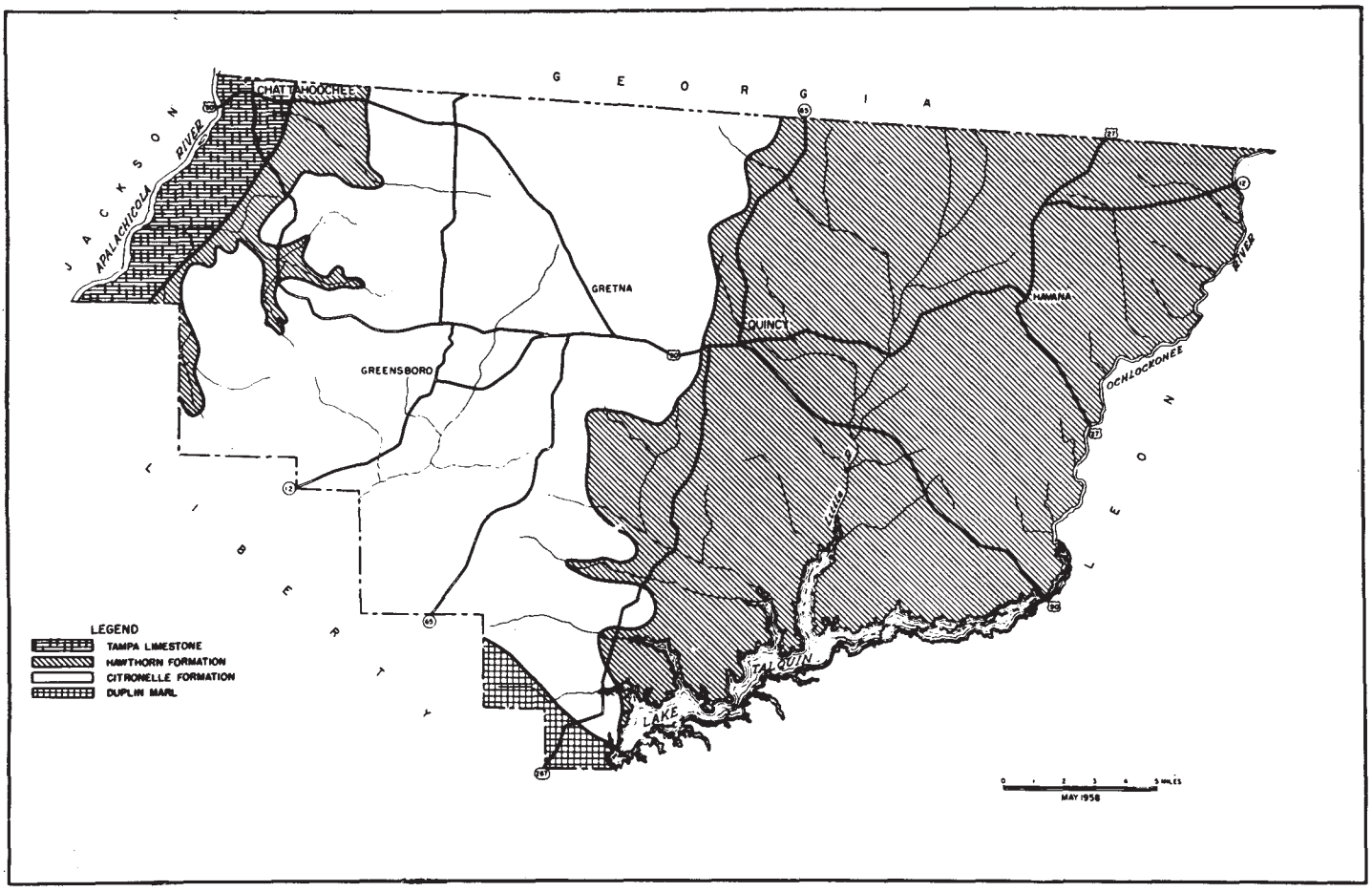


Figure 16.—Geologic map of Gadsden County.

lower part. A thin stratum of limestone that contains as much as 35 percent magnesium carbonate ($MgCO_3$) occurs near the top of the Tampa limestone in places.

Exposures of the upper part of the Tampa limestone and the lower part of the Hawthorn formation are evident in areas of steep to very steep relief (fig. 15, bottom). The Susquehanna, Binnsville, and other soils occur in these areas.

The Hawthorn formation is in the eastern part of the Adam Bluff group in Gadsden County. It is exposed in two separate areas. The smaller area is in the western part of the county just east of the Tampa deposits. The larger area is in the eastern part. These two areas of exposure cover slightly more than 53 percent of the county. The deposits consist of marine, deltaic, and alluvial phosphatic sands, other sands, silts, clays, fuller's earth, marl, and limestone. These sediments were deposited by a transgressive sea that flooded and eroded the land.

The Arredondo, Zuber, Susquehanna, Sawyer, Faceville, Magnolia, Shubuta, Norfolk, Ruston, and other soils have developed on exposures of the Hawthorn formation.

A few miles north of Dogtown and near Quincy, lenses of fuller's earth are exposed on the rolling topography in places. These lenses, or layers, range from a few inches to as much as 16 feet in thickness. The fuller's earth, a valuable clay mineral, is strip mined to depths of 80 feet or more (fig. 17).

Figure 17.—**Fuller's earth strip mined near Quincy in an area of Susquehanna loamy fine sand. Strata of the Hawthorn formation in exposed cut. Fuller's earth is just below the prominent stratum at bottom of cut.**

The Duplin marl is in the extreme southern part of the county, where it is covered with several feet of coarse Pleistocene sand. The coarse-textured, poor agricultural soils, such as the Lakeland, Eustis, Blanton, Klej, and Plummer soils, formed in the coarse sand above the Duplin marl. These soils are also above the Citronelle and Hawthorn formations in the southern part of the county.

The Citronelle formation covers slightly more than 40 percent of Gadsden County. It is in the west-central part. It consists of sand, clay, and water-worn quartz gravel. In most places, the sand and gravel are orange or red and the clay is iron stained where it is mixed with the sand and gravel. Some layers of almost white clay contain a high percentage of kaolin. In elevation, the Citronelle formation is the highest geologic formation in the county. Its highest elevation is slightly more than 300 feet above mean sea level. Orangeburg, Ruston, Norfolk, Tifton, Goldsboro, Lynchburg, and other well-developed soils occur in this area.

Many differences can be noted in the geology of the county. Figure 15 shows a marked difference in topography along Highway No. 90. The Hawthorn formation, which is of Miocene age, has at least 120 feet of relief, whereas the Citronelle, which is of Pliocene age, has about 20 feet of relief. The Hawthorn formation contains more ferruginous pebbles than does the Citronelle formation.

Sinks have formed in places where the soluble carbonates have been removed from the limestone in the Hawthorn formation. Well-drained sinks have not formed in the Citronelle formation, but there are saucer-shaped depressions called Grady ponds.

Pleistocene sand is scattered through the county in quantities that range from very large amounts to small pockets. The Pleistocene sand that is at the higher elevations in the northern part of the county is generally more loamy and finer textured than that in the southern part. Better agricultural soils form on the loamy Pleistocene sand than form on the coarser sand.

The valleys of streams are covered by reworked materials that are 5 to 25 feet thick. These reworked materials were transported from the major geologic formations. Alluvial land, Myatt, Izagora, Leaf, Huckabee, and other soils are formed from these materials.

In Gadsden County, the Tampa and older formations are a part of the Floridian aquifer. The piezometric surface ranges from 30 feet above mean sea level in the southeastern part of the county to about 65 feet above mean sea level in the northwestern part (see fig. 15, bottom). The water is hard and highly mineralized. Water at shallow depths in the Pleistocene and Pliocene deposits is soft.

Settlement and Population

Gadsden County was created in 1823, a year after the territorial government of Florida was formed. Then it consisted of all the area between the Suwannee and Apalachicola Rivers. It was the fifth county in the State to be designated. Quincy, the county seat, was settled mainly by well-to-do slave owners, who established large plantations. Many of these plantations still exist. The county received its name in honor of James Gadsden, aide-de-camp to General Andrew Jackson in the Florida campaign of 1818. Incorporated towns are Quincy, Havana, Chattahoochee, Greensboro, and Gretna. Havana was named after Havana, Cuba, by an old schoolmaster because Little Cuban Sun tobacco is grown in the area. Chattahoochee is the Indian word meaning three rivers.

The population of Gadsden County is gradually increasing. It increased from about 39,500 in 1950 to about 44,600 in July 1957. About 40 percent of the population is white, and 60 percent is Negro. The increase in population is primarily a result of an increase in tobacco acreage, in small industries, and in other small businesses.

Agriculture

Agriculture is the main source of income in Gadsden County. The county is a general farming area, and the principal crops are corn, tobacco, small grains, cabbage, pole beans, hay, sweetpotatoes, sugarcane, and peanuts. A few other crops are grown. Both flue-cured tobacco and shade tobacco are cultivated, but the shade variety is more extensive and is the main cash crop (fig. 18). According to the county agent, about 4,500 acres of shade tobacco were cultivated in 1958.

***Figure 18.*—Shade tobacco on Faceville loamy fine sand, 2 to 5 percent slopes. This specialized crop requires much hand labor and carefully controlled management of a high level. It is grown under cloth shades.**

Shade tobacco is a highly specialized crop that is difficult and expensive to cultivate. It is used only as outer wrappers on cigars. The acreage in shade tobacco is kept about the same from year to year because of acreage allotments. This crop costs between $1,800 to $2,000 per acre to produce. The price received for the tobacco depends primarily on quality. Individual shades, or the shaded fields where the tobacco is grown, have an average size of about 14 acres, but a few are as large as 150 acres. More than 90 percent of the tobacco shades are irrigated.

According to the county agent, about 38,000 acres of corn and about 4,500 acres of oats were grown in the county in 1958. Corn is the most extensive crop in the county (fig. 19). Most of the acreage in oats is grazed, but a small part is combined. Oats are also used as green manure for shade tobacco (fig. 20). Much of the county is in pasture (fig. 21).

Management in the county is at a relatively high level. Farming methods are up-to-date, and improved plant varieties are used.

The number of livestock in the county is increasing. Livestock were first raised mainly to supply barnyard manure for shade tobacco, but raising and fattening beef cattle for market is now well established. The manure is an important byproduct. According to the county agent, there were about 25,000 beef cattle in the county in 1958. About 13,000 steers were fattened and sold, and 10,000 were kept in herds. In 1958, dairy cattle totaled about 1,850. About 25,000 hogs were raised on farms, and approximately 23,000 of these were fattened and sold.

***Figure 19.*—Corn on Norfolk loamy fine sand, 2 to 5 percent slopes, and Norfolk loamy fine sand, 5 to 8 percent slopes. This field is terraced. The terraces empty into the grassed outlet in the foreground. Rows are on contour. Class II and class III land.**

***Figure 20.*—Oats planted under shades after the tobacco is harvested are grazed and later plowed under as green manure.**

According to the census, farms in the county totaled 1,024 in 1954. The average-sized farm was 193.4 acres. There were 746 full owners of farms, 155 part owners, 24 managers, and 99 tenants.

In 1954 there were 359 farms less than 30 acres in size, 144 ranging from 30 to 49 acres, 150 ranging from 50 to 99 acres, 286 ranging from 100 to 499 acres, 48 ranging from 500 to 999 acres, and 37 more than 1,000 acres in size.

In 1954, 1,801 mules were reported on 633 farms in the county. Farm power and mechanical equipment consisted of 667 motortrucks, 595 tractors, 35 grain combines, 92 corn pickers, 18 pick-up hay balers, and 3 field forage harvesters. In spite of a great deal of farm mechanization in the county, many farm laborers are employed. The cultivation of shade tobacco requires much hand labor.

Figure 21.—**Dense sod of coastal bermudagrass. Later this pasture will be plowed under to improve soil quality. Class II and class III land.**

Industries

Though Gadsden County is primarily agricultural, a few industries have been established. The manufacture of cigars is the largest industry, and two plants make cigars in Quincy. The mining and processing of fuller's earth is the second most important industry. Quincy has a veneer mill and a wood-preserving plant, and there are sawmills in Chattahoochee, Greensboro, Havana, and Quincy. A plant in Quincy supplies all local cigar manufacturers with cigar boxes. A vegetable cannery is located in Quincy. In addition to these industries, the county has small meat-packing plants and small plants for making furniture, cabinets, caskets, and concrete products.

Transportation and Markets

Transportation facilities in the county are good. The railroads serving the county are the Seaboard Air Line, the Louisville and Nashville, the Atlantic Coast Line, and the Apalachicola Northern. Bus service is provided by Greyhound Lines and National Trailways.

U.S. Highways No. 27 and 90 run through the county. Highway No. 90 enters the county in the extreme northwestern corner and extends through the county in a southeastern direction. It passes through Chattahoochee, Gretna, and Quincy. Highway No. 27 crosses from north to south across the northeastern part of the county. It passes through Havana and extends northward across the Georgia State line and southward through Tallahassee.

Many State highways connect the various parts of the county. The connecting graded roads are well maintained and are generally passable the year around. Freight is carried over the main highways.

Quincy, the principal trade center for the area, has a State Farmer's Vegetable Market and Livestock Market. Motortrucks transport part of the agricultural products to outside markets. Tobacco packing plants and warehouses are located at Quincy. Nearby, at Havana, millions of pounds of tobacco are packed and marketed each year. Some of the tobacco is used locally in the making of cigars, but most of the tobacco produced in Gadsden County is processed and packed in Quincy to be shipped to other factories. Some dairy products are sold locally, and some are marketed through outlets in Tallahassee.

Farm, Home, and Community Facilities

Homes in rural areas range from well-built, comfortable houses on the more prosperous farms to small houses on some of the tenant farms. Electricity is available in nearly all sections of the county. Less than 3 percent of the farms in the county do not have electricity. Telephone lines connect all towns, and several extend to rural sections. Mail service is countywide. The county has churches of most major denominations, and they are conveniently located in most communities. Three weekly newspapers are published in the county.

There are two hospitals in Gadsden County. The Florida State Hospital at Chattahoochee has about 5,000 beds, and the Gadsden County Hospital in Quincy has about 70 beds. Other health services are provided by the County Health Department.

Recreational Facilities

Excellent fishing and boating are available at Lake Talquin and on the Apalachicola and Ochlockonee Rivers. Quincy has a swimming pool, a golf course and country club, an athletic field, playgrounds, and parks. The nearby Gulf of Mexico is easily accessible to residents of Gadsden County. Lake Seminole, which touches the northwest corner of Gadsden County, provides an excellent place for fishing, swimming, boating, and water skiing.

Schools

Gadsden County has 15 schools, of which 5 are high schools. In 1958–59, about 9,000 pupils were enrolled in the high schools. Students are transported from outlying areas by bus to the consolidated schools located in the larger communities in the county.

Glossary

Aeration. The exchange of air in the soil with air from the atmosphere.

Aggregate. A cluster of many soil particles held together by internal forces to form a granule, clod, block, or other mass.

Available water-holding capacity, soils. That part of the total moisture in the soil that can be readily taken in by plants. It is the difference between the percentage of water at field capacity and the percentage of water at wilting point.

Clay. (1) As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. (2) As a soil textural class, soil material that contains 40 percent or more clay, as defined in (1), less than 45 percent sand, and less than 40 percent silt.

Crumb structure. Soft, small, porous aggregates that are irregular but are somewhat spherical in shape, as in the A_1 horizon of many soils. Crumb structure is closely related to granular structure. (See also, Structure, soil.)

Gravel. A size group of coarse mineral particles varying in diameter from 2 millimeters to 3 inches.

Horizon, soil. A layer of soil, approximately parallel to the soil surface, that has characteristics produced by soil-forming processes.

Horizon A. The master horizon consisting of (1) one or more mineral horizons of maximum organic accumulation; or (2) surface or subsurface horizons that are lighter in color than the underlying horizon and which have lost clay minerals, iron, and aluminum with resultant concentration of the more resistant minerals; or (3) horizons belonging to both of these categories. In this report the A horizon is usually referred to as the "surface layers."

Horizon B. The master horizon of altered material characterized by (1) an accumulation of clay, iron, or aluminum, with accessory organic material; or (2) blocky or prismatic structure together with other characteristics, such as stronger colors, unlike those of the A horizons or the underlying horizons of nearly unchanged material; or (3) characteristics of both these categories. Commonly, the lower limit of the B horizon corresponds to the lower limit of the solum.

Horizon C. A layer of unconsolidated material, relatively little affected by the influence of organisms and presumed to be similar in chemical, physical, and mineralogical composition to the material from which at least a part of the overlying solum has developed.

Horizon D. Any stratum underlying the C, or underlying the B if no C is present, that is unlike the C or is unlike the material from which the solum has been formed.

Loam. The textural class name for soil having approximately equal amounts of sand, silt, and clay. Loam soils contain 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand.

Mottled. Marked with spots of color and usually associated with poor drainage. Descriptive terms for mottles follow: Contrast—*faint, distinct,* and *prominent;* abundance—*few, common,* and *many;* and size—*fine, medium,* and *coarse.* The size measurements are as follows: Fine, commonly less than 5 millimeters (about 0.2 inch) in diameter along the greatest dimension; medium, commonly ranging between 5 and 15 millimeters (about 0.2 to 0.6 inch) along the greatest dimension; and coarse, commonly more than 15 millimeters (about 0.6 inch) along the greatest dimension.

Parent material. The unconsolidated mass of rock or partly weathered soil material from which the soil profile develops.

Permeability, soil. The quality of the soil that enables it to transmit air and water.

Profile, soil. A vertical section of the soil through all its horizons and extending into the parent material. (See Horizon, soil.)

Sand. (1) Individual rock or mineral fragments having diameters ranging from 0.05 millimeter (0.002 inch) to 2.0 millimeters (0.079 inch). Sand grains consist chiefly of quartz, but they may be any mineral composition. (2) The textural class name of any soil that contains 85 percent or more sand and not more than 10 percent clay.

Silt. (1) A soil separate having diameters ranging from 0.05 millimeter to 0.002 millimeter. (2) The textural class name of soil material that contains 80 percent or more silt and less than 12 percent clay.

Single grain soil. A structureless soil in which each particle exists separately.

Soil. The natural medium for the growth of land plants. A soil is a natural three-dimensional body on the surface of the earth, unlike the adjoining bodies.

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 soils consists of the A and B horizons. Usually the characteristics of the material in these horizons are quite unlike those of the underlying parent 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 the adjoining aggregates. The principal forms of soil structure are *platy, prismatic, columnar, blocky,* and *granular.* Structure is defined in terms of distinctness, size, and shape of the soil aggregates. For example, "moderate, medium, subangular blocky" means moderately distinct, medium-sized aggregates of subangular blocky shape.

Subsoil. Technically, the B horizon of soils with distinct profiles; roughly, that part of the profile below plow depth.

Subsurface soil. As used in this report it refers to that part of the A horizon below the surface layer.

Surface layer. As used in this report it refers to the uppermost layer of the soil.

Surface soil. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, about 5 to 8 inches in thickness.

Texture, soil. The relative proportions of the various size groups of individual soil grains in a mass of soil; specifically, the proportions of sand, silt, and clay. The soil texture classes, in increasing order of the content of the finer particles, are as follows: *Sand, loamy sand, sandy loam, loam, silt loam,* and *clay.* These classes may be modified according to relative size of the coarser particles; for example, *fine sand, loamy fine sand, fine sandy loam, very fine sandy loam, coarse sandy loam, gravelly sandy loam, gravelly loam, cobbly loam, sandy clay, stony clay,* and *stony loam.*

Topsoil. Presumably fertile soil material used to topdress roadbanks, gardens, and lawns.

GUIDE TO MAPPING UNITS, CAPABILITY UNITS, AND WOODLAND SUITABILITY GROUPS

[See table 1, p. 20, for estimated productivity ratings of each unit, and table 7, p. 59, for approximate acreage and proportionate extent of the soils. See pp. 30 to 57 for information on engineering properties of the soils]

Map symbol	Mapping unit	Page	Capability unit	Page	Woodland suitability group	Page
Ab	Alluvial land	61				
AdB	Arredondo fine sand, 0 to 5 percent slopes	61	IIIse–1	13	II	29
AdC	Arredondo fine sand, 5 to 8 percent slopes	62	IVse–1	16	II	29
AfD	Arredondo-Fellowship-Gainesville soils, 8 to 12 percent slopes	62	VIes–1	18	II	29
AfF	Arredondo-Fellowship-Gainesville soils, 12 to 40 percent slopes	62	VIIes–1	19	II	29
BaC	Binnsville soils, 2 to 12 percent slopes	63	VIes–2	19	III	30
BcB	Blanton coarse sand, 0 to 5 percent slopes	64	IIIse–3	14	III	30
BfB	Blanton fine sand, 0 to 5 percent slopes	63	IIIse–3	14	III	30
BfC	Blanton fine sand, 5 to 8 percent slopes	64	IVse–3	17	III	30
BtB	Blanton fine sand, terrace, 0 to 5 percent slopes	64	IIIse–3	14	III	30
CaC3	Carnegie fine sandy loam, 5 to 8 percent slopes, severely eroded	66	IVe–2	15	I	29
CnA	Carnegie loamy fine sand, 0 to 2 percent slopes	65	I–2	9	I	29
CnB	Carnegie loamy fine sand, 2 to 5 percent slopes	64	IIe–2	10	I	29
CnB2	Carnegie loamy fine sand, 2 to 5 percent slopes, eroded	65	IIe–2	10	I	29
CnC	Carnegie loamy fine sand, 5 to 8 percent slopes	65	IIIe–2	12	I	29
CnC2	Carnegie loamy fine sand, 5 to 8 percent slopes, eroded	65	IIIe–2	12	I	29
CnD	Carnegie loamy fine sand, 8 to 12 percent slopes	66	IVe–2	15	I	29
Co	Congaree silt loam	66	Vws–1	18	III	30
CrB	Cuthbert loamy fine sand, 2 to 5 percent slopes	67	IIIes–2	13	I	29
CrC	Cuthbert loamy fine sand, 5 to 8 percent slopes	67	IVes–2	16	I	29
CsD	Cuthbert, Boswell, and Susquehanna soils, 5 to 12 percent slopes	67	VIes–2	19	I	29
CsF	Cuthbert, Boswell, and Susquehanna soils, 12 to 60 percent slopes	68	VIIes–2	19	I	29
EcB	Eustis coarse sand, 0 to 5 percent slopes	68	IVse–2	17	II	29
EcD	Eustis coarse sand, 5 to 12 percent slopes	69	VIse–1	19	II	29
EdB	Eustis coarse sand, excessively drained, 0 to 5 percent slopes	69	IVse–2	17	II	29
EmB	Eustis loamy sand, 0 to 5 percent slopes	70	IIIse–1	13	II	29
EmC	Eustis loamy sand, 5 to 8 percent slopes	70	IVse–1	16	II	29
EsA	Eustis loamy sand, shallow, 0 to 2 percent slopes	69	IIIse–1	13	II	29
EsB	Eustis loamy sand, shallow, 2 to 5 percent slopes	69	IIIse–1	13	II	29
EsC	Eustis loamy sand, shallow, 5 to 8 percent slopes	70	IVse–1	16	II	29
FaC3	Faceville fine sandy loam, 5 to 8 percent slopes, severely eroded	71	IVe–2	15	I	29
FaD3	Faceville fine sandy loam, 8 to 12 percent slopes, severely eroded	71	VIes–1	18	I	29
FmA	Faceville loamy fine sand, 0 to 2 percent slopes	71	I–2	9	I	29
FmB	Faceville loamy fine sand, 2 to 5 percent slopes	70	IIe–2	10	I	29
FmB2	Faceville loamy fine sand, 2 to 5 percent slopes, eroded	71	IIe–2	10	I	29
FmC	Faceville loamy fine sand, 5 to 8 percent slopes	71	IIIe–2	12	I	29
FmC2	Faceville loamy fine sand, 5 to 8 percent slopes, eroded	71	IIIe–2	12	I	29
FmD	Faceville loamy fine sand, 8 to 12 percent slopes	71	IVe–2	15	I	29
FsD	Faceville-Shubuta-Ruston complex, 8 to 12 percent slopes	72	VIes–1	18	I	29
FsD3	Faceville-Shubuta-Ruston complex, 8 to 12 percent slopes, severely eroded	72	VIIes–1	19	I	29
FsF	Faceville-Shubuta-Ruston complex, 12 to 35 percent slopes	72	VIIes–1	19	I	29
FsF3	Faceville-Shubuta-Ruston complex, 12 to 35 percent slopes, severely eroded	72	VIIes–1	19	I	29
GoA	Goldsboro loamy fine sand, 0 to 2 percent slopes	73	IIsw–2	11	III	30
GoB	Goldsboro loamy fine sand, 2 to 5 percent slopes	73	IIsw–2	11	III	30
GmA	Goldsboro loamy sand, thick surface, 0 to 2 percent slopes	73	IIsw–2	11	III	30
GmB	Goldsboro loamy sand, thick surface, 2 to 5 percent slopes	73	IIsw–2	11	III	30
GmC	Goldsboro loamy sand, thick surface, 5 to 8 percent slopes	73	IVse–3	17	III	30
Gr	Grady fine sandy loam	74	Vws–1	18	IV	30
Gu	Gullied land	74				
Ha	Hannahatchee soils, local alluvium	75	IIsw–1	11	III	30
HcB	Huckabee fine sand, 0 to 5 percent slopes	75	IIIse–2	13	II	29
Ig	Izagora loamy fine sand	76	IIsw–2	11	III	30
KaA	Kalmia loamy fine sand, 0 to 2 percent slopes	77	I–1	9	I	29
KbA	Klej loamy sand, shallow, 0 to 2 percent slopes	79	IIIse–3	14	III	30
KbB	Klej loamy sand, shallow, 2 to 5 percent slopes	78	IIIse–3	14	III	30
KcB	Klej coarse sand, 0 to 5 percent slopes	79	IIIse–3	14	III	30
KsB	Klej sand, 0 to 5 percent slopes	78	IIIse–3	14	III	30
KsC	Klej sand, 5 to 8 percent slopes	78	IVse–3	17	III	30
LaB	Lakeland coarse sand, 0 to 5 percent slopes	79	IVse–2	17	II	29
LaD	Lakeland coarse sand, 5 to 12 percent slopes	80	VIse–1	19	II	29
LcB	Lakeland coarse sand, excessively drained, 0 to 5 percent slopes	80	IVse–2	17	II	29
LcD	Lakeland coarse sand, excessively drained, 5 to 12 percent slopes	80	VIse–1	19	II	29
LdB	Lakeland loamy sand, 0 to 5 percent slopes	81	IIIse–1	13	II	29
LdD	Lakeland loamy sand, 5 to 12 percent slopes	82	IVse–1	16	II	29
LeA	Lakeland loamy sand, shallow, 0 to 2 percent slopes	81	IIIse–1	13	II	29
LeB	Lakeland loamy sand, shallow, 2 to 5 percent slopes	81	IIIse–1	13	II	29
LmC	Lakeland loamy sand, shallow, 5 to 8 percent slopes	81	IVse–1	16	II	29
LnB	Lakeland sand, 0 to 5 percent slopes	81	IIIse–2	13	II	29
LnD	Lakeland sand, 5 to 12 percent slopes	81	VIse–1	19	II	29
LsF	Lakeland and Eustis sands, 12 to 50 percent slopes	82	VIIes–1	19	II	29
LtC	Lakeland-Eustis-Cuthbert complex, 5 to 8 percent slopes	82	IVes–2	16	II	29
LtD	Lakeland-Eustis-Cuthbert complex, 8 to 12 percent slopes	82	VIes–1	18	II	29
LtF	Lakeland-Eustis-Cuthbert complex, 12 to 45 percent slopes	82	VIIes–1	19	II	29

GUIDE TO MAPPING UNITS, CAPABILITY UNITS, AND WOODLAND SUITABILITY GROUPS—Continued

Map symbol	Mapping unit	Page	Capability unit	Page	Woodland suitability group	Page
Lv	Leaf very fine sandy loam	83	Vws–1	18	IV	30
Lw	Leon sand	83	IVsw–1	17	III	30
LyA	Lynchburg loamy fine sand, 0 to 2 percent slopes	84	IIIws–1	14	III	30
LyB	Lynchburg loamy fine sand, 2 to 5 percent slopes	85	IIIws–1	14	III	30
LzA	Lynchburg loamy sand, thick surface, 0 to 2 percent slopes	85	IIIws–1	14	III	30
LzB	Lynchburg loamy sand, thick surface, 2 to 5 percent slopes	85	IIIws–1	14	III	30
Ma	Made land	85	---		---	
MfB3	Magnolia fine sandy loam, 2 to 5 percent slopes, severely eroded	86	IIIe–2	12	I	29
MfC3	Magnolia fine sandy loam, 5 to 8 percent slopes, severely eroded	87	IVe–2	15	I	29
MfD3	Magnolia fine sandy loam, 8 to 12 percent slopes, severely eroded	87	VIes–1	18	I	29
MgA	Magnolia loamy fine sand, 0 to 2 percent slopes	86	I–2	9	I	29
MgA2	Magnolia loamy fine sand, 0 to 2 percent slopes, eroded	86	IIe–2	10	I	29
MgB	Magnolia loamy fine sand, 2 to 5 percent slopes	86	IIe–2	10	I	29
MgB2	Magnolia loamy fine sand, 2 to 5 percent slopes, eroded	85	IIe–2	10	I	29
MgC	Magnolia loamy fine sand, 5 to 8 percent slopes	86	IIIe–2	12	I	29
MgC2	Magnolia loamy fine sand, 5 to 8 percent slopes, eroded	86	IIIe–2	12	I	29
MgD	Magnolia loamy fine sand, 8 to 12 percent slopes	86	IVe–2	15	I	29
Mp	Mines, pits, and dumps	87	---		---	
MyB	Myatt loamy fine sand, 0 to 5 percent slopes	87	IVws–1	17	IV	30
NfA	Norfolk loamy fine sand, 0 to 2 percent slopes	88	I–1	9	I	29
NfB	Norfolk loamy fine sand, 2 to 5 percent slopes	89	IIe–1	9	I	29
NfB2	Norfolk loamy fine sand, 2 to 5 percent slopes, eroded	89	IIe–1	9	I	29
NfC	Norfolk loamy fine sand, 5 to 8 percent slopes	89	IIIe–1	11	I	29
NfC2	Norfolk loamy fine sand, 5 to 8 percent slopes, eroded	89	IIIe–1	11	I	29
NfD	Norfolk loamy fine sand, 8 to 12 percent slopes	89	IVe–1	15	I	29
NpA	Norfolk loamy fine sand, pebbly, 0 to 2 percent slopes	89	I–1	9	I	29
NpB	Norfolk loamy fine sand, pebbly, 2 to 5 percent slopes	89	IIe–1	9	I	29
NpB2	Norfolk loamy fine sand, pebbly, 2 to 5 percent slopes, eroded	89	IIe–1	9	I	29
NsA	Norfolk loamy sand, thick surface, 0 to 2 percent slopes	90	IIse–1	10	I	29
NsB	Norfolk loamy sand, thick surface, 2 to 5 percent slopes	90	IIse–1	10	I	29
NsC	Norfolk loamy sand, thick surface, 5 to 8 percent slopes	90	IIIes–1	12	I	29
NsD	Norfolk loamy sand, thick surface, 8 to 12 percent slopes	90	IVes–1	15	I	29
NtA	Norfolk loamy sand, thick surface, pebbly, 0 to 2 percent slopes	90	IIse–1	10	I	29
NtB	Norfolk loamy sand, thick surface, pebbly, 2 to 5 percent slopes	90	IIse–1	10	I	29
NtC	Norfolk loamy sand, thick surface, pebbly, 5 to 8 percent slopes	90	IIIes–1	12	I	29
OfA	Orangeburg loamy fine sand, 0 to 2 percent slopes	91	I–1	9	I	29
OfB	Orangeburg loamy fine sand, 2 to 5 percent slopes	92	IIe–1	9	I	29
OfB2	Orangeburg loamy fine sand, 2 to 5 percent slopes, eroded	92	IIe–1	9	I	29
OfC	Orangeburg loamy fine sand, 5 to 8 percent slopes	92	IIIe–1	11	I	29
OfC2	Orangeburg loamy fine sand, 5 to 8 percent slopes, eroded	92	IIIe–1	11	I	29
OfD	Orangeburg loamy fine sand, 8 to 12 percent slopes	92	IVe–1	15	I	29
OtA	Orangeburg loamy sand, thick surface, 0 to 2 percent slopes	92	IIse–1	10	I	29
OtB	Orangeburg loamy sand, thick surface, 2 to 5 percent slopes	93	IIse–1	10	I	29
OtC	Orangeburg loamy sand, thick surface, 5 to 8 percent slopes	93	IIIes–1	12	I	29
OtD	Orangeburg loamy sand, thick surface, 8 to 12 percent slopes	93	IVes–1	15	I	29
PcA	Plummer coarse sand, high, 0 to 2 percent slopes	94	Vws–2	18	III	30
PhA	Plummer sand, high, 0 to 2 percent slopes	94	IVsw–1	17	III	30
PhB	Plummer sand, high, 2 to 5 percent slopes	94	IVsw–1	17	III	30
PsA	Plummer sand, 0 to 2 percent slopes	93	Vws–2	18	IV	30
PsB	Plummer sand, 2 to 5 percent slopes	93	Vws–2	18	IV	30
Pt	Portsmouth fine sandy loam	94	IIIws–2	14	IV	30
Ra	Rains fine sandy loam	95	IVws–1	17	IV	30
RbB3	Red Bay fine sandy loam, 2 to 5 percent slopes, severely eroded	97	IIIe–1	11	I	29
RbC3	Red Bay fine sandy loam, 5 to 8 percent slopes, severely eroded	97	IVe–1	15	I	29
RbD3	Red Bay fine sandy loam, 8 to 12 percent slopes, severely eroded	97	VIes–1	18	I	29
ReA	Red Bay loamy fine sand, 0 to 2 percent slopes	96	I–1	9	I	29
ReB	Red Bay loamy fine sand, 2 to 5 percent slopes	96	IIe–1	9	I	29
ReB2	Red Bay loamy fine sand, 2 to 5 percent slopes, eroded	96	IIe–1	9	I	29
ReC	Red Bay loamy fine sand, 5 to 8 percent slopes	96	IIIe–1	11	I	29
ReC2	Red Bay loamy fine sand, 5 to 8 percent slopes, eroded	96	IIIe–1	11	I	29
ReD	Red Bay loamy fine sand, 8 to 12 percent slopes	97	IVe–1	15	I	29
RfC3	Ruston fine sandy loam, 5 to 8 percent slopes, severely eroded	99	IVe–1	15	I	29
RmA	Ruston loamy fine sand, 0 to 2 percent slopes	97	I–1	9	I	29
RmB	Ruston loamy fine sand, 2 to 5 percent slopes	98	IIe–1	9	I	29
RmB2	Ruston loamy fine sand, 2 to 5 percent slopes, eroded	98	IIe–1	9	I	29
RmC	Ruston loamy fine sand, 5 to 8 percent slopes	98	IIIe–1	11	I	29
RmC2	Ruston loamy fine sand, 5 to 8 percent slopes, eroded	98	IIIe–1	11	I	29
RmD	Ruston loamy fine sand, 8 to 12 percent slopes	98	IVe–1	15	I	29
RsA	Ruston loamy sand, thick surface, 0 to 2 percent slopes	99	IIse–1	10	I	29
RsB	Ruston loamy sand, thick surface, 2 to 5 percent slopes	99	IIse–1	10	I	29
RsC	Ruston loamy sand, thick surface, 5 to 8 percent slopes	99	IIIes–1	12	I	29
RsD	Ruston loamy sand, thick surface, 8 to 12 percent slopes	99	IVes–1	15	I	29
RtC	Ruston-Orangeburg-Lakeland complex, 5 to 8 percent slopes	99	IIIes–1	12	I	29
RtD	Ruston-Orangeburg-Lakeland complex, 8 to 12 percent slopes	100	IVes–1	15	I	29
RtF	Ruston-Orangeburg-Lakeland complex, 12 to 50 percent slopes	100	VIIes–1	19	I	29

GUIDE TO MAPPING UNITS, CAPABILITY UNITS, AND WOODLAND SUITABILITY GROUPS—Continued

Map symbol	Mapping unit	Page	Capability unit	Page	Woodland suitability group	Page
RtF3	Ruston-Orangeburg-Lakeland complex, 12 to 50 percent slopes, severely eroded.	100	VIIes–1	19	I	29
RuA	Rutlege fine sand, 0 to 2 percent slopes	100	IIIws–2	14	IV	30
RbB	Rutlege fine sand, 2 to 5 percent slopes	101	IIIws–2	14	IV	30
SaB	Sawyer loamy fine sand, 2 to 5 percent slopes	101	IIIes–2	13	III	30
SaC	Sawyer loamy fine sand, 5 to 8 percent slopes	102	IVes–2	16	III	30
ShB	Shubuta fine sandy loam, 2 to 5 percent slopes	102	IIIes–2	13	I	29
SnB	Susquehanna loamy fine sand, 2 to 5 percent slopes	103	IVes–2	16	III	30
SnC	Susquehanna loamy fine sand, 5 to 8 percent slopes	103	VIes–2	19	III	30
SrD	Susquehanna-Boswell-Binnsville complex, marly substratum, 5 to 12 percent slopes.	104	VIes–2	19	III	30
SrF	Susquehanna-Boswell-Binnsville complex, marly substratum, 12 to 50 percent slopes.	104	VIIes–2	19	III	30
SsD	Susquehanna-Sawyer complex, 5 to 12 percent slopes	103	VIes–2	19	III	30
SsF	Susquehanna-Sawyer complex, 12 to 50 percent slopes	103	VIIes–2	19	III	30
Sw	Swamp	104				
TfA	Tifton loamy fine sand, 0 to 2 percent slopes	105	I–2	9	I	29
TfB	Tifton loamy fine sand, 2 to 5 percent slopes	105	IIe–2	10	I	29
TfB2	Tifton loamy fine sand, 2 to 5 percent slopes, eroded	105	IIe–2	10	I	29
TfC2	Tifton loamy fine sand, 5 to 8 percent slopes, eroded	106	IIIe–2	12	I	29
ZuB	Zuber loamy sand, 2 to 5 percent slopes	106	IIe–1	9	I	29
ZuC	Zuber loamy sand, 5 to 8 percent slopes	106	IIIe–1	11	I	29

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