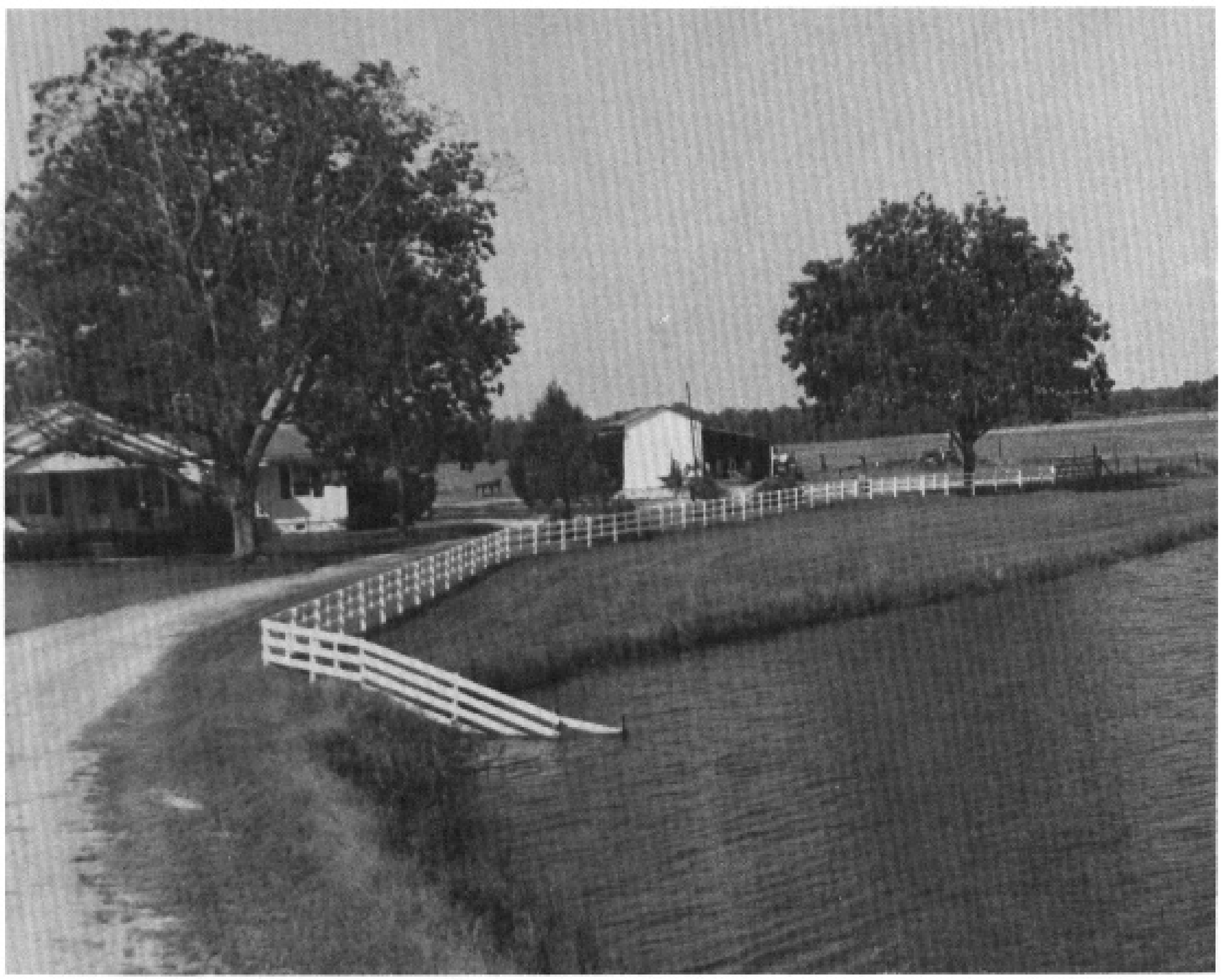
United States
Department of
Agriculture

Soil
Conservation
Service

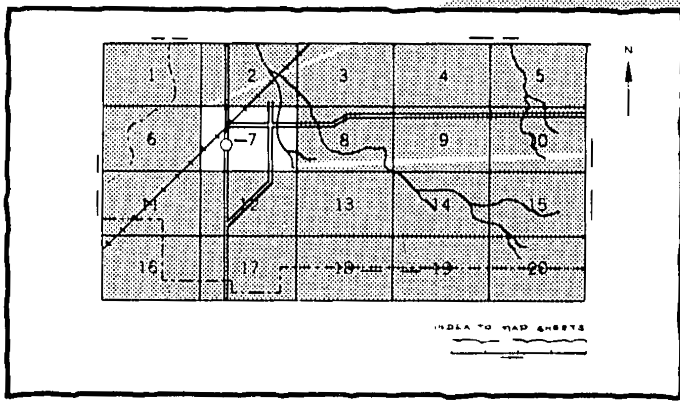
In cooperation with
University of Georgia,
College of Agriculture,
Agricultural
Experiment Stations

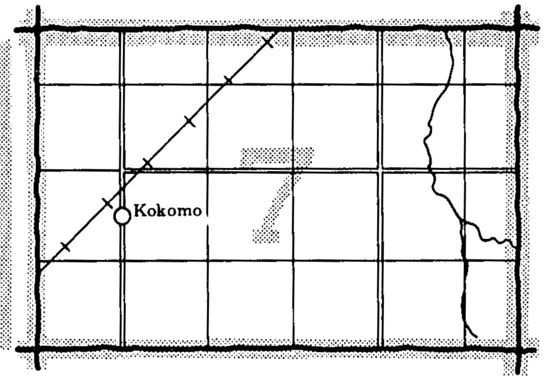
Soil Survey of Burke County, Georgia



HOW TO USE

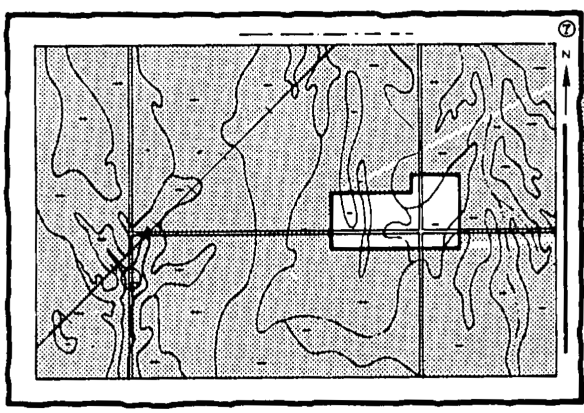
1. Locate your area of interest on the "Index to Map Sheets"

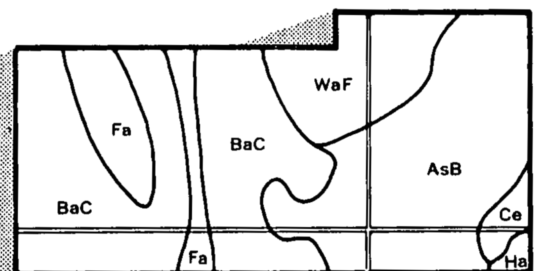




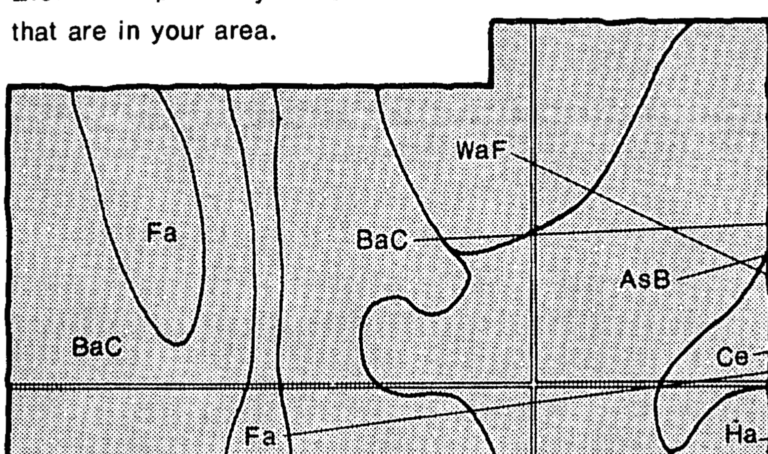
2. Note the number of the map sheet and turn to that sheet.

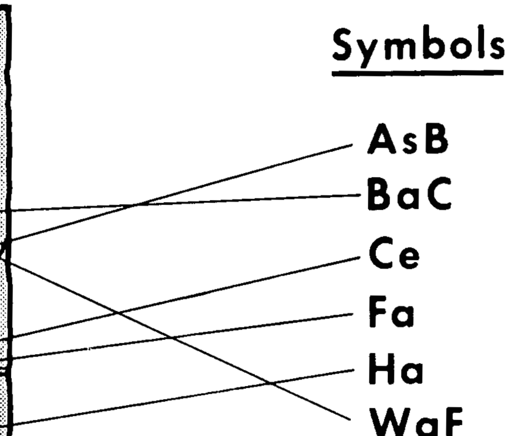
3. Locate your area of interest on the map sheet.





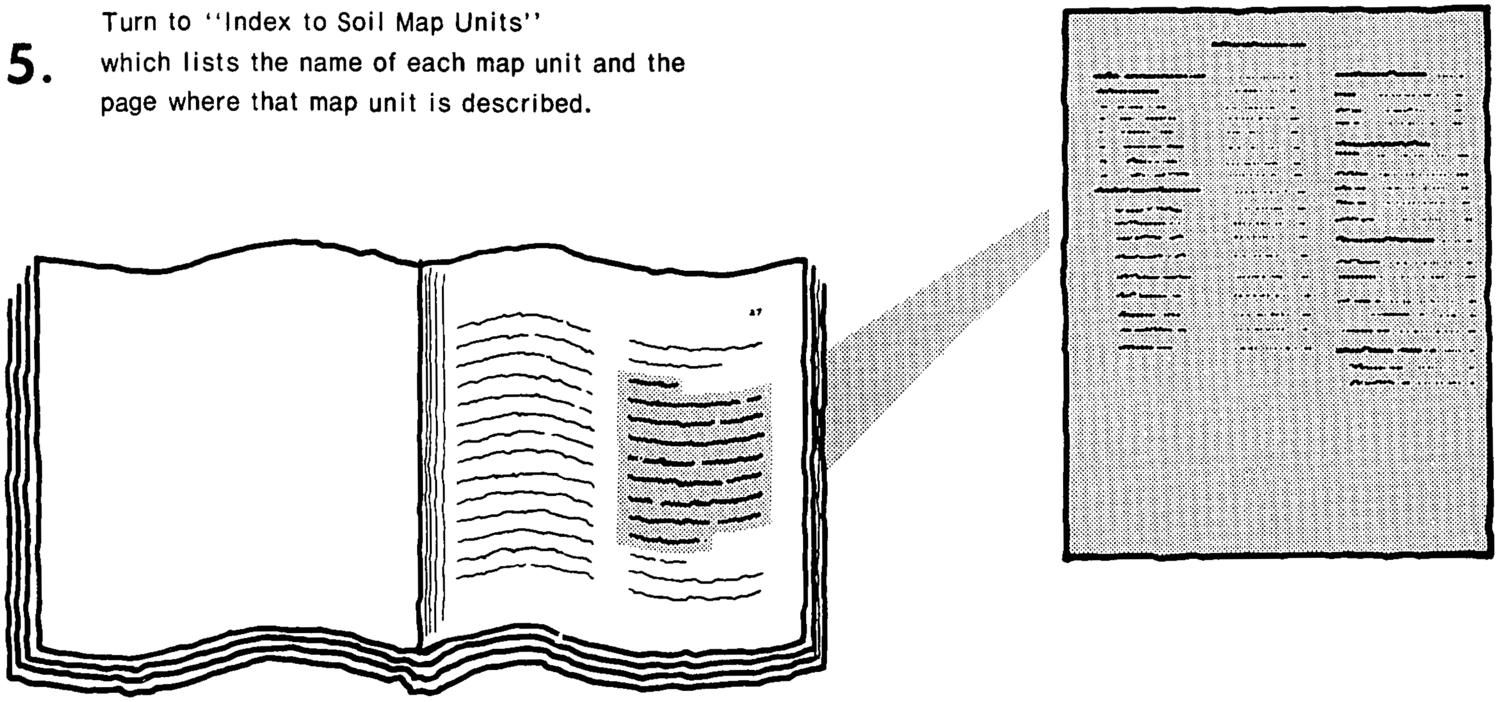
4. List the map unit symbols that are in your area.



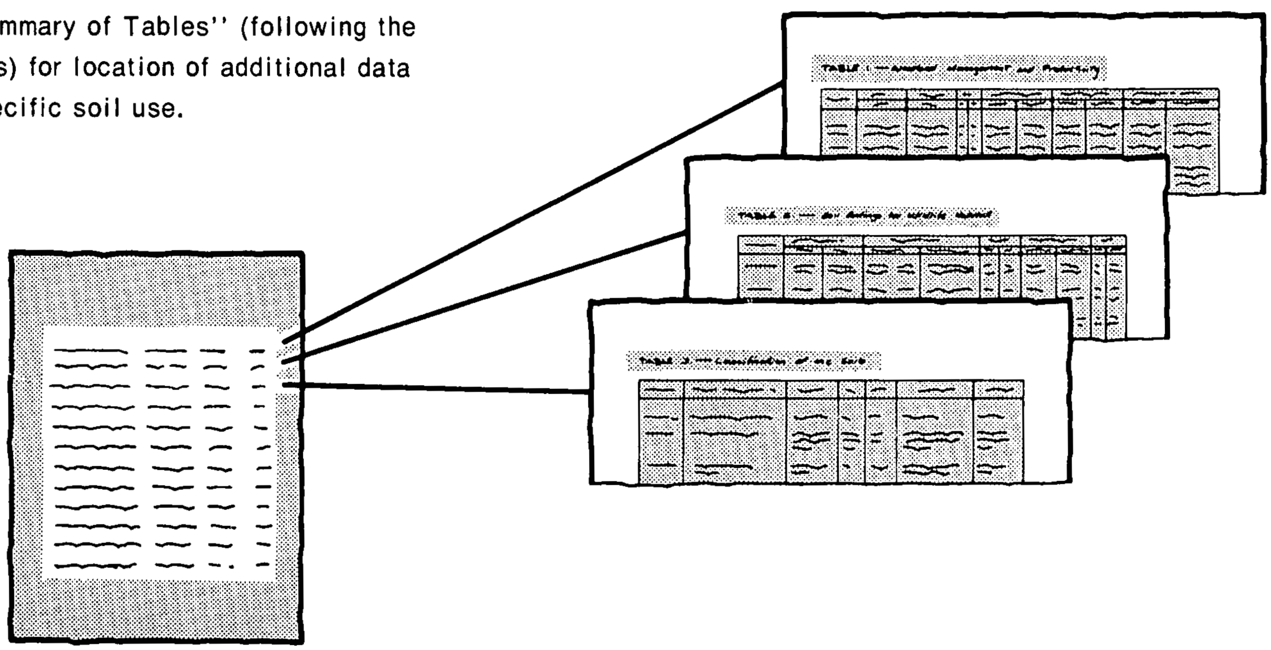


THIS SOIL SURVEY

5. Turn to "Index to Soil Map Units" which lists the name of each map unit and the page where that map unit is described.



6. See "Summary of Tables" (following the Contents) for location of additional data on a specific soil use.



7. Consult "Contents" for parts of the publication that will meet your specific needs. This survey contains useful information for farmers or ranchers, foresters or agronomists; for planners, community decision makers, engineers, developers, builders, or homebuyers; for conservationists, recreationists, teachers, or students; to specialists in wildlife management, waste disposal, or pollution control.

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other federal agencies, state agencies including the Agricultural Experiment Stations, and local agencies. The Soil Conservation Service has leadership for the federal part of the National Cooperative Soil Survey. In line with Department of Agriculture policies, benefits of this program are available to all, regardless of race, color, national origin, sex, religion, marital status, or age.

This survey was made cooperatively by the Soil Conservation Service and the University of Georgia, College of Agriculture, Agricultural Experiment Stations. It is part of the technical assistance furnished to the Brier Creek Soil and Water Conservation District.

Major fieldwork for this soil survey was completed in 1978-1981. Soil names and descriptions were approved in 1982. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1982.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

The first soil survey of Burke County was published in 1919 (*9*). This survey updates the first survey and provides additional information.

Cover: Farmstead and cropland serviced by water from a manmade pond. These very gently sloping Dothan and Tifton soils are typical of soils in the survey area. They are well suited to a wide range of uses.

Contents

Soil Series

Issued February 1986

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Summary of Tables

Foreword

This soil survey contains information that can be used in land-planning programs in Burke County. It contains predictions of soil behavior for selected land uses. The survey also highlights limitations and hazards inherent in the soil, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

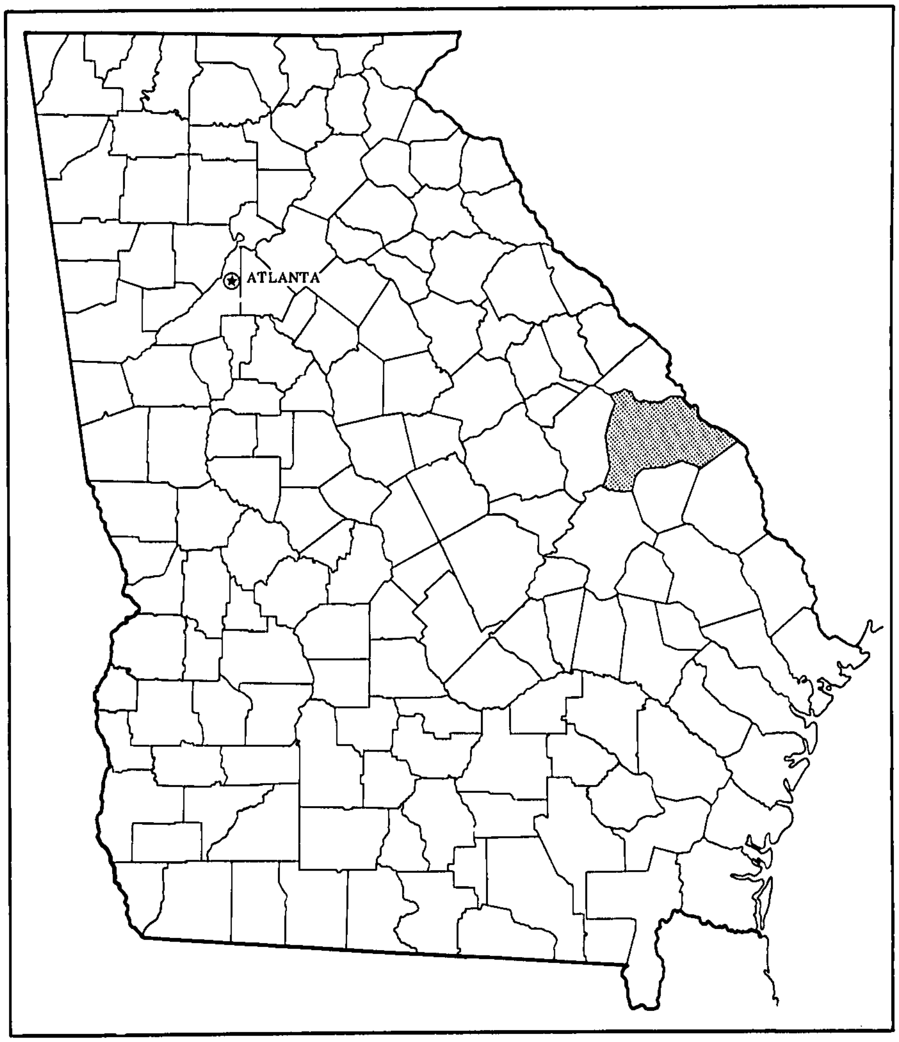
This soil survey is designed for many different users. Farmers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to insure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Soil Conservation Service or the Cooperative Extension Service.

B C Graham

B. C. Graham
State Conservationist
Soil Conservation Service



Location of Burke County in Georgia.

Soil Survey of Burke County, Georgia

By Herschel L. Paulk, Soil Conservation Service

Fieldwork by Herschel L. Paulk, K. Steve Lawrence, Jack R. Brown, Jon D. Jones, Tommie L. Coleman, and Daniel D. Monts, Soil Conservation Service

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

Burke County is in the east-central part of Georgia and borders South Carolina. It has a land area of 830 square miles, or 531,520 acres, and is Georgia's second largest county. Waynesboro, the county seat and largest city, is in the center of the county.

Burke County is mostly in the Southern Coastal Plain Major Land Resource Area. A small area in the northwestern part of the county is in the Carolina and Georgia Sand Hills Major Land Resource Area.

Three major drainageways flow through the county to the east. The Savannah River drains the northern part of the county, Brier Creek drains the middle part, and the Ogeechee River drains the southern part.

Soils on uplands in the southern part of Burke County are predominantly well drained and are nearly level to gently sloping. Soils on flood plains or in depressions are poorly drained, nearly level, and, in places, flooded or ponded in winter and spring. Most of the well drained soils have a sandy surface layer or a sandy surface layer and thick, sandy subsurface layer and a mainly brownish, loamy subsoil. The poorly drained soils have a loamy or sandy surface layer and a loamy or clayey subsoil, or the soils are sandy throughout.

Soils on uplands on the northwestern part of the county are well drained and are mainly nearly level to strongly sloping; soils on flood plains are poorly drained, nearly level, and frequently flooded in winter and spring. The well drained soils have a surface layer that is sandy or loamy and a reddish, loamy or clayey subsoil, or a sandy surface layer and thick, sandy subsurface layer and a reddish, loamy subsoil. The poorly drained soils have a loamy surface layer and sandy or loamy underlying layers.

Soils on uplands north of Brier Creek in the eastern part of the county are predominantly well drained, and mainly range from very gently sloping to steep. Soils on flood plains are mainly poorly drained, nearly level, and frequently flooded in winter and spring. The well drained soils have a sandy surface layer or a sandy surface layer and thick, sandy subsurface layer and a mainly yellowish or brownish, loamy subsoil. The poorly drained soils are mainly sandy or loamy throughout.

Most of the soils on uplands are used for farming and truck crops. The soils in upland depressions and on flood plains and stream terraces are mainly wooded.

General Nature of the Survey Area

This section gives general information concerning Burke County. It describes the geology, climate, history and settlement, water resources, and farming of the county.

Geology

William R. Fulmer, geologist, Soil Conservation Service, prepared this section.

Burke County is typical of the landforms that developed from marine sediment that was deposited in central and eastern Georgia between approximately 20 and 40 million years ago.

In the northern and eastern parts of the county the surface geology consists of predominantly sand deposits, collectively known as the Barnwell Group of late Eocene age. The southern part of Burke County from Waynesboro to the south boundary is capped by sediment of the Hawthorn Formation of Miocene age. The Barnwell Group lies under the Hawthorn Formation and outcrops along the stream valleys and lower elevations where channel development has bisected the overlying Hawthorn Formation.

Regional dip of these formations is south-southeast at approximately 15 feet per mile. Locally, the bedding commonly appears to be nearly horizontal. The Dry Branch Formation of the Barnwell Group is dominant in Burke County, and two of its members, the Irwinton Sand and the underlying Twiggs Clay, are in most outcrops in the area. Twiggs Clay is rough and blocky material that has thin interbedded layers of sand. It is pale green to almost black and consists of fairly uniform angular fragments larger than 4 millimeters; jagged points are in the fractures. Twiggs Clay, which outcrops along lower valley slopes and bottoms of the larger well defined streams, is montmorillonite clay that is mined as fuller's earth in Twiggs County.

Overlying the Twiggs Clay, the distinctively orange to red colored Irwinton Sand caps the uplands. It typically consists of fine to medium grained, well sorted quartz sand that exhibits well developed horizontal and cross bedding. Thin laminae or lenses of Twiggs Clay are common in the profile. The Irwinton Sand is loose and unconsolidated and formed the slopes in the area. However, locally there are chert beds that form resistant ledges in the profile. Where the typical Irwinton Sand is absent, a more massive structureless sand occurs at about the same stratigraphic location. It has recently been proposed that this sand be called the Griffins Landing Member. Its most significant characteristic is the presence of oyster fragments and shells. Thin beds of limestone and chert and clay lenses commonly are in the profile.

Making up the cap material that provides the nearly level fields and the more gentle topography south of Waynesboro, the Hawthorn Formation consists of a series of sands and sandy clay ranging in color from gray to yellow. Gravel deposits consisting chiefly of coarse angular pebbles and locally cemented sandstone are also significant constituents and, where present, are referred to as the Altamaha Grit. Erosion and stream development have progressed more slowly in the Hawthorn Formation than in the Irwinton Sand because of the inherently more resistant clays and clayey sands in the profile; most streams have not formed channels in the underlying Barnwell Group material. Brier Creek, Buckhead Creek, and the Ogeechee River are more deeply eroded and provide a transition area that exhibits the relative position and contact between these two formations.

To a lesser extent, other formations outcrop in Burke County. The underlying McBean Formation is exposed along the steep bluffs near the Savannah River and at the bottom of McBean Creek. Typically, the McBean Formation is green fossiliferous sand and marl and a mixture of clay and limestone. This formation also contains oyster shells, such as those exposed along Georgia Highway 23 at Shell Bluff. At Keysville, in the northwestern part of the county, Upper Cretaceous sediment, sand, and clay of the Tuscaloosa Formation are along the channel and the lower elevations of Brier Creek.

The supply of ground water is abundant in the county. Adequate quantities are generally available from the Barnwell Group, and most wells are supplied by the water-bearing sands. The Tuscaloosa Formation can also be penetrated at reasonable depths and has the potential for supplying larger quantities of water than it now provides. The Hawthorn Formation is much less productive, but furnishes small quantities of water for domestic use. Burke County is also a recharge area for the principal artesian aquifer. Most of the formations have a direct relationship to the aquifer and furnish water for most of southern and eastern Georgia.

Climate

Prepared by the National Climatic Center, Asheville, North Carolina.

Burke County, Georgia, has long, hot summers because moist tropical air from the Gulf of Mexico persistently covers the area. Winters are cool and fairly short, with only a rare cold wave that moderates in 1 or 2 days. Precipitation is fairly heavy throughout the year, and prolonged droughts are rare. Summer precipitation, mainly afternoon thunderstorms, is adequate for all crops.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Waynesboro, Georgia, for the period 1952 to 1979. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter the average temperature is 47° F, and the average daily minimum temperature is 34° F. The lowest temperature on record, which occurred at Waynesboro on January 30, 1966, is 4° F. In summer the average temperature is 79° F, and the average daily maximum temperature is 90° F. The highest recorded temperature, which occurred on July 25, 1952, is 108° F.

Growing degree days, shown in table 1, are equivalent to heat units. During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (50° F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

Of the total annual precipitation, 24 inches, or 55 percent, usually falls in April through September, which includes the growing season for most crops. In 2 years out of 10, the rainfall in April through September is less than 19 inches. The heaviest 1-day rainfall during the period of record was 5.30 inches at Waynesboro on October 5, 1964. Thunderstorms occur on about 55 days each year, and most occur in summer.

Average seasonal snowfall is less than 1 inch. The greatest snow depth at any one time during the period of record was 2 inches. On the average, there are no days with at least 1 inch of snow is on the ground, but the number of such days varies greatly from year to year.

The average relative humidity in midafternoon is about 55 percent. Humidity is higher at night, and the average at dawn is about 85 percent. The percentage of possible sunshine is 65 percent in summer and 50 percent in winter. The prevailing wind is from the southeast. Average windspeed is highest, 8 miles per hour, in spring.

Severe local storms, including tornadoes, strike occasionally in or near the area. They are short and cause variable and spotty damage. Every few years in summer or autumn, a tropical depression or remnant of a hurricane that has moved inland causes extremely heavy rains for 1 to 3 days.

Settlement and History

The Waynesboro Historical Museum furnished information for this section.

Early in the eighteenth century, the first Indian traders moved into the area that was to become Burke County. In 1763, by the Treaty of Augusta, the Creek, Cherokee, and Catawba Indians gave up their claim to the area. Settlers from neighboring colonies and some directly from European countries came to the area. By the beginning of the Revolutionary War, many planters and small independent farmers lived in the area.

Burke County was one of the first counties in Georgia. It was formed in 1777 from St. George Parish and was named in honor of Edmund Burke, an English spokesman for American liberty.

In 1796, the State capital, which was then at Louisville, was in Burke County. However, in that year Burke County was divided, and the town of Louisville went to the newly created Jefferson County. In 1793, a part of Burke County was cut off to form Screven County, and in 1905, another part went to Jenkins County. Burke County has retained its present boundaries since 1905.

In 1783, the legislature provided for laying out Waynesborough, the county seat, since shortened to Waynesboro. Waynesboro, which was incorporated in 1812, was named for "Mad" Anthony Wayne.

Royal, headright, bounty, and State grants made possible the establishment of cotton plantations. These plantations controlled the economy until the Civil War. Burke County was heavily damaged during the war, and the economy was disrupted.

Since Reconstruction, plantations have given way to large farms. Farming is big business in Burke County and is largely dependent on machinery instead of labor. More people in Burke County are employed in agriculture-related manufacturing and business than on farms.

Water Resources

The most abundant water supplies in Burke County are the Savannah River, the Ogeechee River, Brier Creek, Buckhead Creek, Beaver Dam Creek, and McBean Creek. In addition, many intermittent natural ponds are in the county.

Watercourses are found throughout the county, but in most of the smaller ones, water flows only in wet seasons. Perennial streams are larger and flow through areas of flood plains; these streams commonly overflow their banks during heavy rains. Many farm ponds have been constructed in the watersheds of the smaller streams. These ponds are used for livestock water and for irrigation and recreation.

Most of Burke County is underlain by an artesian aquifer, which provides water for domestic, industrial, and irrigation and other farm uses. Wells drilled into the aquifer are more than 200 feet deep and yield abundant water. Free-flowing artesian wells are in the valleys of Brier Creek, McBean Creek, and the Ogeechee River.

Farming

The early settlers of Burke County were mostly farmers, and throughout the county's history farming has been the main enterprise. At first, corn, wheat, potatoes, and different kinds of vegetables were grown for subsistence, and hogs, cattle, and poultry were raised. Later, as settlement became more general, cotton and cowpeas were grown, and livestock production increased. With the advent of the cotton gin, the acreage in cotton rapidly increased, and cotton became the chief income crop. In 1909, 104,786 acres of cotton was grown. Subsistence crops were used for feeding work stock and livestock or for consumption in the home.

From the late 1920's until 1969, the acreage in cotton gradually declined and that in corn increased. Since 1969, the acreage in corn has decreased and the acreage in soybeans and wheat has increased.

According to the 1982 edition of Georgia Agricultural Facts, Burke County leads the state in soybean acreage (*6*). In 1981, 146,500 acres of soybeans was planted. In addition to soybeans, corn, cotton, peanuts, and small grains were the principal crops grown. Since 1969, the acreage in cropland has increased and that in pasture and woodland has decreased.

The economic depression in the early 1930's led to misuse of the land. This misuse increased erosion on most sloping soils. Many fields were abandoned because of low crop yields. Changes in land ownership were common, and soil fertility was not maintained in most places. There was a definite need to protect the land against depletion.

The enactment of soil conservation district legislation in 1937 by the State of Georgia was supported by the leading farmers of Burke County. The Brier Creek Soil and Water Conservation district was organized, and Burke County was one of the five counties included in the district. Farmers in Burke County recognized the need for soil conservation to prevent soil erosion and improve or maintain fertility. They began using terraces, grassed waterways, improved pastures, and ponds to control erosion and increase productivity. They used the soil according to its capability and treated it in accordance with the needs of the crop. The soil survey maps made by the Soil Conservation Service became the basis for determining the capability of each soil. Many sloping, seriously eroded fields that had been cultivated were put in grass or trees.

In the 1960's and early 1970's, public concern about the productive capacity of American agriculture prompted a national inventory of important farmlands. The best land in Burke County available for producing food, feed, forage, fiber, and oilseed crops is identified in the section "Important Farmland."

In 1978, farms covered 267,020 acres, or 50.2 percent of Burke County (*14*). These farms produce significant amounts of high-yielding peanuts, corn, soybeans, pecans, and truck crops.

Many of the soils are well suited to sprinkler irrigation. The amount of land under irrigation increased from 363 acres in 1974 to about 33,317 acres in 1982 (*5*). Most of the irrigated land is used for corn, soybeans, truck crops, and peanuts.

How This Survey Was Made

This survey was made to provide information about the soils in the survey area. The information includes a description of the soils and their location and a discussion of the suitability, limitations, and management of the soils for specified uses. Soil scientists observed the steepness, length, and shape of slopes; the general pattern of drainage; the kinds of crops and native plants growing on the soils; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biologic activity.

The soils in the survey area occur in an orderly pattern that is related to the geology, the landforms, relief, climate, and the natural vegetation of the area. Each kind of soil is associated with a particular kind of landscape or with a segment of the landscape. By observing the soils in the survey area and relating their position to specific segments of the landscape, a soil scientist develops a concept, or model, of how the soils were formed. Thus, during mapping, this model enables the soil scientist to predict with considerable accuracy the kind of soil at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, acidity, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. The system of taxonomic classification used in the United States is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpreted the data from these analyses and tests as well as the field-observed characteristics and the soil properties in terms of expected behavior of the soils under different uses. Interpretations for all of the soils were field tested through observation of the soils in different uses under different levels of management. Some interpretations are modified to fit local conditions, and new interpretations sometimes are developed to meet local needs. Data were assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management were assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can state with a fairly high degree of probability that a given soil will have a high water table within certain depths in most years, but they cannot assure that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Map Unit Composition

A map unit delineation on a soil map represents an area dominated by one major kind of soil or an area dominated by several kinds of soil. A map unit is identified and named according to the taxonomic classification of the dominant soil or soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural objects. In common with other natural objects, they have a characteristic variability in their properties. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of soils of other taxonomic classes. Consequently, every map unit is made up of the soil or soils for which it is named and some soils that belong to other taxonomic classes. These latter soils are called inclusions or included soils.

Most inclusions have properties and behavioral patterns similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting (similar) inclusions. They may or may not be mentioned in the map unit descriptions. Other inclusions, however, have properties and behavior divergent enough to affect use or require different management. These are contrasting (dissimilar) inclusions. They generally occupy small areas and cannot be shown separately on the soil maps because of the scale used in mapping. The inclusions of contrasting soils are mentioned in the map unit descriptions. A few inclusions may not have been observed, and consequently are not mentioned in the descriptions, especially where the soil pattern was so complex that it was impractical to make enough observations to identify all of the kinds of soils on the landscape.

The presence of inclusions in a map unit in no way diminishes the usefulness or accuracy of the soil data. The objective of soil mapping is not to delineate pure taxonomic classes of soils but rather to separate the landscape into segments that have similar use and management requirements. The delineation of such landscape segments on the map provides sufficient information for the development of resource plans, but onsite investigation is needed to plan for intensive uses in small areas.

General Soil Map Units

The general soil map at the back of this publication shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each map unit on the general soil map is a unique natural landscape. Typically, a map unit consists of one or more major soils and some minor soils. It is named for the major soils. The soils making up one unit can occur in other units but in a different pattern.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils can be identified on the map. Likewise, areas where the soils are not suitable can be identified.

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or building or other structure. The soils in any one map unit differ from place to place in slope, depth, drainage, and other characteristics that affect management.

The soils in the survey area differ in suitability for major land uses. In this section the extent of the map units and their topography are described. The main concerns of management and the soil properties that limit use are indicated, and ratings of suitability or degree of limitation are given for the common uses. For each general map unit, the visual elements of landforms, water, vegetation or land use, and structures are described. The units are classified as having a low or moderate degree of visual diversity. This is a value rating of landscape elements and their pattern within a frame of reference developed for a local geographic area. Visual diversity can be used in conservation planning and in establishing a desirable continuity of landscape elements.

Soil Descriptions

Nearly level soils on flood plains

Two map units in Burke County are made up of poorly drained, somewhat poorly drained, and well drained soils on flood plains. Slope is 0 to 2 percent. The poorly drained soils have mainly a brownish, loamy surface layer and grayish, loamy or clayey underlying layers. The somewhat poorly drained soils have a brownish, clayey surface layer; a dominantly brownish, loamy subsoil that is mottled; and brownish, loamy underlying material. The well drained soils are brownish and mainly loamy throughout.

1. Tawcaw-Chastain-Shellbluff

Somewhat poorly drained and poorly drained soils in areas that are mainly clayey throughout; and well drained soils that are loamy throughout

The landscape is characterized by nearly level soils that are about 1/2 to 1 mile wide. These soils in areas occur mainly on the flood plain of the winding Savannah River. The somewhat poorly drained Tawcaw soils commonly lie between the poorly drained Chastain soils in the sloughs and the well drained Shellbluff soils on the natural levee. Slope is 0 to 2 percent.

The drainage system is not well formed, and there is frequent flooding in winter and spring. Most of the natural watercourses are perennial. This unit is mostly wooded, but some areas of the soils are well drained, and these are used for pasture. Other than the development associated with the river, there are few manmade features. Degree of visual diversity is low.

This unit makes up about 1 percent of the county. Tawcaw soils make up about 48 percent of the unit; Chastain soils, about 21 percent; Shellbluff soils, about 20 percent; and minor soils, about 11 percent.

Tawcaw soils are somewhat poorly drained. Typically, the surface layer is brown silty clay 3 inches thick. The subsoil extends to a depth of 70 inches. The upper part is reddish brown silty clay, the middle part is brown silty clay that has light brownish gray mottles, and the lower part is light brownish gray and grayish brown silty clay loam that has brown and yellowish brown mottles. The underlying material is mottled, yellowish brown and grayish brown silty clay loam.

Chastain soils are poorly drained. Typically, the surface layer is gray silty clay 4 inches thick. The subsoil extends to a depth of 62 inches or more. The upper part is light brownish gray clay that has strong brown mottles, the middle part is light gray silty clay that has brown mottles, and the lower part is light brownish gray clay that has yellowish brown mottles.

Shellbluff soils are well drained. Typically, the surface layer is brown clay loam 4 inches thick. The subsoil extends to a depth of about 65 inches. The upper part is reddish brown silty clay loam, the middle part is predominantly reddish brown clay loam, and the lower part is predominantly reddish brown silty clay.

Of minor extent in this unit are the Bibb and Osier soils. These soils are poorly drained and are found in swales with the Chastain soils.

The main concerns in management are wetness and control of flooding. However, these soils are well suited to the commonly grown trees. The hazard of flooding and the seasonal high water table severely limit these soils for farming and most nonfarm uses.

2. Herod-Muckalee

Poorly drained soils that are loamy throughout

The landscape is characterized by nearly level, poorly drained soils in areas that are about 1/4 to 1/2 mile wide. These soils are on the flood plains of the winding Beaver Dam, Brier, Buckhead, and Rocky Creeks and the Ogeechee River. Slope is 0 to 2 percent.

The drainage system is not well formed, and there is frequent flooding in winter and spring. Most of the natural watercourses are perennial. The soils are mostly in sweetgum, blackgum, cypress, bay, poplar, and water oak. Other than roads and utility lines, there is little manmade development. Degree of visual diversity is low.

This unit makes up about 4 percent of the county. Herod soils make up about 34 percent of the unit; Muckalee soils, about 33 percent; and minor soils, about 33 percent.

Herod soils have a medium clay content. Typically, the surface layer is very dark grayish brown loam 6 inches thick. The underlying material to a depth of 22 inches is sandy loam that is light brownish gray in the upper part and gray mottled with yellowish brown in the lower part. The material between depths of 22 and 39 inches is gray sandy clay loam that has yellowish brown and light yellowish brown mottles. Below that, to a depth of 62 inches, is gray sand.

Muckalee soils have a low clay content. Typically, the surface layer is very dark grayish brown loam 6 inches thick. The underlying material, to a depth of 62 inches or more, is mainly gray sandy loam that has yellowish brown and strong brown mottles.

Of minor extent in this unit are the poorly drained Bibb, Meggett, and Osier soils and the moderately well drained Dogue soils. The poorly drained soils are on the flood plain with the major soils. The moderately well drained soils are on the nearby stream terraces.

The main concerns of management are wetness and control of flooding. However, these soils are well suited to the commonly grown trees. The hazard of flooding and the seasonal high water table severely limit these soils for farming and most nonfarm uses.

Dominantly nearly level to gently sloping soils, mainly on uplands

Six map units are made up of well drained soils or poorly drained soils that are mainly on uplands. The well drained soils are on ridgetops and hillsides, and the poorly drained soils are on benches, stream terraces, or flood plains. Slope is 0 to 12 percent.

The soils on ridgetops and hillsides have a brownish, sandy or loamy surface layer and a reddish or brownish, clayey or loamy subsoil that is mottled in the middle and lower parts; or the soils have a brownish surface layer and a thick, sandy subsurface layer, and a dominantly brownish, loamy subsoil that is mottled in the middle and lower parts. The soils on benches, stream terraces, or flood plains are mainly grayish and are sandy or clayey throughout.

3. Dothan-Tifton-Osier

Well drained soils that have a dominantly sandy surface layer and a loamy subsoil, mainly on ridgetops; and poorly drained soils that are mainly sandy throughout, on flood plains

The landscape is characterized by undulating soils that are mainly on smooth and convex ridgetops and by nearly level soils on flood plains. The soils on uplands are well drained and are nearly level to gently sloping; the soils on flood plains are poorly drained. Slope is 0 to 8 percent. Most of this unit is south and west of Waynesboro. Less extensive areas are near the towns of Blythe, Girard, and Sardis.

Excess surface water from the upland soils drains into a system of intermittent streams, and in winter and spring, the soils on flood plains are frequently flooded. Areas of open water are few. The soils on uplands are used mainly for farming (fig. 1), and the soils on flood plains are mainly in woodland. Roads, utility lines, fences, and farm homes and associated structures are common. Degree of visual diversity is moderate.

This unit makes up about 43 percent of the county. Dothan soils make up about 44 percent of the unit; Tifton soils, about 19 percent; Osier soils, about 10 percent; and minor soils, about 27 percent.

Dothan soils are well drained and have a few nodules of ironstone. Typically, the surface layer is grayish brown loamy sand 9 inches thick. The subsurface layer is light yellowish brown loamy sand and extends to a depth of 12 inches. The subsoil is predominantly sandy clay loam and extends to a depth of 62 inches or more. The upper part is mainly yellowish brown, the middle part is yellowish brown and has strong brown and yellowish red mottles, and the lower part is mottled red, gray, yellowish brown, and yellowish red. Below a depth of 48 inches, 5 percent or more of the volume is plinthite.

Tifton soils are well drained and have common nodules of ironstone. Typically, the surface layer is grayish brown loamy sand 8 inches thick. The subsoil is sandy clay loam and extends to a depth of 65 inches or more. The upper part is yellowish brown, the middle part is brownish yellow and has red and strong brown mottles, and the lower part is mottled strong brown, brownish yellow, red, and light gray. Plinthite makes up 5

Figure 1.—Wheat growing on uplands in the Dothan-Tifton-Osier association. These soils are prime farmland and are well suited to this close-growing crop.

percent or more of the volume below a depth of 34 inches.

Osier soils are poorly drained. Typically, the surface layer is dark grayish brown loamy sand 4 inches thick. The underlying material extends to a depth of 61 inches or more. The upper part is light brownish gray sand that has yellowish brown and yellowish red mottles, the middle part is light brownish gray loamy sand that has yellowish brown and dark grayish brown mottles, and the lower part is dark gray loamy sand that has gray mottles.

Of minor extent in this unit are the Bibb, Carnegie, Clarendon, and Ocilla soils. Poorly drained Bibb soils are on the flood plain with the Osier soils. Well drained Carnegie soils, moderately well drained Clarendon soils, and somewhat poorly drained Ocilla soils are on the uplands with Dothan and Tifton soils.

The main concerns of management are controlling erosion on the very gently sloping and gently sloping soils on uplands and overcoming wetness and flooding on the nearly level soils on flood plains. The soils on uplands are well suited to most uses. Because the soils on flood plains are seasonally wet and frequently flooded, they are severely limited for most uses.

4. Dothan-Tifton-Grady

Well drained soils that have a dominantly sandy surface layer and a loamy subsoil, mainly on ridgetops; and poorly drained soils that have a loamy surface layer and a clayey subsoil, in depressions

The landscape is characterized by undulating soils that are mainly on smooth and convex ridgetops and by nearly level soils in depressions. The soils mainly on ridgetops are well drained and are nearly level to gently sloping; those in depressions are poorly drained. Slope is 0 to 8 percent. Much of this unit is in the southwestern part of the county. Less extensive areas are 3 to 5 miles northeast and 3 or 4 miles southwest of Waynesboro and in the vicinity of Sardis.

Excess surface water from the soils on ridgetops drains into a system of intermittent and perennial streams or onto the seasonally or perennially ponded Grady soils in depressions. The soils on ridgetops are used mainly for farming. The soils in depressions are mainly in baldcypress, blackgum, and water oak. Some areas are dominated by water-tolerant shrubs and grasses. Roads, utility lines, fences, and farm homes and associated structures are common. Degree of visual diversity is moderate.

This unit makes up about 9 percent of the county. Dothan soils make up about 46 percent of the unit; Tifton soils, about 18 percent; Grady soils, about 17 percent; and minor soils, about 19 percent.

Dothan soils are well drained and have a few nodules of ironstone. Typically, the surface layer is grayish brown loamy sand 9 inches thick. The subsurface layer is light yellowish brown loamy sand and extends to a depth of 12 inches. The subsoil is predominantly sandy clay loam and extends to a depth of 62 inches or more. The upper part is mainly yellowish brown, the middle part is yellowish brown and has strong brown and yellowish red mottles, and the lower part is mottled yellowish brown, red, yellowish red, and gray. Below a depth of 48 inches, 5 percent or more of the volume is plinthite.

Tifton soils are well drained and have common nodules of ironstone. Typically, the surface layer is grayish brown loamy sand 8 inches thick. The subsoil is sandy clay loam and extends to a depth of 65 inches or more. The upper part is yellowish brown, the middle part is brownish yellow and has red and strong brown mottles, and the lower part is mottled strong brown, brownish yellow, red, and light gray. Plinthite makes up 5 percent or more of the volume of this soil below a depth of 34 inches.

Grady soils are poorly drained. Typically, the surface layer is dark gray loam 5 inches thick. The subsoil is mainly clay and extends to a depth of 79 inches or more. It is gray and mainly has yellowish brown, red, yellowish red, strong brown, and brown mottles.

Of minor extent in this unit are the Clarendon, Fuquay, and Rains soils. Moderately well drained, nearly level Clarendon soils are commonly on broad benches of the upland. They are slightly lower on the landscape than the soils on ridgetops. Well drained Fuquay soils are on the ridgetops, and poorly drained Rains soils are in depressions, on stream terraces, or on low-lying benches of the upland.

The main concerns of management are controlling erosion on the very gently sloping and gently sloping soils and overcoming wetness on the nearly level soils in depressions or on benches. Soils that are mainly on ridgetops are well suited to most uses. Soils in the depressions or on benches have a seasonal high water table and are severely limited for most uses.

5. Bonifay-Fuquay

Well drained soils that have a sandy surface layer, a thick, sandy subsurface layer, and a loamy subsoil, mainly on ridgetops

The landscape is characterized mainly by undulating soils on smooth and convex ridgetops. The soils are well drained and range from nearly level to strongly sloping. Slope is 1 to 12 percent. Most of this unit is in the eastern part of the county. Excess surface water drains into a system of intermittent and perennial streams. Areas of open water are few. The soils mainly are in woodland, but some large areas are farmed. Roads, utility lines, fences, and farm homes and associated structures are common. Degree of visual diversity is moderate.

This unit makes up about 7 percent of the county. Bonifay soils make up about 55 percent of the unit; Fuquay soils, about 35 percent; and minor soils, about 10 percent.

Bonifay soils have a sandy subsurface layer that extends to a depth of 40 inches or more. Typically, the surface layer is grayish brown fine sand 8 inches thick. The subsurface layer is fine sand and extends to a depth of 50 inches. The upper part is light yellowish brown, and the lower part is brownish yellow. The subsoil extends to a depth of 80 inches or more. The upper part is brownish yellow sandy loam, the middle part is brownish yellow sandy clay loam and has strong brown and red mottles, and the lower part is mottled red, brownish yellow, strong brown, and light brownish gray sandy clay loam. Plinthite makes up 5 percent or more of the volume of the soils below a depth of 58 inches.

Fuquay soils have a sandy subsurface layer that extends to a depth of 25 to 35 inches. Typically, the surface layer is dark grayish brown loamy sand 5 inches thick. The subsurface layer is loamy sand and extends to a depth of 28 inches. The upper few inches are mainly pale brown, and the rest of the layer is mainly light yellowish brown. The subsoil is sandy clay loam and extends to a depth of 75 inches or more. It is strong brown throughout and has red and dark red mottles. The lower part also has light gray mottles. Plinthite makes up 5 percent or more of the volume below a depth of 48 inches. A few nodules of ironstone are in the soil to a depth of 28 inches.

Of minor extent in this unit are the Lakeland, Lucy, and Troup soils. Excessively drained Lakeland soils and well drained Lucy and Troup soils are on the upland with the major soils.

The main concern of management is increasing available water capacity. The soils in this unit are well suited to most nonfarm uses.

6. Cowarts-Fuquay-Rains

Well drained soils that have a dominantly sandy surface layer and a loamy subsoil or a sandy surface layer, a thick, sandy subsurface layer, and a loamy subsoil, on ridgetops and hillsides; and poorly drained soils that have a loamy surface layer and subsoil; on benches or stream terraces

The landscape is characterized by undulating and rolling soils on uplands that are mainly irregular and convex, and by nearly level soils in depressions of stream terraces and on low-lying benches. The soils on ridgetops and hillsides are well drained and are nearly level to strongly sloping; those in depressions of stream terraces and on upland benches are poorly drained. Slope is 0 to 12 percent. Most of this unit is in the southeastern part of the county.

Excess surface water from the soils on ridgetops and hillsides drains into a system of intermittent and perennial streams or onto the lower lying soils. The soils mainly are in woodland, but some large areas are farmed. Roads, utility lines, fences, and farm homes and associated structures are common. Degree of visual diversity is moderate.

This unit makes up about 8 percent of the county. Cowarts soils make up about 50 percent of the unit; Fuquay soils, about 25 percent; Rains soils, about 11 percent; and minor soils, about 14 percent.

Cowarts soils are well drained and have a sandy or loamy surface layer. Typically, the surface layer is brown loamy sand 6 inches thick. The subsurface layer extends to a depth of 14 inches. It is light yellowish brown loamy sand. The subsoil is sandy clay loam and extends to a depth of 32 inches. The upper part is strong brown, and the lower part is yellowish brown and has red and brownish yellow mottles. The underlying material, to a depth of 83 inches or more, is sandy clay loam and sandy loam that is dense and mainly yellowish brown, red, and light gray.

Fuquay soils are well drained and have a sandy subsurface layer that extends to a depth of 25 to 35 inches. Typically, the surface layer is dark grayish brown loamy sand 5 inches thick. The subsurface layer is loamy sand and extends to a depth of 28 inches. The upper few inches are mainly pale brown, and the rest of this layer is mainly light yellowish brown. The subsoil is sandy clay loam and extends to a depth of 75 inches or more. It is strong brown throughout and has red and dark red mottles. The lower part also has light gray mottles. Plinthite makes up 5 percent or more of the volume below a depth of 48 inches. A few nodules of ironstone are in the soil to a depth of 28 inches.

Rains soils are poorly drained. Typically, the surface layer is very dark grayish brown sandy loam 8 inches thick. The subsurface layer is grayish brown loamy sand and extends to a depth of 15 inches. The subsoil is gray sandy clay loam and extends to a depth of 62 inches or more. The upper part has yellowish brown mottles, the middle part has yellowish brown and brownish gray mottles, and the lower part has yellowish brown, brown, and strong brown mottles.

Of minor extent in this unit are the Bibb, Esto, Nankin, and Osier soils. Poorly drained Bibb and Osier soils are on flood plains. Well drained Esto and Nankin soils are on ridgetops and hillsides.

The main concerns of management are controlling erosion on the very gently sloping to strongly sloping soils that have a thin, sandy or loamy surface layer and increasing available water capacity on soils that have a sandy surface layer and thick, sandy subsurface layer. Most of the soils in this unit are well suited to nonfarm uses. Soils in depressions or on low-lying benches have a seasonally high water table and are severely limited for most uses.

7. Faceville-Orangeburg

Well drained soils that have a sandy or loamy surface layer and a clayey or loamy subsoil, on ridgetops and hillsides

The landscape is characterized by well drained, undulating and rolling soils on smooth and convex ridgetops and hillsides. Slope is 0 to 12 percent. Most of this unit occurs parallel to Brier Creek in the vicinity of Waynesboro.

Excess surface water drains into a system of intermittent and perennial streams. Areas of open water are few. The soils are used mainly for farming; however, many areas are in woodland. Roads, utility lines, fences, and farm homes and associated structures are common. Degree of visual diversity is moderate.

This unit makes up about 14 percent of the county. Faceville soils make up about 42 percent of the unit; Orangeburg soils, about 36 percent; and minor soils, about 22 percent.

Faceville soils have a clayey subsoil. Typically, the surface layer is dark brown loamy sand 8 inches thick. The subsoil extends to a depth of 62 inches or more. The upper few inches are yellowish red sandy clay loam, and the rest of the subsoil is sandy clay that is red. Yellowish brown mottles are in the lower part. In some places, Faceville soils have a sandy loam surface layer.

Orangeburg soils have a loamy subsoil. Typically, the surface layer is brown loamy sand 6 inches thick. The subsoil is predominantly sand clay loam and extends to a depth of 60 inches or more. The upper part is yellowish red, and the rest of the subsoil is red except that strong brown mottles are also in the lower part. In some places, Orangeburg soils have a sandy loam surface layer.

Of minor extent in this unit are the Bibb, Lucy, Osier, and Troup soils. Poorly drained Bibb and Osier soils are on flood plains. Well drained Lucy and Troup soils are on the same upland as the major soils.

The main concern of management is controlling erosion on the very gently sloping to strongly sloping soils. The soils on ridgetops and the gently sloping soils on hillsides in this unit are well suited to most uses; however, the more sloping soils on hillsides are somewhat limited because of steepness.

8. Troup-Lucy

Well drained soils that have a sandy surface layer, a thick, sandy subsurface layer, and a loamy subsoil, on ridgetops and hillsides

The landscape is characterized by well drained, undulating soils on uplands that have smooth and convex ridgetops and hillsides. The soils are nearly level to gently sloping. Slope is 0 to 8 percent. Most of the acreage of this unit is near the Savannah River in the northeastern part of the county. Less extensive areas are parallel to and near Brier Creek.

Excess surface water drains into a system of intermittent streams. The soils are mainly in woodland, but some large areas are farmed. Roads, utility lines, fences, and farm homes and associated structures are few. Degree of visual diversity is low.

This unit makes up about 10 percent of the county. Troup soils make up about 54 percent of the unit; Lucy soils, about 32 percent; and minor soils, about 14 percent.

Troup soils have a sandy subsurface layer that extends to a depth of 41 inches or more. Typically, the surface layer is brown fine sand 4 inches thick. The subsurface layer extends to a depth of 42 inches. The upper part is light yellowish brown fine sand, the middle part is reddish yellow fine sand, and the lower part is yellowish red sand. The subsoil is red and extends to a depth of 80 inches or more. The upper part is loamy sand, the middle part is sandy loam, and the lower part is sandy clay loam.

Lucy soils have a sandy subsurface layer that extends to a depth of 21 to 38 inches. Typically, the surface layer is brown loamy sand 5 inches thick. The subsurface layer is loamy sand and extends to a depth of 29 inches. The upper part is strong brown, and the lower part is yellowish red. The subsoil is red sandy clay loam and extends to a depth of 72 inches or more.

Of minor extent in this unit are the Bibb, Lakeland, and Osier soils. Poorly drained Bibb and Osier soils are on flood plains. Excessively drained Lakeland soils are on the same upland as the major soils.

The main concern of management is increasing the available water capacity. The soils in this unit are well suited to most nonfarm uses.

Strongly sloping to steep soils on uplands

One unit is made up of well drained soils on the hillsides of uplands. Slope is 8 to 25 percent. The soils have a brownish, sandy surface layer and a thick, sandy subsurface layer and a dominantly brownish loamy subsoil that is mottled in the middle and lower parts; or the soils are loamy throughout and have a brownish surface layer and a predominantly red subsoil.

9. Troup-Lucy-Orangeburg

Well drained soils that have a sandy surface layer, a thick, sandy subsurface layer, and a loamy subsoil; and well drained soils that are loamy throughout; on hillsides

The landscape is characterized by well drained, hilly soils on irregular and convex hillsides. The soils are strongly sloping to steep. Slope is 8 to 25 percent. Most of this unit is near the Savannah River.

Excess surface water drains into a system of intermittent and perennial streams. Areas of open water are few. The soils mainly are in woodland, but a few areas are in pasture. Manmade structures are few. Degree of visual diversity is moderate.

This unit makes up about 4 percent of the county. Troup soils make up about 36 percent; Lucy soils, about 31 percent; Orangeburg soils, about 19 percent; and minor soils, about 14 percent.

Troup soils have a surface layer and thick subsurface layer that are sandy to a depth of 41 inches or more. Typically, the surface layer is dark grayish brown fine sand 3 inches thick. The subsurface layer is fine sand and extends to a depth of 44 inches. The upper part is dark yellowish brown, the middle part is yellowish brown, and the lower part is brownish yellow and has light yellowish brown and strong brown mottles. The subsoil is yellowish red sandy loam that extends to a depth of 62 inches or more.

Lucy soils have a surface layer and thick subsurface layer that are sandy to a depth of 21 to 38 inches. Typically, the surface layer is dark brown fine sand 3 inches thick. The subsurface layer is loamy sand and extends to a depth of 33 inches. The upper part is yellowish brown, and the lower part is strong brown. The subsoil is red and extends to a depth of 62 inches or more. The upper part is sandy loam, and the lower part is sandy clay loam.

Orangeburg soils are loamy throughout. Typically, the surface layer is dark brown sandy loam 4 inches thick. The subsoil is predominantly red sandy clay loam and extends to a depth of 69 inches or more.

Of minor extent in this unit are Bibb, Lakeland, and Osier soils. Poorly drained Bibb and Osier soils are on flood plains. Excessively drained Lakeland soils are on the same upland as the major soils.

The main concern of management is the strongly sloping to steep slopes.

Broad Land Use Considerations

Considerable acreage in the survey area is being used as cropland, pasture, and woodland. The general soil map can be used for broad planning, but it cannot be used to locate the site for a specific structure. In general, the soils in the survey area that are well suited to cultivated crops also are well suited to urban development. Their excellence as farmland should not be overlooked in planning.

Many of the soils on uplands in the survey area are used for cultivated crops and pasture. Most are well drained and are well suited to farming. However, some of the soils in the survey area are poorly suited to farming. These include the poorly drained, seasonally wet soils on flood plains, in upland or stream terrace depressions, and on broad benches of the upland. Also included are the well drained soils on uplands that have a sandy surface layer and very thick sandy subsurface layer and excessively drained soils that are sandy throughout and have low fertility and low available water capacity.

Part of the survey area is used for woodland. The soils are predominantly moderately suited or well suited to the production of trees.

About three-fourths of the soils in the survey area are on ridgetops and hillsides of uplands. They commonly are well drained and well suited to nonfarm use. The rest of the soils are on flood plains and stream terraces, in upland depressions, and on broad benches of the upland. They are less well drained, seasonally wet, and only moderately suited or poorly suited to urban and recreation uses.

Detailed Soil Map Units

The map units on the detailed soil maps at the back of this survey represent the soils in the survey area. The map unit descriptions in this section, along with the soil maps, can be used to determine the suitability of a soil for specific uses. They also can be used to plan the management needed for those uses. A soil is well suited if it has properties that are favorable. A soil is moderately suited if it has properties that require special planning and management to obtain satisfactory performance. A soil is poorly suited if it has properties that are unfavorable. More information on each map unit, or soil, is given under "Use and Management of the Soils."

Each map unit on the detailed soil maps represents an area on the landscape and consists of one or more soils for which the unit is named.

A symbol identifying the soil precedes the map unit name in the soil descriptions. Each description includes general facts about the soil and gives the principal hazards and limitations to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer or of the underlying material, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer or of the underlying material. They also can differ in slope, wetness, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Dothan loamy sand, 2 to 5 percent slopes, is one of several phases in the Dothan series.

Some map units are made up of two or more major soils or one or more soils and a miscellaneous area (an area that has little or no soil and supports little or no vegetation). These map units are called soil complexes, soil associations, or undifferentiated groups.

A *soil complex* consists of two or more soils or one or more soils and a miscellaneous area in such an intricate pattern or in such small areas that they cannot be shown separately on the soil maps. The pattern and proportion of the soils and miscellaneous area are somewhat similar in all areas. Dothan-Urban land complex, 2 to 5 percent slopes is an example.

A *soil association* is made up of two or more geographically associated soils that are shown as one unit on the maps. Because of present or anticipated soil uses in the survey area, it was not considered practical or necessary to map the soils separately. The pattern and relative proportion of the soils are somewhat similar. Chastain-Tawcaw association is an example.

An *undifferentiated group* is made up of two or more soils that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils in a mapped area are not uniform. An area can be made up of only one of the major soils, or it can be made up of all of them. Osier and Bibb soils is an undifferentiated group in this survey area.

Most map units include small scattered areas of soils other than those for which the map unit is named. Some of these included soils have properties that differ substantially from those of the major soil or soils. Such differences could significantly affect use and management of the soils in the map unit. The included soils are identified in each map unit description. Some small areas of strongly contrasting soils are identified by a special symbol on the soil maps.

Table 4 gives the acreage and proportionate extent of each map unit. Other tables (see "Summary of Tables") give properties of the soils and the limitations, capabilities, and suitabilities for many uses. The Glossary defines many of the terms used in describing the soils.

Soil Descriptions

BoA—Bonifay fine sand, 1 to 5 percent slopes. This well drained, nearly level and very gently sloping soil is on broad ridgetops on uplands. Slopes commonly are undulating and convex. Areas commonly range from 30 to 500 acres.

Typically, the surface layer is grayish brown fine sand 8 inches thick. The subsurface layer is fine sand and extends to a depth of 50 inches. The upper part is light yellowish brown, and the lower part is brownish yellow. The subsoil extends to a depth of 80 inches or more. The upper part is brownish yellow sandy loam, the middle part is brownish yellow sandy clay loam and has strong brown and red mottles, and the lower part is mottled red, brownish yellow, strong brown, and light brownish gray sandy clay loam. Below a depth of 58 inches, 5 percent or more of the volume of this soil is plinthite.

This soil is low in natural fertility and organic matter. It is strongly acid or very strongly acid throughout except for the surface layer in areas that have been limed. Permeability is rapid in the surface layer and subsurface layer, moderate in the upper part of the subsoil, and moderately slow in the lower part of the subsoil. Available water capacity is low. Tilth is good. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are areas of a soil that has a seasonal water table between depths of 40 and 60 inches. Also included are small areas of Fuquay, Lakeland, and Troup soils.

This Bonifay soil is poorly suited to farming because of low available water capacity. Returning crop residue to the soil helps the soil retain moisture. Irrigation increases yields for the commonly grown crops.

This soil is moderately suited to loblolly pine, slash pine, and longleaf pine. Because this soil has low available water capacity, seedling mortality is a concern. The survival rate of seedlings can be improved by proper planting procedures, use of suitable drought-hardy species, and reduction of plant competition. The sandiness of the soil commonly limits the use of conventional equipment. Using special implements or performing management operations during the wetter seasons helps overcome the equipment limitation.

This soil is well suited to most urban uses. However, seepage is a limitation for most sanitary facilities. Because it is too sandy, this soil is poorly suited to recreation uses.

This soil is in capability subclass IIIs and in woodland suitability group 3s.

BoC—Bonifay fine sand, 5 to 8 percent slopes. This well drained, gently sloping soil is on narrow ridgetops and broad hillsides on uplands. Slopes commonly are undulating and convex. Areas commonly range from 10 to 200 acres.

Typically, the surface layer is grayish brown fine sand 7 inches thick. The subsurface layer is fine sand and extends to a depth of 48 inches. The upper part is brownish yellow, and the lower part is light yellowish brown. The subsoil is predominantly sandy clay loam and extends to a depth of 70 inches or more. The upper part is brownish yellow, the middle part is brownish yellow and has red and yellowish red mottles, and the lower part is mottled red, dark red, brownish yellow, and light brownish gray. Content of plinthite is 5 percent or more below a depth of about 52 inches.

This soil is low in natural fertility and organic matter. It is strongly acid or very strongly acid throughout except for the surface layer in areas that have been limed. Permeability is rapid in the surface layer and subsurface layer, moderate in the upper part of the subsoil, and moderately slow in the lower part of the subsoil. Available water capacity is low. Tilth is good. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are small areas of Fuquay, Lakeland, and Troup soils.

This Bonifay soil is poorly suited to farming because of low available water capacity. Returning crop residue to the soil helps the soil retain moisture.

This soil is moderately suited to loblolly pine, longleaf pine, and slash pine. Because this soil has low available water capacity, seedling mortality is a concern. The survival rate of seedlings can be improved by proper planting procedures, use of suitable drought-hardy species, and the reduction of plant competition. Sandiness of the soil commonly limits the use of conventional equipment. Using special implements or performing management operations during the wetter seasons helps overcome the equipment limitation.

This soil is well suited to most urban uses. However, seepage is a limitation for most sanitary facilities. Because it is too sandy, this soil is poorly suited to recreation uses.

This soil is in capability subclass IVs and in woodland suitability group 3s.

BoD—Bonifay fine sand, 8 to 12 percent slopes. This well drained, strongly sloping soil is on hillsides on uplands. Slopes are rolling and convex. Areas range from 10 to 75 acres.

Typically, the surface layer is grayish brown fine sand 5 inches thick. The subsurface layer is fine sand and extends to a depth of 44 inches. It is brownish yellow throughout, except that the lower part has pale brown mottles. The subsoil is predominantly sandy clay loam and extends to a depth of 65 inches or more. The upper part is strong brown, and the lower part is mottled red, light gray, and brownish yellow. Below a depth of about 54 inches, 5 percent or more of the volume of this soil is plinthite.

This soil is low in natural fertility and organic matter. It is strongly acid or very strongly acid throughout except for the surface layer in areas that have been limed. Permeability is rapid in the surface layer and subsurface layer, moderate in the upper part of the subsoil, and moderately slow in the lower part of the subsoil. Available water capacity is low. Tilth is good. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are small areas of Lakeland and Troup soils.

This Bonifay soil is poorly suited to farming because of slope and low available water capacity.

This soil is moderately suited to loblolly pine, longleaf pine, and slash pine. Because this soil has low available water capacity, seedling mortality is a concern. The survival rate of seedlings can be improved by proper planting procedures, use of suitable drought-hardy species, and the reduction of plant competition. The sandiness of the soil limits the use of conventional equipment. Using special implements or performing management operations during the wetter seasons helps overcome the equipment limitation. b m his soil is only moderately suited to most urban uses because of slope. Also, seepage is a limitation for most sanitary facilities. Because it is too sandy, this soil is poorly suited to recreation uses.

This soil is in capability subclass VIs and in woodland suitability group 3s.

CaB2—Carnegie sandy loam, 3 to 5 percent slopes, eroded. This well drained, very gently sloping soil is on ridgetops and hillsides on uplands. The surface layer is a mixture of the original surface soil and the upper part of the subsoil. In most places, the soils are undulating and have a few galled spots and shallow gullies. Areas range from 5 to 30 acres.

Typically, the surface layer is brown sandy loam 4 inches thick. The subsoil extends to a depth of 62 inches. The upper part is strong brown sandy clay loam, the middle part is predominantly strong brown sandy clay and has brownish yellow and red mottles, and the lower part is mottled red, strong brown, brownish yellow, and gray sandy clay and has pockets of sandy clay loam. Nodules of ironstone are in the surface layer and throughout the upper and middle parts of the subsoil. Below a depth of about 21 inches, 5 percent or more of the volume of this soil is plinthite.

This soil is low in natural fertility and organic matter. It is strongly acid or very strongly acid throughout except for the surface layer in areas that have been limed. Permeability is moderately slow, and available water capacity is moderate. Runoff is rapid. Tilth is good. The effective root zone is limited to about the upper 20 inches of soil; plinthite below this depth is not easily penetrated by plant roots.

Included with this soil in mapping are areas of Cowarts and Tifton soils. Also included are uneroded soils that have a loamy sand surface layer.

This Carnegie soil is well suited to farming. However, the rapid runoff and somewhat gullied landscape are management concerns. Good tilth can be maintained in most places by returning crop residue to the soil. Erosion is a moderate hazard if cultivated crops are grown. Conservation tillage and the use of cover crops, including grasses and legumes, in the cropping system reduce runoff and help control erosion.

This soil is well suited to slash pine and loblolly pine. Although this Carnegie soil has no significant limitations for woodland use, performing management operations on the contour helps keep soil erosion to a minimum.

This soil is well suited to most urban uses. However, moderately slow permeability in the subsoil limits its use for septic tank absorption fields. Commonly, this limitation can be overcome by special design and installation. This soil is only moderately suited to most recreation uses because of the moderately slow permeability in the subsoil.

This soil is in capability subclass IIIe and in woodland suitability group 2o.

CaC2—Carnegie sandy loam, 5 to 8 percent slopes, eroded. This well drained, gently sloping soil is on hillsides on uplands. The surface layer is a mixture of the original surface soil and the upper part of the subsoils. In most places, slopes are short and undulating and have galled spots and an occasional gully. Areas range from 8 to 40 acres.

Typically, the surface layer is brown sandy loam 4 inches thick. The subsoil is predominantly sandy clay and extends to a depth of 62 inches or more. The upper part is strong brown, the middle part is strong brown and has yellowish red and brownish yellow mottles, and the lower part is mainly mottled strong brown, red, and light gray. Nodules of ironstone are in the surface layer and throughout the upper and middle part of the subsoil. Plinthite makes up 5 percent or more of the volume of this soil below a depth of about 18 inches.

This soil is low in natural fertility and organic matter. It is strongly acid or very strongly acid throughout except for the surface layer in areas that have been limed. Permeability is moderately slow, and available water capacity is moderate. Runoff is rapid. Tilth is good. The effective root zone is limited to about the upper 20 inches of the soil; plinthite below this depth is not easily penetrated by plant roots.

Included with this soil in mapping are areas of Cowarts and Tifton soils. Also included are severely eroded soils that have a sandy clay loam surface layer.

This Carnegie soil is only moderately suited to farming because of the rapid runoff and the somewhat gullied, short, irregular slopes. Good tilth can be maintained by returning crop residue to the soil. Erosion is a severe hazard if cultivated crops are grown. Including grasses and legumes in the cropping system helps reduce runoff and control erosion.

This soil is well suited to slash pine and loblolly pine. Although this Carnegie soil has no significant limitations for woodland use, performing management operations on the contour keeps erosion to a minimum.

This soil is well suited to most urban uses. However, moderately slow permeability in the subsoil limits the use of this soil for septic tank absorption fields. Commonly, this limitation can be overcome by special design and installation. This soil is only moderately suited to most recreation uses because the subsoil has moderately slow permeability.

This soil is in capability subclass IVe and in woodland suitability group 2o.

CC—Chastain-Tawcaw association. This association consists of nearly level soils on flood plains of the

Savannah River. The poorly drained Chastain soils are mainly in sloughs and the lower lying positions, and the somewhat poorly drained Tawcaw soils are in the slightly higher lying positions. These soils, which formed in clayey sediment, occur in a regular repeating pattern. They frequently are flooded from late fall to midspring. Areas are mainly long and range from 50 to 700 acres. Slopes are 0 to 2 percent.

Poorly drained Chastain soils make up about 65 percent of the map unit. Typically, the surface layer is gray silty clay 4 inches thick. The subsoil extends to a depth of 62 inches or more. The upper part is light brownish gray clay that has strong brown mottles, the middle part is light gray silty clay that has brown mottles, and the lower part is light brownish gray clay that has yellowish brown mottles.

Chastain soils are low in natural fertility and organic matter. They are strongly acid or very strongly acid throughout except for the surface layer in areas that have been limed. Permeability is slow, and available water capacity is moderate. Tilth is fair. The root zone is deep, except from late fall to late spring, when the water table commonly is within a depth of 1 foot.

Somewhat poorly drained Tawcaw soils make up about 25 percent of the map unit. Typically, the surface layer is brown silty clay 3 inches thick. The subsoil extends to a depth of 70 inches. The upper part is reddish brown silty clay, the middle part is brown silty clay that has light brownish gray mottles, and the lower part is light brownish gray and grayish brown silty clay loam that has brown and yellowish brown mottles. The underlying material is mottled yellowish brown and grayish brown silty clay loam.

Tawcaw soils are low in natural fertility and organic matter. They are moderately acid to very strongly acid throughout except for the surface layer in areas that have been limed. Permeability is slow, and available water capacity is moderate. Tilth is fair. The root zone is deep, except from late fall to midspring, when the water table commonly is at a depth of 1.5 to 2.5 feet.

Included with these soils in mapping are small areas of poorly drained soils that are loamy throughout.

The Chastain and Tawcaw soils in this unit are poorly suited to farming because flooding is frequent during the planting season.

These soils are well suited to slash pine, loblolly pine, yellow poplar, and sweetgum. However, seasonal wetness and flooding limit the use of conventional equipment and increase seedling mortality. The equipment limitation commonly can be overcome by using modified equipment or by performing operations during the drier seasons. The rate of seedling survival can be improved by drainage, bedding, reduction of plant competition, and the use of suitable species.

The soils in this association are poorly suited to recreation uses because of wetness and flooding. These limitations also severely limit urban uses of these soils. Wetness and flooding can be overcome only by extensive flood control and drainage.

The soils in this association are in capability subclass VIw. Chastain soils are in woodland suitability group 2w, and Tawcaw soils are in woodland suitability group 1w.

ChA—Chipley sand, 0 to 2 percent slopes. This moderately well drained, nearly level soil is in small areas on broad uplands. Slopes are smooth and mainly convex. Areas range from 5 to 40 acres.

Typically, the soil is sand throughout. The surface layer is dark grayish brown and is 6 inches thick. The underlying layers extend to a depth of 80 inches or more. The upper layer is yellowish brown, the middle layer is brownish yellow and has very pale brown mottles, and the lower several layers are light gray and have strong brown and very pale brown mottles.

This soil is low in natural fertility and organic matter. It is strongly acid or very strongly acid throughout except for the surface layer in areas that have been limed. Permeability is rapid, and available water capacity is low. Tilth is good. This soil can be worked throughout a wide range of moisture content. The root zone is deep, except from late fall to midspring, when the water table commonly is at a depth of 2 to 3 feet.

Included with this soil in mapping are small areas of Ocilla and Rains soils.

This Chipley soil is poorly suited to farming because of low available water capacity and wetness. However, it is moderately suited to hay and pasture.

This soil is well suited to slash pine and loblolly pine. However, the soil's sandiness limits the use of equipment. Using special implements or performing management operations during the wetter seasons helps overcome the equipment limitation.

This soil is poorly suited to most urban uses mainly because of wetness. Because of this soil's sandiness, it is poorly suited to recreation uses.

This soil is in capability subclass IIIw and in woodland suitability group 2s.

CnA—Clarendon loamy sand, 0 to 2 percent slopes. This moderately well drained, nearly level soil commonly is on broad benches of the uplands. Areas range from 10 to 20 acres.

Typically, the surface layer is grayish brown loamy sand 7 inches thick; however, if it is deeply plowed, the surface layer commonly is as much as 14 inches thick. The subsurface layer is pale brown loamy sand 4 inches thick. The subsoil is mainly sandy clay loam and extends to a depth of 60 inches or more. The upper part is olive yellow, the middle part is brownish yellow and has yellowish brown, gray, and yellowish red mottles, and the lower part is mottled gray, yellowish brown, and red. Plinthite makes up 5 percent or more of the volume of this soil below a depth of about 24 inches.

This soil is low in natural fertility and organic matter. It is strongly acid or very strongly acid throughout except for the surface layer in areas that have been limed. Permeability is moderate in the upper part of the subsoil and moderately slow in the lower part. Available water capacity is moderate. Tilth is good, and the soil can be worked throughout a wide range of moisture content. The root zone is deep, except during winter and spring, when the water table is at a depth of 1.5 to 2.5 feet.

Included with this soil in mapping are a few small areas of Dothan, Ocilla, and Tifton soils. Also included are small areas of a somewhat poorly drained soil that does not contain plinthite.

This Clarendon soil is well suited to farming. However, wetness somewhat restricts its use, and drainage is needed in most places.

This soil is well suited to slash pine, loblolly pine, and yellow poplar. However, seasonal wetness limits the use of conventional equipment. This limitation commonly can be overcome by using modified or special equipment or by performing management operations during the drier seasons.

This soil is only moderately suited to most urban and recreation uses because of wetness. This limitation commonly can be reduced by drainage.

This soil is in capability subclass IIw and in woodland suitability group 2w.

CoB—Cowarts loamy sand, 2 to 5 percent slopes. This well drained, very gently sloping soil is on ridgetops and hillsides on uplands. Slopes commonly are undulating and convex. Areas range from 5 to 30 acres.

Typically, the surface layer is brown loamy sand 6 inches thick. The subsurface layer extends to a depth of 14 inches. It is light yellowish brown loamy sand. The subsoil is sandy clay loam and extends to a depth of 32 inches. The upper part is strong brown, and the lower part is yellowish brown and has red and brownish yellow mottles. The underlying material to a depth of 83 inches or more is sandy clay loam and sandy loam that is dense and mainly yellowish brown, red, and light gray.

This soil is low in natural fertility and organic matter. It is strongly acid or very strongly acid throughout except for the surface layer in areas that have been limed. Permeability is moderate in the subsoil and moderately slow or slow in the underlying material. Available water capacity is moderate. Tilth is good. This soil can be worked throughout a wide range of moisture content. The effective root zone is limited to about the upper 24 to 36 inches of the soil; the underlying material is dense and not easily penetrated by plant roots.

Includes with this soil in mapping are areas of Esto soils. Also included are soils that have more clay in the upper part of the subsoil than is common to Cowarts soils and severely eroded soils that have a sandy clay loam surface layer. This map unit also includes wet areas less than 3 acres in size. These areas are indicated by a wet spot symbol on the map.

This Cowarts soil is well suited to farming. However, yields are somewhat reduced since the effective root zone is limited to the upper 24 to 36 inches of soil. Good tilth is easily maintained by returning crop residue to the soil. Erosion is a moderate hazard if cultivated crops are grown. Conservation tillage and the use of cover crops, including grasses and legumes, in the cropping system reduce runoff and help control erosion.

This soil is well suited to slash pine and loblolly pine. Although this soil has no significant limitations for woodland use, performing management operations on the contour keeps soil erosion to a minimum.

This soil is well suited to most urban uses. However, moderately slow or slow permeability in the underlying material limits its use for septic tank absorption fields. Commonly, this limitation can be overcome by special design and installation. This soil is only moderately suited to most recreation uses because the underlying material has moderately slow or slow permeability.

This soil is in capability subclass IIe and in woodland suitability group 2o.

CoD—Cowarts loamy sand, 8 to 12 percent slopes. This well drained, strongly sloping soil is on hillsides on uplands. Slopes are irregular and choppy. Areas are 5 to 25 acres.

Typically, the surface layer is loamy sand 10 inches thick. The upper part is dark grayish brown, and the lower part is brown. The subsoil is sandy clay loam and extends to a depth of 32 inches. It is strong brown throughout, except that the lower part also has yellowish red and light gray mottles. The underlying material to a depth or 62 inches or more is dense, mottled strong brown, yellowish red, and light gray sandy loam and sandy clay loam.

This soil is low in natural fertility and organic matter. It is strongly acid or very strongly acid throughout except for the surface layer in areas that have been limed. Permeability is moderate in the subsoil and moderately slow or slow in the underlying material. Available water capacity is moderate. Tilth is good. This soil can be worked throughout a wide range of moisture content. The effective root zone is limited to about the upper 24 to 36 inches of the soil; the underlying material is dense and not easily penetrated by plant roots.

Included with this soil in mapping are areas of Esto and Nankin soils. Also included in mapping are severely eroded soils that have a sandy clay loam surface layer.

This Cowarts soil is poorly suited to farming because of the strong slopes. However, it is moderately suited to hay and pasture.

This soil is well suited to slash pine and loblolly pine. Although it has no significant limitations for woodland use, performing management operations on the contour keeps soil erosion to a minimum.

This soil is moderately suited to most urban and recreation uses mainly because of slope. In addition, the moderately slow or slow permeability in the underlying material limits the use of this soil for septic tank absorption fields. Commonly, this limitation can be overcome by special design and installation.

This soil is in capability subclass IVe and in woodland suitability group 2o.

CwC2—Cowarts sandy loam, 5 to 8 percent slopes, eroded. This well drained, gently sloping soil is on hillsides on uplands. The surface layer is a mixture of the original surface soil and the upper part of the subsoil. In most places, slopes are irregular and choppy and contain galled spots and an occasional gully. Areas range from 5 to 50 areas.

Typically, the surface layer is dark grayish brown sandy loam 4 inches thick. The subsoil is dominantly sandy clay loam and extends to a depth of 32 inches. The upper part is strong brown, and the lower part is mottled strong brown, red, brownish yellow and light gray. The underlying material to a depth of 72 inches or more is dense, mottled yellowish brown, light gray, red, and yellowish red sandy clay loam and sandy loam.

This soil is low in natural fertility and organic matter. It is strongly acid or very strongly acid throughout except for the surface layer in areas that have been limed. Permeability is moderate in the subsoil and moderately slow or slow in the underlying material. Available water capacity is moderate. Runoff is rapid. The effective root zone is limited to about the upper 24 to 36 inches of soil; the underlying material is dense and not easily penetrated by plant roots.

Included with this soil in mapping are areas of Esto and Nankin soils. Also included are small areas of uneroded soils that have a loamy sand surface layer.

This Cowarts soil is poorly suited to farming because of rapid runoff and the somewhat gullied irregular and choppy slopes. However, it is moderately suited to hay and pasture. Good tilth can be maintained by returning crop residue to the soil. Erosion is a severe hazard if cultivated crops are grown. Grasses and legumes reduce runoff and help control erosion.

This soil is well suited to slash pine and loblolly pine. Although this soil has no significant limitations for woodland use, performing management operations on the contour keeps soil erosion to a minimum.

This soil is well suited to most urban uses. However, moderately slow or slow permeability in the underlying material limits its use for septic tank absorption fields. Commonly, this limitation can be overcome by special design and installation. This soil is only moderately suited to most recreation uses because the underlying material has moderately slow or slow permeability.

This soil is in capability subclass IVe and in woodland suitability group 2o.

DgA—Dogue sandy loam, 0 to 2 percent slopes. This moderately well drained, nearly level soil is on stream terraces that mainly are near Brier Creek and the Ogeechee River. Areas range from 10 to 125 acres.

Typically, the surface layer is brown sandy loam 5 inches thick. The subsurface layer is pale brown sandy loam and extends to a depth of 9 inches. The subsoil is predominately sandy clay and extends to a depth of 58 inches. The upper part is strong brown, the middle part is strong brown and has light gray and yellowish red mottles, and the lower part is mottled strong brown, light gray, yellowish red, and yellowish brown. The underlying material is mottled strong brown, light gray, yellowish red, and yellowish brown coarse sandy loam to a depth of 62 inches or more.

This soil is low in natural fertility and organic matter. It is very strongly acid or strongly acid throughout except for the surface layer in areas that have been limed. Permeability is moderately slow, and available water capacity is moderate. Tilth is good. The root zone is deep, except during winter and early spring, when the water table is at a depth of 1.5 to 3 feet.

Included with this soil in mapping are soils that have a subsoil that extends to a depth of 60 inches or more. Also included are small areas of Ocilla and Rains soils.

This Dogue soil is well suited to farming. However, wetness somewhat limits this soil's use for farming, and drainage is needed in most places.

This soil is well suited to loblolly pine, slash pine, and yellow poplar. However, seasonal wetness limits the use of conventional equipment and increases the rate of seeding mortality. The equipment limitation commonly can be overcome by using modified or special implements or by performing management operations during the drier seasons. The survival rate of seedlings commonly can be improved by drainage and the use of suitable species.

This soil is poorly suited to most urban uses and only moderately suited to recreation uses because of wetness. This limitation can be reduced by drainage.

This soil is in capability subclass IIw and in woodland suitability group 2w.

DoA—Dothan loamy sand, 0 to 2 percent slopes. This well drained, nearly level soil is on ridgetops on uplands. Areas range from 10 to 50 acres.

Typically, the surface layer is grayish brown loamy sand 9 inches thick. The subsurface layer is light yellowish brown loamy sand and extends to a depth of 12 inches. The subsoil is dominantly sandy clay loam and extends to a depth of 65 inches or more. The upper part is yellowish brown, the middle part is yellowish brown and has red, yellowish red, and light brownish gray mottles, and the lower part is mottled gray, yellowish red, red, and strong brown. Plinthite makes up 5 percent or more of the volume of this soil below a depth of about 43 inches. A few nodules of ironstone are in the surface layer and in the upper part of the subsoil.

This soil is low in natural fertility and organic matter. It is moderately acid to very strongly acid throughout except for the surface layer in areas that have been limed. Permeability is moderate in the upper part of the subsoil and moderately slow in the lower part. Available water capacity is moderate. Tilth is good. The soil can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are a few small areas of Clarendon, Fuquay, and Tifton soils.

This Dothan soil is well suited to farming. During dry seasons, this soil responds favorably to irrigation, and high yields can be obtained. Conservation tillage and the use of cover crops, including grasses and legumes, in the cropping system help maintain organic matter and conserve moisture.

This soil is well suited to slash pine and loblolly pine. It has no significant limitations for woodland use or management.

This soil is well suited to most urban and recreation uses. However, moderately slow permeability in the lower part of the subsoil limits the use of this soil for septic tank absorption fields. Commonly, this limitation can be overcome by special design and installation.

This soil is in capability class I and in woodland suitability group 2o.

DoB—Dothan loamy sand, 2 to 5 percent slopes. This well drained, very gently sloping soil is on ridgetops and hillsides on uplands. Slopes are smooth and convex. Areas range from 5 to 50 acres.

Typically, the surface layer is grayish brown loamy sand 9 inches thick. The subsurface layer is light yellowish brown loamy sand and extends to a depth of 12 inches. The subsoil is predominantly sandy clay loam and extends to a depth of 62 inches or more. The upper part mainly is yellowish brown, the middle part is yellowish brown and has strong brown and yellowish red mottles, and the lower part is mottled red, gray, yellowish brown, and yellowish red. Plinthite makes up 5 percent or more of the volume of this soil below a depth of 48 inches. A few nodules of ironstone are in the surface layer and upper part of the subsoil.

This soil is low in natural fertility and organic matter. It is moderately acid to very strongly acid throughout except for the surface layer in areas that have been limed. Permeability is moderate in the upper part of the subsoil and moderately slow in the lower part. Available water capacity is moderate. Tilth is good. This soil can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are a few areas of Fuquay and Tifton soils.

This Dothan soil is well suited to farming. During dry seasons this soil responds favorably to irrigation, and high yields can be obtained. Erosion is a moderate hazard if cultivated crops are grown. Such practices as terracing, contouring, conservation tillage, and the use of cover crops, including grasses and legumes, in the cropping system reduce runoff and help control erosion (fig. 2).

This soil is well suited to loblolly pine and slash pine. Although it has no significant limitations for woodland use, performing management operations on the contour keeps soil erosion to a minimum.

This soil is well suited to most urban and recreation uses. However, moderately slow permeability in the lower part of the subsoil limits the use of this soil for septic tank absorption fields. Commonly, this limitation can be overcome by special design and installation.

This soil is in capability subclass IIe and in woodland suitability group 2o.

DoC—Dothan loamy sand, 5 to 8 percent slopes. This well drained, gently sloping soil is on ridgetops and hillsides on uplands. Slopes are smooth and convex. Areas range from 5 to 20 acres.

Typically, the surface layer is dark grayish brown loamy sand 8 inches thick. The subsoil is predominantly sandy clay loam and extends to a depth of 62 inches or more. The upper part is yellowish brown, the middle part is yellowish brown and has yellowish red and red mottles, and the lower part is mottled yellowish brown, red, and light brownish gray. Plinthite makes up 5 percent or more of the volume of this soil below a depth of about 32 inches.

This soil is low in natural fertility and organic matter. It is moderately acid to very strongly acid throughout except for the surface layer in areas that have been limed. Permeability is moderate in the upper part of the subsoil and moderately slow in the lower part. The available water capacity is moderate. Tilth is good. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are a few areas of Cowarts, Fuquay, and Tifton soils.

This Dothan soil is well suited to farming. Erosion is a moderate hazard if cultivated crops are grown. Terracing, contouring, conservation tillage, and the use of cover crops, including grasses and legumes, in the cropping system reduce runoff and help control erosion.

This soil is well suited to loblolly pine and slash pine. Although this soil has no significant limitations for woodland use, performing management operations on the contour keeps soil erosion to a minimum.

This soil is well suited to most urban and recreation uses. However, moderately slow permeability in the lower part of the subsoil limits the use of this soil for septic tank absorption fields. Commonly, this limitation can be overcome by special design and installation.

Figure 2.—Soybeans planted across the slope in small grain residue on Dothan loamy sand, 2 to 5 percent slopes. This soil is prime farmland and is well suited to conservation tillage.

This soil is in capability subclass IIIe and in woodland suitability group 2o.

DuB—Dothan-Urban land complex, 2 to 5 percent slopes. This complex consists of areas of Dothan soil and Urban land so intermingled that they could not be mapped separately at the scale selected. It is on very gently sloping ridgetops and hillsides on uplands. Slopes are smooth and convex. Areas range from 10 to 80 acres.

Dothan loamy sand makes up about 55 percent of each mapped area. Typically, the surface layer is dark grayish brown loamy sand 9 inches thick. The subsurface layer is yellowish brown loamy sand and extends to a depth of 16 inches. The subsoil is predominantly sandy clay loam and extends to a depth of 61 inches or more. The upper part is yellowish brown, the middle part is yellowish brown and has red and strong brown mottles, and the lower part is mottled yellowish brown, yellowish red, and gray.

This soil is low in natural fertility and organic matter. It is strongly acid throughout except for the surface layer in areas that have been limed. Permeability is moderate in the upper part of the subsoil and moderately slow in the lower part. Available water capacity is moderate. Tilth is good. This soil can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

Urban land makes up about 35 percent of each mapped area. Most areas are used for shopping centers, schools, parking lots. industries, streets, commercial buildings, and private dwellings. The soils have been altered by cutting, filling, and shaping.

Included in mapping are small areas of Fuquay and Tifton soils.

The Dothan soil is well suited to most urban and recreation uses. However, moderately slow permeability in the lower part of the subsoil limits the use of this soil for septic tank absorption fields. Commonly, this limitation can be overcome by special design and installation.

This complex is well suited to home vegetable gardens and to plants commonly used for landscaping. Until permanent plant cover is established, the hazard of erosion is severe in the more sloping part of the map unit. Tilling across slopes and planting winter cover crops reduce erosion.

This complex is not assigned to a capability subclass or to a woodland suitability group.

ENB—Esto and Nankin soils, 2 to 5 percent slopes. This map unit consists of well drained, very gently sloping soils on undulating uplands. It consists of areas of Esto sandy loam and areas of Nankin loamy sand that are closely associated in an irregular pattern. In each mapped area, at least one of the soils is present; in some mapped areas, both soils are found. Because of present and predicted use, the soils were not separated in mapping.

A typical area of this map unit is about 50 percent Esto soil, 35 percent Nankin soil, and 15 percent minor soils, namely, Carnegie, Cowarts, Dothan, and Faceville soils. Also present in some of the mapped areas are areas of soils that have a hard rock layer at a depth of about 54 inches. However, in individual mapped areas, the proportion of each soil varies. The minor soils are on the same undulating landscape as the Esto and Nankin soils. Areas range from 5 to 75 acres.

Typically, the Esto soil has a grayish brown sandy loam surface layer 4 inches thick. The subsurface layer is light yellowish brown sandy loam and extends to a depth of 10 inches. The subsoil is clay and extends to a depth of 65 inches or more. The upper part is strong brown, the middle part is strong brown and has reddish brown and light gray mottles, and the lower part is mottled light gray, light brownish gray, strong brown, dark red, and red.

The Esto soil is low in natural fertility and organic matter. It is strongly acid or very strongly acid throughout except for the surface layer in areas that have been limed. Permeability is slow, and available water capacity is moderate. Tilth is good. The effective root zone is limited because of the firm, clayey subsoil.

Typically, the Nankin soil has a dark brown loamy sand surface layer 7 inches thick. The subsoil extends to a depth of 41 inches. The upper part mainly is yellowish brown sandy clay and has red mottles, the middle part is clay that is mottled red and pale brown, and the lower part is mainly mottled red, yellowish brown, and light gray sandy clay. The underlying material to a depth of 68 inches or more is mainly light gray, yellowish brown, and red sandy clay loam or sandy loam that is very firm.

The Nankin soil is low in natural fertility and organic matter. It is strongly acid or very strongly acid throughout except for the surface layer in areas that have been limed. Permeability is moderately slow, and available water capacity is moderate. Tilth is good. The effective root zone is limited because of the firm, clayey subsoil and the very firm underlying material.

These soils are only moderately suited to farming because of limited effective rooting depth. Good tilth can be maintained in most places by returning crop residue to the soil. Conservation tillage and the use of cover crops, including grasses and legumes, in the cropping system reduce runoff and help to control erosion.

These soils are moderately suited to slash pine and loblolly pine. Although they have no significant limitations to woodland use, performing management operations on the contour keeps soil erosion to a minimum.

Most areas of the soils in this map unit are only moderately suited to urban and recreation uses. However, some areas are well suited to urban uses. Slow or moderately slow permeability in the subsoil limits the use of these soils for septic tank absorption fields and most recreation uses. In addition, shrink-swell potential further limits urban uses in parts of each mapped area.

The Esto soil is in capability subclass IIIe, and the Nankin soil is in capability subclass IIe; both soils are in woodland suitability group 3o.

ENC2—Esto and Nankin sandy loams, 5 to 8 percent slopes, eroded. This map unit consists of well drained, gently sloping soils on undulating uplands. It consists of areas of Esto sandy loam and Nankin sandy loam that are closely associated in an irregular pattern. In each mapped area at least one of the soils is present; in some mapped areas, both soils occur. Because of present and predicted use, the soils were not separated in mapping. The surface layer is a mixture of the original surface soil and the upper part of the subsoil. In most places, slopes commonly have rills or galled spots and an occasional gully.

A typical area is about 50 percent Esto soil, 35 percent Nankin soil, and 15 percent minor soils, namely, Carnegie, Cowarts, and Faceville soils. Also present in some of the mapped areas are areas of soils that have small chert fragments throughout. However, in individual mapped areas, the proportion of each soil varies. The minor soils are on the same rolling landscape as the Esto and Nankin soils. Areas range from 5 to 50 acres.

Typically, the Esto soil has a grayish brown sandy loam surface layer 4 inches thick. The subsoil predominantly is sandy clay and extends to a depth of 65 inches or more. The upper part is strong brown, the middle part is mainly mottled brownish yellow, reddish brown, strong brown, and light gray, and the lower part is mainly mottled red, strong brown, and light gray.

The Esto soil is low in natural fertility and organic matter. It is strongly acid or very strongly acid throughout except for the surface layer in areas that have been limed. Permeability is slow, and available water capacity is moderate. Runoff is rapid. The effective root zone is limited because of the firm, clayey subsoil.

Typically, the Nankin soil has a dark grayish brown sandy loam surface layer 4 inches thick. The subsoil extends to a depth of 47 inches. The upper part is strong brown sandy clay, the middle part is strong brown clay and has red and pale brown mottles, and the lower part is predominantly sandy clay that is mainly mottled red, yellowish brown, and light gray. The underlying material to a depth of 84 inches is mainly sandy loam that is firm. It is mottled light gray, pale yellow, yellowish red, and red.

The Nankin soil is low in natural fertility and organic matter. It is strongly acid or very strongly acid throughout except for the surface layer in areas that have been limed. Permeability is moderately slow, and the available water capacity is moderate. Runoff is rapid. The effective root zone is limited because of the firm, clayey subsoil and the very firm underlying material.

These soils are poorly suited to farming because of rapid runoff and the somewhat gullied, rolling landscape. However, they are moderately suited to hay and pasture. Tilth can be maintained by returning crop residue to the soil. Erosion is a severe hazard if cultivated crops are grown. Grasses and legumes reduce runoff and help control erosion.

These soils are moderately suited to slash pine and loblolly pine. Although they have no significant limitations to woodland use, performing management operations on the contour keeps soil erosion to a minimum.

Most areas of these soils are only moderately suited to urban and recreation uses; however, some areas are well suited to urban uses. Slow or moderately slow permeability in the subsoil limits the use of these soils for septic tank absorption fields and most recreation uses. In addition, shrink-swell potential further limits urban uses in parts of each mapped area.

The Esto soil is in capability subclass VIe, and the Nankin soil is in capability subclass IVe; both soils are in woodland suitability group 3o.

FaA—Faceville loamy sand, 0 to 2 percent slopes. This well drained, nearly level soil is on broad ridgetops on uplands. Areas are 10 to 70 acres.

Typically, the surface layer is dark brown loamy sand 7 inches thick. The subsoil extends to a depth of 62 inches or more. The upper few inches is yellowish red sandy clay loam and the rest of the subsoil is red sandy clay.

This soil is medium in natural fertility and low in organic matter. It is strongly acid or very strongly acid throughout except for the surface layer in areas that have been limed. Permeability is moderate, and available water capacity is moderate. Tilth is good. This soil can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are a few areas of Dothan and Orangeburg soils.

This Faceville soil is well suited to farming. During dry seasons, this soil responds favorably to irrigation, and high yields can be obtained. Conservation tillage and the use of cover crops, including grasses and legumes, in the cropping system help maintain organic matter and conserve moisture.

This soil is moderately suited to loblolly pine and slash pine. This soil has no significant limitations for woodland use or management.

This soil is well suited to most urban and recreation uses. The clayey subsoil is a limitation for a few uses.

This soil is in capability class I and in woodland suitability group 3o.

FaB—Faceville loamy sand, 2 to 5 percent slopes. This well drained, very gently sloping soil is on ridgetops and hillsides on uplands. Slopes are smooth and convex. Areas range from 10 to 40 acres.

Typically, the surface layer is dark brown loamy sand 8 inches thick. The subsoil extends to a depth of 62 inches or more. The upper few inches is yellowish red sandy clay loam, and the rest of the subsoil is red sandy clay except that yellowish brown mottles are in the lower part.

This soil is medium in natural fertility and low in organic matter. It is strongly acid or very strongly acid throughout except for the surface layer in areas that have been limed. Permeability and available water capacity are moderate. Tilth is good. This soil can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are a few areas of Dothan and Orangeburg soils.

This Faceville soil is well suited to farming. During dry seasons, this soil responds favorably to irrigation, and high yields can be obtained. Erosion is a moderate hazard if cultivated crops are grown. Terracing, contouring, conservation tillage, and the use of cover crops, including grasses and legumes, in the cropping system reduce runoff and help control erosion.

This soil is moderately suited to loblolly pine and slash pine. Although this soil has no significant limitations for woodland use, performing management operations on the contour keeps soil erosion to a minimum.

This soil is well suited to most urban and recreation uses. The clayey subsoil is a limitation for a few uses.

This soil is in capability subclass IIe and in woodland suitability group 3o.

FeC2—Faceville sandy loam, 5 to 8 percent slopes, eroded. This well drained, gently sloping soil is on hillsides on uplands. The surface layer is a mixture of the original surface soil and the upper part of the subsoil. In most places, slopes are undulating and contain galled spots and an occasional gully. Areas range from 5 to 40 acres.

Typically, the surface layer is yellowish brown sandy loam 5 inches thick. The subsoil extends to a depth of 60 inches or more. The upper few inches is red sandy clay loam, and the rest of the subsoil is red clay. The lower part has yellowish brown mottles.

This soil is medium in natural fertility and low in organic matter. It is strongly acid or very strongly acid throughout except for the surface layer in areas that have been limed. Permeability is moderate, and available water capacity is moderate. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are small areas of Dothan and Orangeburg soils.

This Faceville soil is only moderately suited to farming because of slope and the somewhat gullied landscape. However, it is well suited to hay and pasture. Good tilth can be maintained in most places by returning crop residue to the soil. Erosion is a severe hazard if cultivated crops are grown. Conservation tillage and the use of cover crops, including grasses and legumes, in the cropping system reduce runoff and help control erosion.

This soil is moderately suited to loblolly pine and slash pine. Although this soil has no significant limitations for woodland use, performing management operations on the contour keeps soil erosion to a minimum.

This soil is well suited to most urban and recreation uses. The clayey subsoil is a limitation for a few uses.

This soil is in capability subclass IIIe and in woodland suitability group 3o.

FeD2—Faceville sandy loam, 8 to 12 percent slopes, eroded. This well drained, strongly sloping soil is on short hillsides on uplands. The surface layer is a mixture of the original surface soil and the upper part of the subsoil. In most places, slopes are smooth and convex and contain galled spots and an occasional gully. Areas range from 10 to 30 acres.

Typically, the surface layer is reddish brown sandy loam 2 inches thick. The subsoil is sandy clay and extends to a depth of 60 inches or more. The upper part is red, the middle part is red and has strong brown and reddish yellow mottles, and the lower part is mottled yellowish red, strong brown, and white.

This soil is medium in natural fertility and low in organic matter. It is strongly acid or very strongly acid throughout except for the surface layer in areas that have been limed. Permeability and available water capacity are moderate. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are a few intermingled areas of soils that are made up of mottled clay at a depth of 30 inches or more.

This Faceville soil is poorly suited to farming because of the strong slope and the somewhat gullied landscape. Good tilth can be maintained in most places by returning crop residue to the soil. Erosion is a severe hazard if cultivated crops are grown.

This soil is moderately suited to loblolly pine and slash pine. Although this soil has no significant limitations for woodland uses, performing management operations on the contour keeps soil erosion to a minimum.

This soil is only moderately suited to most urban and recreation uses mainly because of slope.

This soil is in capability subclass VIe and in woodland suitability group 3o.

FmA—Faceville sandy clay loam, 0 to 2 percent slopes, smoothed. This well drained, nearly level soil is on a broad ridgetop of the upland in one delineated area. It is an abandoned airfield that has been smoothed by cutting, filling, and shaping. This area is 160 acres in size.

Typically, the surface layer is dark red sandy clay loam 5 inches thick. The subsoil is sandy clay and extends to a depth of 62 inches or more. It is red throughout and has brownish yellow and strong brown mottles.

This soil is low in natural fertility and low in organic matter. It is strongly acid or very strongly acid throughout except for the surface layer in areas that have been limed. Permeability and available water capacity are moderate. Tilth is fair. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are areas of a soil that has a red sandy clay loam subsoil and is covered by about 13 inches of fill material.

This soil is well suited to farming. However, the sandy clay loam surface layer reduces the natural tilth of the soil. During dry seasons, this soil responds favorably to irrigation. Conservation tillage and the use of cover crops, including grasses and legumes, in the cropping system help to improve soil tilth.

This soil is moderately suited to loblolly pine and slash pine. This soil has no significant limitations for woodland use or management.

This soil is well suited to most urban and recreation uses. The clayey subsoil is a limitation for a few uses.

Figure 3.—Improved bermudagrass on Fuquay loamy sand, 1 to 5 percent slopes. This soil is only moderately suited to the commonly grown hay and pasture crops because of low available water capacity.

This soil is in capability subclass IIe and in woodland suitability group 3o.

FsB—Fuquay loamy sand, 1 to 5 percent slopes. This well drained, nearly level and very gently sloping soil is on broad ridgetops on uplands. Slopes are mostly smooth and convex. Areas are 5 to 15 acres.

Typically, the surface layer is dark grayish brown loamy sand 5 inches thick. The subsurface layer is loamy sand and extends to a depth of 28 inches. The upper few inches is mainly pale brown, and the rest of this layer is mainly light yellowish brown. The subsoil is sandy clay loam and extends to a depth of 75 inches or more. It is strong brown throughout and has red and dark red mottles. The lower part also has light gray mottles. Plinthite makes up 5 percent or more of the volume of this soil below a depth of 48 inches. A few nodules of ironstone are in the soil to a depth of 28 inches.

This soil is low in natural fertility and organic matter. It is strongly acid or very strongly acid throughout except for the surface layer in areas that have been limed. Permeability is moderate in the upper part of the subsoil and slow in the lower part. Available water capacity is low. Tilth is good. This soil can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are a few small areas of Dothan soils. Also included are soils similar to this Fuquay soil, except that the subsoil is compact and brittle.

This soil is only moderately suited to farming because of low available water capacity (fig. 3). Returning crop residue to the soil helps overcome this limitation. During dry seasons, this soil responds favorably to irrigation, and high yields can be obtained.

This soil is moderately suited to loblolly pine, slash pine, and longleaf pine. Because this soil has low available water capacity, seedling mortality is a concern. The survival rate of seedlings can be improved by proper planting procedures, use of suitable drought-hardy species, and the reduction of plant competition. The sandiness of this soil commonly limits the use of conventional equipment. Using special implements or performing operations during the wetter seasons helps overcome the equipment limitation.

This soil is well suited to most urban uses. However, slow permeability in the lower part of the subsoil limits the use of this soil for septic tank absorption fields. Commonly, this limitation can be overcome by special design and installation. Because it is so sandy, this soil is only moderately suited to recreation uses.

This soil is in capability subclass IIs and in woodland suitability group 3s.

FsC—Fuquay loamy sand, 5 to 8 percent slopes. This well drained, gently sloping soil is on ridgetops and hillsides on uplands. Slopes commonly are smooth and convex. Areas are 5 to 25 acres.

Typically, the surface layer is brown loamy sand 9 inches thick. The subsurface layer is brownish yellow loamy sand and extends to a depth of about 34 inches. The subsoil is sandy clay loam and extends to a depth of 60 inches or more. The upper part is yellowish brown and has yellowish red and red mottles, and the lower part is mottled yellowish red, red, light yellowish brown, and light gray. Plinthite makes up 5 percent or more of the volume of this soil below a depth of 45 inches.

This soil is low in natural fertility and organic matter. It is strongly acid or very strongly acid throughout except for the surface layer in areas that have been limed. Permeability is moderate in the upper part of the subsoil and slow in the lower part. Available water capacity is low. Tilth is good. This soil can be worked throughout a wide range of moisture content. The root zone is deep and can be easily penetrated by plant roots.

Included with this soil in mapping are small areas of Lakeland soils. Also included are soils that are similar to this Fuquay soil except that the subsoil is compact and brittle.

This soil is only moderately suited to farming because of low available water capacity and slope. Returning crop residue to the soil helps increase the available water capacity.

This soil is moderately suited to loblolly pine, slash pine, and longleaf pine. Because this soil has low available water capacity, seedling mortality is a concern. The survival rate of seedlings can be improved by proper planting procedures, use of drought-hardy species, and the reduction of plant competition. The sandiness of the soil commonly limits the use of conventional equipment. Using special implements or performing operations during the wetter seasons helps overcome the equipment limitation.

This soil is well suited to most urban uses. However, slow permeability in the lower part of the subsoil somewhat limits the use of this soil for septic tank absorption fields. Commonly, this limitation can be overcome by special design and installation. Because it is so sandy, this soil is only moderately suited to recreation uses.

This soil is in capability subclass IIIs and in woodland suitability group 3s.

GR—Grady-Rembert association. This association consists of poorly drained, nearly level soils in depressions on uplands. In places, Grady soils make up the large depressions; Rembert soils make up the small ones. In other places, Grady soils are near the center of the depressions, and Rembert soils are near the edge. Both soils are found in each mapped area and occur in a regular repeating pattern. They formed in clayey sediment. They are seasonally ponded in winter and spring. Mapped areas are saucer-shaped and range from 5 to 90 acres. Slope is 0 to 2 percent.

Grady soils make up about 65 percent of the map unit. Typically, the surface layer is dark gray loam 5 inches thick. The subsoil is mainly clay and extends to a depth of 79 inches or more. It is gray and mainly has yellowish brown, red, yellowish red, strong brown, and brown mottles.

Grady soils are low in natural fertility and medium in organic matter. They are very strongly acid or strongly acid throughout except for the surface layer in areas that have been limed. Permeability is slow, and available water capacity is moderate. Tilth is good. The root zone is deep, except during winter and spring, when the soil is commonly ponded.

Rembert soils make up about 25 percent of the map unit. Typically, the surface layer is dark grayish brown sandy loam 5 inches thick. The subsoil extends to a depth of 64 inches or more. The upper part is grayish brown sandy clay loam and has strong brown mottles, the middle part is gray clay and sandy clay and has yellowish brown and reddish brown mottles, and the lower part is mottled light gray, yellowish brown, and reddish brown sandy clay loam. The underlying material is mottled light gray, yellowish brown, and red coarse sandy loam.

Rembert soils are low in natural fertility and medium in organic matter. They are very strongly acid or strongly acid throughout except for the surface layer in areas that have been limed. Permeability is slow, and available water capacity is moderate. Tilth is good. The root zone is deep, except during winter and spring, when the soil is commonly ponded.

Included with these soils in mapping are small areas of other poorly drained soils that are loamy or clayey.

The soils in this association are mostly wooded. Baldcypress, blackgum, water oak, and water tupelo are the common trees; some areas are dominated by water tolerant shrubs and grasses. Ponding is the main limitation to equipment use. It also limits the survival rate of seedlings except for the common water tolerant trees.

This association is poorly suited to farming and to urban and recreation uses because of ponding. Unless outlets are available for drainage, this limitation is difficult to overcome.

The soils in this association are in capability subclass Vw. Grady soils are in woodland suitability group 4w, and Rembert soils are in woodland suitability group 5w.

HM—Herod and Muckalee loams. This map unit consists of poorly drained, nearly level soils mainly on the flood plain of Brier Creek. It consists of areas of Herod loam and areas of Muckalee loam that are closely associated in an irregular pattern. These soils are frequently flooded from late fall to midspring. In each mapped area, at least one of the soils is present; in some mapped areas, both soils occur. Because of present and predicted use, the soils were not separated in mapping. Slope is 0 to 2 percent.

A typical area of the map unit is about 60 percent Herod soil, 35 percent Muckalee soil, and 5 percent Dogue and Rains soils, but in individual mapped areas, the proportion of each soil varies. Moderately well drained Dogue soils and poorly drained Rains soils are on stream terraces. Areas range from 50 to 300 acres.

Typically, the Herod soil has a very dark grayish brown loam surface layer 6 inches thick. The underlying material to a depth of 22 inches is sandy loam that is light brownish gray in the upper part and gray mottled with yellowish brown in the lower part. The material between depths of 22 and 39 inches is gray sandy clay loam that has yellowish brown and light yellowish brown mottles. Below that, to a depth of 62 inches, is gray sand.

The Herod soil is low in natural fertility and organic matter. It is strongly acid or moderately acid in the surface layer and moderately acid to neutral in the underlying material. Permeability is moderate, and available water capacity is high. The root zone is deep, except in winter, when the water table commonly is at a depth of 0.5 foot to 1.5 feet.

Typically, the Muckalee soil has a very dark grayish brown loam surface layer 6 inches thick. The underlying material to a depth of 62 inches or more is mainly gray sandy loam that has brownish yellow and strong brown mottles.

The Muckalee soil is low in natural fertility and organic matter. It is strongly acid or moderately acid in the surface layer and moderately acid to neutral in the underlying material. Permeability and available water capacity are moderate. The root zone is deep, except in winter, when the water table commonly is at a depth of 0.5 foot to 1.5 feet.

The soils in this map unit are wooded. They are well suited to loblolly pine, slash pine, and sweetgum. However, seasonal wetness limits the use of conventional equipment and increases seedling mortality. The equipment limitation commonly can be overcome by using modified equipment or by performing management operations during the drier seasons. The survival rate of seedlings commonly can be improved by drainage, bedding, reduction of plant competition, and the use of suitable species.

The soils in this map unit are poorly suited to farming and recreation uses because of wetness and flooding. These limitations also severely limit these soils for urban uses. They can be overcome only by extensive flood control and drainage.

The soils in this map unit are in capability subclass Vw. The Herod soil is in woodland suitability group 1w, and the Muckalee soil is in woodland suitability group 2w.

KuB—Kureb sand, 1 to 8 percent slopes. This excessively drained, nearly level to gently sloping soil is on ridgetops and hillsides on uplands. Slopes are undulating and convex. Areas are 10 to 80 acres.

Typically, the soil is sand throughout. The surface layer is gray and 3 inches thick. The subsurface layer extends to a depth of 32 inches and is light gray. The underlying material to a depth of 50 inches is yellowish brown and has dark reddish brown and dark brown organic bodies; below, to a depth of 90 inches or more, it is brownish yellow.

This soil is low in natural fertility and organic matter. It is very strongly acid or strongly acid throughout except for the surface layer in areas that have been limed. Permeability is rapid, and available water capacity is very low. Tilth is good. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are small areas of Lakeland and Troup soils.

This Kureb soil is poorly suited to farming because of the very low available water capacity.

This soil is poorly suited to slash pine and longleaf pine. Because this soil has a very low available water capacity, seedling mortality is a concern. In most places, retaining more than the usual number of seed trees or retaining greater than the normal basal area in shelterwood cuts is desirable to ensure heavy seed production. The sandiness of the soil limits the use of conventional equipment. Using special implements or performing management operations during the wetter seasons helps overcome the equipment limitations.

This soil is well suited to most urban uses. However, seepage is a limitation for sanitary facilities. Because it is too sandy, this soil is poorly suited to recreation uses.

This soil is in capability subclass VIIs and in woodland suitability group 5s.

LaB—Lakeland sand, 1 to 8 percent slopes. This excessively drained, nearly level to gently sloping soil is on broad ridgetops and on hillsides on uplands. Slopes are smooth and convex. Areas range from 30 to 200 acres.

Typically, the soil is sand throughout. The surface layer is brown and 5 inches thick. The underlying material extends to a depth of 100 inches or more. The upper part is yellowish brown, the middle part is strong brown, and the lower part is reddish yellow.

This soil is low in natural fertility and organic matter. It is strongly acid or very strongly acid throughout except for the surface layer in areas that have been limed.

Permeability is very rapid, and available water capacity is low. Tilth is good. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are small areas of Bonifay and Troup soils. Also included are small areas of sandy soils that are nearly devoid of silt and clay.

This Lakeland soil is poorly suited to farming because of low available water capacity and low fertility. However, the nearly level and very gently sloping parts of this soil respond well to irrigation, and yields can be substantially increased. Returning crop residue to the soil is effective in retaining moisture.

This soil is moderately suited to loblolly pine and slash pine. Because this soil has low available water capacity, seedling mortality is a concern. The survival rate of seedlings commonly can be improved by proper planting procedures, use of suitable drought-hardy species, and the reduction of plant competition. The sandiness of the soil commonly limits the use of conventional equipment. Using special implements or performing management operations during the wetter seasons helps overcome the equipment limitation.

This soil is well suited to most urban uses. However, seepage is a limitation to most sanitary facilities. Because it is too sandy, this soil is poorly suited to most recreation uses.

This soil is in capability subclass IVs and in woodland suitability group 4s.

LaD—Lakeland sand, 8 to 17 percent slopes. This excessively drained, strongly sloping and moderately steep soil is mostly on hillsides on uplands. Slopes are short, rolling, and convex. Areas range from 10 to 50 acres.

Typically, the soil is sand throughout. The surface layer is grayish brown and is 4 inches thick. The underlying material extends to a depth of 80 inches or more. It is yellowish brown throughout except for the lower part, which is pale brown.

This soil is low in natural fertility and organic matter. It is strongly acid or very strongly acid throughout except for the surface layer in areas that have been limed. Permeability is very rapid, and available water capacity is low. Tilth is good. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are a few small areas of Lucy and Troup soils.

This Lakeland soil is poorly suited to farming because of slope and low available water capacity.

This soil is moderately suited to loblolly pine and slash pine. Because this soil has low available water capacity, seedling mortality is a concern. The survival rate of seedlings commonly can be improved by proper planting procedures, use of suitable drought-hardy species, and the reduction of plant competition. The sandiness of the soil commonly limits the use of conventional equipment. Using special implements or performing operations during the wetter seasons helps overcome the equipment limitation.

This soil is only moderately suited to most urban uses because of slope. In addition, seepage is a limitation for most sanitary facilities. Because it is so sandy, this soil is poorly suited to most recreation uses.

This soil is in capability subclass VIIs and in woodland suitability group 4s.

LmB—Lucy loamy sand, 0 to 5 percent slopes. This well drained, nearly level and very gently sloping soil is on broad ridgetops on uplands. Slopes are smooth and convex. Areas range from 10 to 75 acres.

Typically, the surface layer is dark brown loamy sand 5 inches thick. The subsurface layer extends to a depth of 29 inches and is strong brown loamy sand. The subsoil is red sandy clay loam and extends to a depth of 65 inches or more.

This soil is low in natural fertility and organic matter. It is strongly acid or very strongly acid throughout except for the surface layer in areas that have been limed. Permeability is moderate, and available water capacity is low. Tilth is good. The soil can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are a few small areas of soils that have a dark reddish brown surface layer and a dark red subsoil. Also included are a few intermingled areas of Lakeland, Orangeburg, and Troup soils.

This Lucy soil is only moderately suited to farming because of low available water capacity. Returning crop residue to the soil is effective in retaining soil moisture. During dry seasons, this soil responds favorably to irrigation, and high yields can be obtained.

This soil is moderately suited to longleaf pine and slash pine. Because this soil has low available water capacity, seedling mortality is a concern. The rate of seedling survival can be improved by proper planting procedures, use of suitable drought-hardy species, and the reduction of plant competition. Sandiness of the soil limits the use of conventional equipment. Using special implements and performing management operations during the wetter seasons help overcome the equipment limitation.

This soil is well suited to most urban uses. However, seepage is a limitation for some sanitary facilities. Because it is too sandy, this soil is only moderately suited to recreation uses.

This soil is in capability subclass IIs and in woodland suitability group 3s.

LmC—Lucy loamy sand, 5 to 8 percent slopes. This well drained, gently sloping soil is mainly on hillsides on uplands. Slopes commonly are smooth and convex. Areas range from 10 to 50 acres.

Typically, the surface layer is brown loamy sand 5 inches thick. The subsurface layer extends to a depth of 29 inches and is loamy sand. The upper part is strong brown, and the lower part is yellowish red. The subsoil is red sandy clay loam and extends to a depth of 72 inches or more.

This soil is low in natural fertility and organic matter. It is strongly acid or very strongly acid throughout except for the surface layer in areas that have been limed. Permeability is moderate, and available water capacity is low. Tilth is good. The soil can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are areas of soils that have a dark reddish brown surface layer and a dark red subsoil. Also included are a few intermingled areas of Lakeland, Orangeburg, and Troup soils.

This Lucy soil is only moderately suited to farming because of low available water capacity and slope. Returning crop residue to the soil is effective in retaining soil moisture.

This soil is moderately suited to longleaf pine and slash pine. Because this soil has low available water capacity, seedling mortality is a concern. The rate of seedling survival commonly can be improved by proper planting procedures, use of suitable drought-hardy species, and the reduction of plant competition. Sandiness of the soil commonly limits the use of conventional equipment. Using special implements or performing management operations during the wetter seasons helps overcome the equipment limitation.

This soil is well suited to most urban uses. However, seepage is a limitation for some sanitary facilities. Because it is so sandy, this soil is only moderately suited to recreation uses.

This soil is in capability subclass IIIs and in woodland suitability group 3s.

LmD—Lucy loamy sand, 8 to 17 percent slopes. This well drained, strongly sloping and moderately steep soil is on hillsides on uplands. Slopes are rolling and convex. Areas range from 10 to 50 acres.

Typically, the surface layer is brown loamy sand 4 inches thick. The subsurface layer is brownish loamy sand and extends to a depth of 36 inches. The subsoil extends to a depth of 60 inches or more. The upper part is yellowish red sandy loam, the middle part is yellowish red sandy clay loam that has red mottles, and the lower part is red sandy clay loam that has strong brown mottles.

This soil is low in natural fertility and organic matter. It is strongly acid or very strongly acid throughout except for the surface layer in areas that have been limed. Permeability is moderate, and available water capacity is low. Tilth is good. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are a few intermingled areas of Orangeburg and Troup soils. Also included are areas of soils that have a compact and brittle subsoil.

This soil is poorly suited to farming because of low available water capacity and slope. However, it is moderately suited to hay and pasture. Returning crop residue to the soil is effective in retaining soil moisture.

This soil is moderately suited to longleaf pine and slash pine. Because this soil has low available water capacity, seedling mortality is a concern. The survival rate of seedlings commonly can be improved by proper planting procedures, use of suitable drought-hardy species, and the reduction of plant competition. The sandiness of this soil limits the use of conventional equipment. Using special implements or performing management operations during the wetter seasons helps overcome the equipment limitations.

This soil is only moderately suited to most urban and recreation uses because of slope. In addition, seepage is a limitation for some sanitary facilities.

This soil is in capability subclass IVs and in woodland suitability group 3s.

Me—Meggett loam. This poorly drained, nearly level soil is mainly on the flood plain of the Ogeechee River. The soil is frequently flooded during the winter and early spring months. Slope is 0 to 2 percent. Areas range from 50 to 300 acres.

Typically, the surface layer is dark grayish brown loam 4 inches thick. The subsoil extends to a depth of 61 inches or more. The upper part is dark gray clay and has yellowish brown mottles, the middle part is dark gray sandy clay and has yellowish brown mottles, and the lower part is gray clay and has yellowish brown mottles. Concretions of calcium carbonate are in the middle and lower parts of the subsoil.

This soil is low in natural fertility and organic matter. The surface layer is strongly acid or moderately acid. The upper part of the subsoil is moderately acid to mildly alkaline, and the lower part is neutral to mildly alkaline. Permeability is slow, and available water capacity is moderate. The root zone is deep, except from late fall to midspring, when the water table commonly is at the surface or within a depth of 1 foot.

Included with this soil in mapping are a few small areas of Herod and Muckalee soils. Also included are soils that have less clay in the lower part of the subsoil than is common for Meggett soils.

This soil is well suited to loblolly pine and slash pine. However, seasonal wetness limits the use of conventional equipment and increases seedling mortality. The equipment limitation commonly can be overcome by using modified equipment or by performing management operations during the drier seasons. Drainage, bedding, reduction of plant competition, and the use of suitable species commonly increase the survival rate of the seedlings.

This Meggett soil is poorly suited to farming and recreation uses because of wetness and flooding. These limitations also severely limit this soil for urban uses. They can be overcome only by extensive flood control and drainage.

This soil is in capability subclass VIw and in woodland suitability group 1w.

Mu—Muckalee loam. This poorly drained, nearly level soil is mainly on the flood plain of Brier Creek. The soil is frequently flooded from late fall to midspring. Slope is 0 to 2 percent. Areas are 20 to 80 acres.

Typically, the surface layer is very dark grayish brown loam 6 inches thick. The underlying material to a depth of 62 inches or more is mainly gray sandy loam that has yellowish brown and strong brown mottles.

This soil is low in natural fertility and organic matter. The surface layer is strongly acid or moderately acid, and the underlying material is moderately acid to neutral. Permeability and available water capacity are moderate. The root zone is deep, except in winter, when the water table commonly is at a depth of 0.5 foot to 1.5 feet.

Included with this soil in mapping are areas of Herod and Osier soils.

This soil is wooded. This soil is well suited to loblolly pine, slash pine, and sweetgum. However, seasonal wetness limits the use of conventional equipment and increases seedling mortality. The equipment limitation commonly can be overcome by using modified equipment or by performing management operations during the drier seasons. The survival rate of seedlings commonly can be increased by drainage, bedding, reduction of plant competition, and the use of suitable species.

This soil is poorly suited to farming and recreation uses, because of wetness and flooding. Wetness and flooding, which also severely limit urban uses of this soil, can be overcome only by extensive flood control and drainage.

This soil is in capability subclass Vw and in woodland suitability group 2w.

OcA—Ocilla loamy sand, 0 to 2 percent slopes. This somewhat poorly drained, nearly level soil commonly is on broad benches of the upland and on stream terraces. Areas range from 5 to 50 acres.

Typically, the surface layer is dark grayish brown loamy sand 10 inches thick. The subsurface layer is loamy sand and extends to a depth of 21 inches. The upper part is light brownish gray, and the lower part is yellowish brown. The subsoil is predominantly sandy clay loam that extends to a depth of 60 inches or more. The upper part is yellowish brown and has pale brown, yellowish red, red, and gray mottles, and the lower part is light brownish gray and has yellowish brown and red mottles.

This soil is low in natural fertility and organic matter. It is strongly acid or very strongly acid throughout except for the surface layer in areas that have been limed. Permeability is moderate, and available water capacity is low. Tilth is good. The root zone is deep, except from winter to midspring, when the water table is at a depth of 1 foot to 2.5 feet.

Included with this soil in mapping are small areas of Clarendon and Rains soils.

This Ocilla soil is only moderately suited to farming because of wetness. Drainage commonly helps overcome this limitation.

This soil is only moderately suited to loblolly pine and slash pine. Seasonal wetness limits the use of conventional equipment and increases the rate of seedling mortality. The equipment limitation commonly can be overcome by using modified or special implements, or by performing management operations during the drier seasons. The survival rate of seedlings commonly can be improved by drainage and the reduction of plant competition.

This soil is poorly suited to most urban uses and only moderately suited to recreation uses because of wetness. This limitation can be reduced by drainage.

This soil is in capability subclass IIIw and in woodland suitability group 3w.

OeA—Orangeburg loamy sand, 0 to 2 percent slopes. This well drained, nearly level soil is on broad ridgetops on uplands. Areas range from 5 to 30 acres.

Typically, the surface layer is dark brown loamy sand 6 inches thick. The subsoil is predominantly sandy clay loam and extends to a depth of 60 inches or more. The upper part is predominantly yellowish red, and the rest of the subsoil is red. The lower part also has yellowish brown mottles.

This soil is medium in natural fertility and low in organic matter. It is strongly acid or very strongly acid throughout except for the surface layer in areas that have been limed. Permeability is moderate, and the available water capacity is moderate. Tilth is good. This soil can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are a few areas of Dothan and Faceville soils.

This Orangeburg soil is well suited to farming. During dry seasons, this soil responds favorably to irrigation, and high yields can be obtained. Conservation tillage and the use of cover crops, including grasses and legumes, in the cropping system help conserve moisture and maintain organic matter.

This soil is well suited to loblolly pine and slash pine. This soil has no significant limitations for woodland uses or management.

This soil is well suited to urban and recreation uses.
This soil is in capability class I and in woodland suitability group 2o.

OeB—Orangeburg loamy sand, 2 to 5 percent slopes. This well drained, very gently sloping soil is mainly on ridgetops on uplands. Slopes are smooth and convex. Areas range from 10 to 100 acres.

Typically, the surface layer is brown loamy sand 6 inches thick. The subsoil is predominantly sandy clay loam and extends to a depth of 60 inches or more. The upper part is yellowish red, and the rest of the subsoil is red. The lower part also has strong brown mottles.

This soil is medium in natural fertility and low in organic matter. It is strongly acid or very strongly acid throughout except for the surface layer in areas that have been limed. Permeability is moderate, and the available water capacity is moderate. Tilth is good. This soil can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are a few areas of Dothan and Faceville soils. Also included are a few areas of eroded soils that have a sandy clay loam surface layer.

This Orangeburg soil is well suited to farming. During dry seasons, this soil responds favorably to irrigation, and high yields can be obtained. Erosion is a moderate hazard if cultivated crops are grown. Terracing, contouring, conservation tillage, and the use of cover crops, including grasses and legumes, in the cropping system reduce runoff and help control erosion.

This soil has no significant limitations for woodland use and is well suited to loblolly pine and slash pine (fig. 4). Performing management operations on the contour keeps soil erosion to a minimum.

This soil is well suited to most urban and recreation uses.

This soil is in capability subclass IIe and in woodland suitability group 2o.

OgC2—Orangeburg sandy loam, 5 to 8 percent slopes, eroded. This well drained, gently sloping soil is mainly on hillsides on uplands. The surface layer is a mixture of the original surface soil and the upper part of the subsoil. In most places, slopes are smooth and convex and contain a few galled spots and shallow gullies. Areas range from 5 to 40 acres.

Typically, the surface layer is yellowish red sandy loam 4 inches thick. The subsoil is sandy clay loam and extends to a depth of 60 inches or more. It is red throughout except that the lower part also has yellowish brown and dark yellowish brown mottles.

This soil is medium in natural fertility and low in organic matter. It is strongly acid or very strongly acid throughout except for the surface layer in areas that have been limed. Permeability is moderate, and available water capacity is medium. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are a few areas of Dothan and Faceville soils. Also included are a few small areas of eroded soils that have a sandy clay loam surface layer.

This Orangeburg soil is well suited to farming. Good tilth can be maintained in most places by returning crop residue to the soil. Erosion is a severe hazard if cultivated crops are grown. Conservation tillage and the use of cover crops, including grasses and legumes, in the cropping system, contour farming, and terracing reduce runoff and help control erosion.

This soil is well suited to loblolly pine and slash pine. Although this soil has no significant limitations for woodland use, performing management operations on the contour keeps soil erosion to a minimum.

This soil is well suited to most urban and recreation uses.

This soil is in capability subclass IIIe and in woodland suitability group 2o.

OgD2—Orangeburg sandy loam, 8 to 17 percent slopes, eroded. This well drained, strongly sloping and moderately steep soil is mainly on hillsides on uplands. The surface layer is a mixture of the original surface soil and the upper part of the subsoil. In most places, slopes are rolling to hilly and commonly contain rills, galled spots, and an occasional gully. Areas range from 5 to 30 acres.

Typically, the surface layer is dark brown sandy loam 4 inches thick. The subsoil is predominantly red sandy clay loam and extends to a depth of 69 inches or more.

This soil is medium in natural fertility and low in organic matter. It is strongly acid or very strongly acid throughout except for the surface layer in areas that have been limed. Permeability is moderate, and the available water capacity is moderate. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are small areas of Faceville and Lucy soils. Also included are a few small areas of eroded soils that have a sandy clay loam surface layer.

This soil is poorly suited to farming because of the strong and moderately steep choppy slopes and the somewhat gullied landscape. Good tilth can be maintained in most places by returning crop residue to the soil. Erosion is a severe hazard if cultivated crops are grown.

This soil is well suited to loblolly pine and slash pine. Although this soil has no significant limitations to woodland uses, performing management operations on the contour keeps soil erosion to a minimum.

This soil is only moderately suited to most urban and recreation uses because of slope.

This soil is in capability subclass VIe and in woodland suitability group 2o.

Figure 4.—Loblolly pine on Orangeburg loamy sand, 2 to 5 percent slopes. This soil is prime farmland and is well suited to the commonly planted crops and trees.

Ol—Osier and Bibb soils. This map unit consists of poorly drained, nearly level soils on flood plains. It is made up of areas of Osier loamy sand and areas of Bibb sandy loam that are closely associated in an irregular pattern. These soils frequently are flooded in winter and spring. In most mapped areas both soils are present, but in a few areas, only one of the soils occurs. Because of present and predicted use, the soils were not separated in mapping. Slope is 0 to 2 percent.

A typical area of this map unit is about 60 percent Osier soil, 30 percent Bibb soil, and 10 percent Ocilla and Rains soils, but in individual mapped areas, the proportion of each soil varies. Somewhat poorly drained Ocilla soils are on slightly higher lying uplands and poorly drained Rains soils are on stream terraces. Areas range from 25 to 1,000 acres.

Typically, the Osier soil has a dark grayish brown loamy sand surface layer 4 inches thick. The underlying material extends to a depth of 61 inches or more. The upper part is light brownish gray sand that has yellowish brown and yellowish red mottles, the middle part is light brownish gray loamy sand that has yellowish brown and dark grayish brown mottles, and the lower part is dark gray loamy sand that has gray mottles.

The Osier soil is low in natural fertility and organic matter. It is very strongly acid to moderately acid throughout. Permeability is rapid. Available water capacity is low. The root zone is deep, except from late fall to early spring, when the water table commonly is at the surface or within a depth of 1 foot.

Typically, the Bibb soil has a surface layer 14 inches thick. The upper part is very dark grayish brown sandy loam, and the lower part is light gray loamy sand. The underlying material to a depth of 70 inches is sandy loam. The upper part is light brownish gray and has yellowish brown mottles, the middle part is light gray and has yellowish brown and red mottles, and the lower part is mottled yellowish brown and has vertical areas of light gray.

The Bibb soil is low in natural fertility and organic matter. It is very strongly acid or strongly acid throughout. Permeability and available water capacity are moderate. The root zone is deep, except from late fall to early spring when the water table commonly is at a depth of 0.5 foot to 1.5 feet.

The soils in this map unit are mostly wooded. They are mainly moderately suited to loblolly pine, slash pine, and sweetgum. Seasonal wetness limits the use of conventional equipment and increases the rate of seedling mortality. The equipment limitation commonly can be overcome by using modified equipment or by performing management operations during the drier seasons. The survival rate of seedlings commonly can be increased by drainage, bedding, reduction of plant competition, and the use of suitable species.

The soils in this map unit are poorly suited to farming and recreation uses because of wetness and flooding. These limitations also severely limit these soils for urban uses. They can be overcome only by extensive flood control and drainage.

The soils in this map unit are in capability subclass Vw. Osier soil is in woodland suitability group 3w, and Bibb soil is in woodland suitability group 2w.

Ra—Rains sandy loam. This poorly drained, nearly level soil commonly is on broad benches of the upland and in slight depressions on stream terraces. Slope is 0 to 2 percent. Areas range from 5 to 60 acres.

Typically, the surface layer is very dark grayish brown sandy loam 8 inches thick. The subsurface layer is grayish brown loamy sand and extends to a depth of 15 inches. The subsoil is gray sandy clay loam and extends to a depth of 62 inches or more. The upper part has yellowish brown mottles, the middle part has yellowish brown and brownish gray mottles, and the lower part has yellowish brown, brown, and strong brown mottles.

This soil is low in natural fertility and organic matter. It is very strongly acid or strongly acid throughout except for the surface layer in areas that have been limed. Permeability and available water capacity are moderate. Tilth is good during the drier seasons. The root zone is deep, except from late fall to midspring, when the water table is within a depth of 1 foot.

Included with this soil in mapping are a few small areas of Bibb, Clarendon, Grady, Rembert, and Osier soils. Also included are a few areas of soils that have a sandy surface layer that is 20 inches or more in thickness.

Most of this Rains soil is wooded. It is well suited to slash pine, loblolly pine, and sweetgum. Seasonal wetness limits the use of conventional equipment and increases the rate of seedling mortality. The equipment limitation commonly can be overcome by using modified equipment or by performing management operations during the drier seasons. The survival rate of seedlings commonly can be improved by drainage, bedding, reduction of plant competition, and the use of suitable species.

This soil is poorly suited to farming and recreation uses because of wetness. This limitation also severely restricts urban uses. It can be overcome only by extensive drainage.

This soil is in capability subclass IVw and in woodland suitability group 2w.

TA—Tawcaw-Shellbluff association. This association consists of nearly level soils on flood plains of the Savannah River. The somewhat poorly drained Tawcaw soils commonly are on slightly lower lying parts of the flood plain, and the well drained Shellbluff soils are on natural levees adjacent to stream channels. Both soils are found in each mapped area and occur in a regular repeating pattern. These soils formed in clayey sediment. They frequently are flooded from late fall to midspring. Mapped areas are mostly long and range from 25 to 500 acres. Slope is 0 to 2 percent.

Somewhat poorly drained Tawcaw soils make up about 60 percent of the map unit. Typically, the surface layer is brown silty clay 3 inches thick. The subsoil extends to a depth of 70 inches. The upper part is reddish brown silty clay, the middle part is brown silty clay that has light grayish brown mottles, and the lower part is light brownish gray and grayish brown silty clay loam that has brown and yellowish brown mottles. The underlying material is mottled yellowish brown and grayish brown silty clay loam.

Tawcaw soils are low in natural fertility and organic matter. They are moderately acid to very strongly acid throughout except for the surface layer in areas that have been limed. Permeability is slow, and available water capacity is moderate. Tilth is fair. The root zone is deep, except from late fall to midspring, when the water table commonly is at a depth of 1.5 to 2.5 feet.

Well drained Shellbluff soils make up about 30 percent of the map unit. Typically, the surface layer is brown clay loam 4 inches thick. The subsoil extends to a depth of about 65 inches. The upper part is reddish brown silty clay loam, the middle part is predominantly reddish brown clay loam, and the lower part is predominantly reddish brown silty clay.

Shellbluff soils are low in natural fertility and organic matter. They are moderately acid to very strongly acid throughout except for the surface layer in areas that have been limed. Permeability is moderate, and available water capacity is high. Tilth is fair. The root zone is deep. The water table is within a depth of 3 to 5 feet from late fall to midspring.

Included with these soils in mapping are small areas of Chastain soils. Also included are small areas of sandy soils on the natural levees.

The slightly lower lying Tawcaw soils in this unit are poorly suited to farming because of wetness; however, the Shellbluff soils on the natural levees are well suited to farming. Flooding can be expected in winter to midspring, but on the Shellbluff soils, it commonly is not a hazard during the growing season.

These soils are well suited to loblolly pine, yellow poplar, and sweetgum. However, seasonal wetness and flooding limit the use of conventional equipment and increase the rate of seedling mortality on the lower lying Tawcaw soils. The equipment limitation commonly can be overcome by using modified equipment or by performing management operations during the drier seasons. The survival rate of seedlings commonly can be increased by drainage, bedding, reduction of plant competition, and the use of suitable species. The Shellbluff soils on the levees have no significant limitations for woodland use and management.

The soils in this association are severely limited for urban uses and most recreation uses because of flooding. This limitation can be overcome only by extensive flood control.

The Tawcaw soils in this association are in capability subclass VIw, and the Shellbluff soils are in capability subclass IIw. Tawcaw soils are in woodland suitability group 1w, and Shellbluff soils are in woodland suitability group 1o.

TfA—Tifton loamy sand, 0 to 2 percent slopes. This well drained, nearly level soil is on ridgetops on uplands. Areas range from 5 to 80 acres.

Typically, the surface layer is brown loamy sand 8 inches thick. The subsoil is dominantly sandy clay loam and extends to a depth of 65 inches or more. The upper part is strong brown, the middle part is yellowish brown, and the lower part is mottled brownish yellow, yellowish red, strong brown, and light brownish gray. Plinthite makes up 5 percent or more of the volume below a depth of about 48 inches. Nodules of ironstone are mainly on and in the surface layer and in the upper part of the subsoil.

This soil is low in natural fertility and organic matter. It is strongly acid or very strongly acid throughout except for the surface layer in areas that have been limed. Permeability and available water capacity are moderate. Tilth is good. This soil can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are a few small areas of Clarendon, Dothan, and Fuquay soils.

This Tifton soil is well suited to farming. During dry seasons, this soil responds favorably to irrigation, and high yields can be obtained. Conservation tillage and the use of cover crops, including grasses and legumes, in the cropping system help maintain organic matter and conserve moisture.

This soil is well suited to loblolly pine and slash pine. This soil has no significant limitations for woodland use or management.

This soil is well suited to most urban and recreation uses. However, moderate permeability in the subsoil limits the use of this soil for septic tank absorption fields. Commonly, this limitation can be overcome by special design and installation.

This soil is in capability class I and in woodland suitability group 2o.

TfB—Tifton loamy sand, 2 to 5 percent slopes. This well drained, very gently sloping soil is mainly on ridgetops on uplands. Slopes commonly are smooth and convex. Areas range from 5 to 75 acres.

Typically, the surface layer is grayish brown loamy sand 8 inches thick. The subsoil is sandy clay loam and extends to a depth of 65 inches or more. The upper part is yellowish brown, the middle part is brownish yellow and has red and strong brown mottles, and the lower part is mottled strong brown, brownish yellow, red, and light gray. Content of plinthite is 5 percent or more below a depth of about 34 inches. Nodules of ironstone are mainly on and in the surface layer and in the upper part of the subsoil.

This soil is low in natural fertility and organic matter. It is strongly acid or very strongly acid throughout except for the surface layer in areas that have been limed. Permeability and available water capacity are moderate. Tilth is good. This soil can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are a few small areas of Dothan, Fuquay, and Orangeburg soils.

This Tifton soil is well suited to farming. During dry seasons, this soil responds favorably to irrigation, and high yields can be obtained. Good tilth is easily maintained by returning crop residue to the soil. Erosion is a moderate hazard if cultivated crops are grown. Conservation tillage and the use of cover crops, including grasses and legumes, in the cropping system, terracing, and contour farming reduce runoff and help control erosion.

This soil is well suited to loblolly pine and slash pine. Although this soil has no significant limitations to woodland use, performing management operations on the contour keeps soil erosion to a minimum.

This soil is well suited to most urban and recreation uses. However, moderate permeability in the subsoil limits the use of this soil for septic tank absorption fields. Commonly, this limitation can be overcome by special design and installation.

This soil is in capability subclass IIe and in woodland suitability group 2o.

ThC2—Tifton sandy loam, 5 to 8 percent slopes, eroded. This well drained, gently sloping soil is mainly on hillsides on uplands. The surface layer is a mixture of the original surface soil and the upper part of the subsoil. In most places, slopes are undulating and convex and contain galled spots and an occasional shallow gully. Areas range from 5 to 25 acres.

Typically, the surface layer is strong brown sandy loam 4 inches thick. The subsoil is sandy clay loam and extends to a depth of 65 inches or more. The upper part is strong brown, the middle part is strong brown and has brownish yellow and red mottles, and the lower part is mottled red, dark red, strong brown, yellowish brown, and light gray. Content of plinthite is 5 percent or more below a depth of about 32 inches. Nodules of ironstone are mainly on and in the surface layer and in the upper part of the subsoil.

This soil is low in natural fertility and organic matter. It is strongly acid or very strongly acid throughout except for the surface layer in areas that have been limed. Permeability and available water capacity are moderate. This soil has good tilth. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are a few small areas of Cowarts soils. Also included are uneroded soils that have a loamy sand surface layer.

This Tifton soil is well suited to farming. Good tilth can be maintained in most places by returning crop residue to the soil. Erosion is a severe hazard if cultivated crops are grown. Conservation tillage and the use of cover crops, including grasses and legumes, in the cropping system, contour farming, and terracing reduce runoff and help control erosion.

This soil is well suited to loblolly pine and slash pine. Although this soil has no significant limitations for woodland use, performing management operations on the contour keeps soil erosion to a minimum.

This soil is well suited to most urban and recreation uses. However, moderate permeability in the subsoil limits the use of this soil for septic tank absorption fields. Commonly, this limitation can be overcome by special design and installation.

This soil is in capability subclass IIIe and in woodland suitability group 2o.

TrB—Troup fine sand, 1 to 5 percent slopes. This well drained, nearly level and very gently sloping soil is on broad ridgetops on uplands. Slopes commonly are smooth, undulating, and convex. Areas range from 30 to 500 acres or more.

Typically, the surface layer is dark brown fine sand 6 inches thick. The subsurface layer is fine sand and extends to depths of 58 inches. The upper part is light yellowish brown, and the lower part is brownish yellow. The subsoil extends to a depth of 82 inches or more. The upper part is yellowish red sandy loam, and the rest of the subsoil is mottled yellowish red and strong brown sandy clay loam.

This soil is low in natural fertility and organic matter. It is strongly acid or very strongly acid throughout except for the surface layer in areas that have been limed. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. Available water capacity is low. Tilth is good. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are areas of soil that has a seasonal water table between depths of 40 and 60 inches. Also included are small areas of Fuquay, Lakeland, and Lucy soils.

This Troup soil is only moderately suited to farming because of low available water capacity. Returning crop residue to the soil helps retain soil moisture. Yields for the crops commonly grown can be increased if this soil is irrigated.

This soil is moderately suited to loblolly pine, longleaf pine, and slash pine. Because this soil has low available water capacity, seedling mortality is a concern. Proper planting procedures, use of suitable drought-hardy species, and the reduction of plant competition commonly improve the survival rate of the seedlings. The sandiness of the soil limits the use of conventional equipment. Using special implements or performing management operations during the wetter seasons helps overcome the equipment limitation.

This soil is well suited to most urban uses. However, seepage is a limitation for most sanitary facilities. Because it is so sandy, this soil is poorly suited to most recreation uses.

This soil is in capability subclass IIIs and in woodland suitability group 3s.

TrC—Troup fine sand, 5 to 8 percent slopes. This well drained, gently sloping soil is on narrow ridgetops and long, broad hillsides on uplands. Slopes commonly are smooth, undulating, and convex. Areas range from 10 to 200 acres or more.

Typically, the surface layer is brown fine sand 4 inches thick. The subsurface layer extends to a depth of 42 inches. The upper part is light yellowish brown fine sand, the middle part is reddish yellow fine sand, and the lower part is yellowish red sand. The subsoil is red and extends to a depth of 80 inches or more. The upper part is loamy sand, the middle part is sandy loam, and the lower part is sandy clay loam.

This soil is low in natural fertility and organic matter. It is strongly acid or very strongly acid throughout except for the surface layer in areas that have been limed. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. Available water capacity is low. Tilth is good. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are small areas of Bonifay, Fuquay, Lakeland, and Lucy soils.

This Troup soil is poorly suited to farming mainly because of low available water capacity. Returning crop residue to the soil helps retain soil moisture.

This soil is moderately suited to loblolly pine, longleaf pine, and slash pine. Because this soil has low available water capacity, seedling mortality is a concern. The survival rate of seedlings commonly can be improved by proper planting procedures, use of suitable drought-hardy species, and the reduction of plant competition. The sandiness of the soil commonly limits the use of conventional equipment. Using special implements or performing management operations during the wetter seasons helps overcome the equipment limitation.

This soil is well suited to most urban uses. However, seepage is a limitation for most sanitary facilities. Because it is so sandy, this soil is poorly suited to most recreation uses.

This soil is in capability subclass IVs and in woodland suitability group 3s.

TrD—Troup fine sand, 8 to 17 percent slopes. This well drained, strongly sloping and moderately steep soil is on hillsides on uplands. Slopes are rolling to hilly and convex. Areas range from 10 to 75 acres.

Typically, the surface layer is dark brown fine sand 3 inches thick. The subsurface layer is fine sand and extends to a depth of 56 inches. The upper part is reddish yellow, and the lower part is yellowish red. The subsoil extends to a depth of 80 inches or more. The upper part is red sandy loam, the middle part is red sandy clay loam that is mottled, and the lower part is red sandy loam.

This soil is low in natural fertility and organic matter. It is strongly acid or very strongly acid throughout except for the surface layer in areas that have been limed. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. Available water capacity is low. Tilth is good. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are small areas of Lakeland and Lucy soils.

This Troup soil is poorly suited to farming because of low available water capacity and the strongly sloping and moderately steep slope.

This soil is moderately suited to loblolly pine, longleaf pine, and slash pine. Because this soil has low available water capacity, seedling mortality is a concern. The survival rate of the seedlings commonly can be improved by proper planting procedures, use of suitable drought-hardy species, and the reduction of plant competition. The sandiness of the soil commonly limits the use of conventional equipment. Using special implements or performing management operations during the wetter seasons helps overcome the equipment limitation.

This soil is only moderately suited to most urban uses because of the strongly sloping and moderately steep slope. Also, seepage limits most sanitary facilities. Because it is so sandy, this soil is poorly suited to recreation uses.

This soil is in capability subclass VIs and in woodland suitability group 3s.

TUF—Troup and Lucy fine sands, 17 to 25 percent slopes. This map unit consists of well drained, steep soils on hillsides on uplands. It is made up of areas of Troup fine sand and areas of Lucy fine sand that are closely associated in an irregular pattern. Most mapped areas contain both soils, but a few areas contain only one of the soils. Because of present and predicted use, the soils were not separated in mapping.

A typical area of this map unit is about 50 percent Troup soil, 40 percent Lucy soil, and 10 percent Orangeburg and Lakeland soils; but in individual mapped areas, the proportion of each soil varies. Commonly, Troup soils make up the lower half of the slope, and Lucy soils make up the upper half. Areas range from 20 to 60 acres.

Typically, the Troup soil has a dark grayish brown fine sand surface layer 3 inches thick. The subsurface layer is fine sand and extends to a depth of 44 inches. The upper part is dark yellowish brown, the middle part is yellowish brown, and the lower part is brownish yellow and has light yellowish brown and strong brown mottles. The subsoil is yellowish red sandy loam that extends to a depth of 62 inches or more.

The Troup soil is low in natural fertility and organic matter. It is strongly acid or very strongly acid throughout. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. The available water capacity is low. The root zone is deep and is easily penetrated by plant roots.

Typically, the Lucy soil has a dark brown fine sand surface layer 3 inches thick. The subsurface layer is loamy sand and extends to a depth of 33 inches. The upper part is yellowish brown, and the lower part is strong brown. The subsoil is red and extends to a depth of 62 inches or more. The upper part is sandy loam, and the lower part is sandy clay loam.

The Lucy soil is low in natural fertility and organic matter. It is strongly acid or very strongly acid throughout. Permeability is moderate, and the available water capacity is low. The root zone is deep and easily penetrated by plant roots.

The soils in this map unit are mostly wooded. These soils are moderately suited to loblolly pine, longleaf pine, and slash pine. Because these soils have low available water capacity, seedling mortality is a concern. The survival rate of seedlings commonly can be improved by proper planting procedures, using suitable drought-hardy species, and the reduction of plant competition. The sandiness of the soil commonly limits the use of conventional equipment. Using special implements or performing management operations during the wetter seasons helps overcome the equipment limitation.

These soils are poorly suited to farming and to urban and recreation uses mainly because of the steep slopes.

Troup soils in this map unit are in capability subclass VIIs, and Lucy soils are in capability subclass VIs. Both soils are in woodland suitability group 3s.

Important Farmland

In Burke County, some soils are important for producing food, feed, fiber, forage, and oilseed crops.

The map units that make up *prime farmland* (fig. 5) and *additional farmland of statewide importance*, and the acreage of each, are listed in table 5. This list does not constitute a recommendation for a particular land use. The location of each map unit is shown on the detailed soil maps at the back of this publication. The soil qualities that affect use and management are described in the section "Detailed Soil Map Units."

Prime Farmland

Prime farmland, as defined by the U. S. Department of Agriculture, is the land that is best suited to producing food, feed, forage, fiber, and oilseed crops. It has adequate soil quality, growing season, and moisture supply to economically produce sustained high crop yields if acceptable farming methods are used. Prime farmland produces the highest yields with minimal inputs of energy and money, and farming it results in the least damage to the environment. Prime farmland is of major importance in satisfying the nation's short- and long-range needs for food and fiber. The supply of high quality farmland is limited, and the U.S. Department of Agriculture recognizes that all levels of government, as well as individuals, must encourage and facilitate the use of prime farmland with wisdom and foresight.

Prime farmland is either currently used for producing food or fiber or is available for this use. Urban or built-up land, water areas, or areas used for other purposes that preclude later use of the soils for farmland are not included. Urban and built-up land is any contiguous unit of land of 10 acres or more that is used for residences, industrial sites, commercial sites, construction sites, institutional sites, public administrative sites, railroad yards, small parks, cemeteries, airports, golf courses, sanitary landfills, sewage treatment plants, water-control structures and spillways, shooting ranges, and so forth.

Prime farmland usually has an adequate and dependable supply of moisture from precipitation or irrigation. It has favorable temperature and growing season and acceptable soil reaction. It has few or no rocks and is permeable to water and air. Prime farmland is not excessively erodible or saturated with water for long periods and is not flooded during the growing season. Slope ranges mainly from 0 to 8 percent. Further information on the criteria for prime farmland is available at the local office of the Soil Conservation Service.

In Burke County, about 240,000 acres, or about 45 percent of the survey area, meets the soil requirements for prime farmland (see table 5). Areas are scattered throughout the county, but most are in map units 3, 4, 6, and 7 on the general soil map.

Additional Farmland of Statewide Importance

A recent trend in land use in some parts of the county has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on additional farmland of statewide importance.

In Burke County, about 157,000 acres is additional farmland of statewide importance (see table 5). This farmland consists of soils that are important to the agricultural resource base in the county but that do not meet the requirements for prime farmland. These soils are more erodible, droughty, seasonally wet, difficult to cultivate, and usually are less productive than prime farmland soils. The slope is 8 percent or less.

Figure 5.—Corn under irrigation on Tifton loamy sand, 2 to 5 percent slopes. This soil is prime farmland, and it is well suited to the commonly grown cultivated crops.

Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and suitabilities of natural resources and the environment. Also, it can help avoid soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavior characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; for woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreation facilities; and for wildlife habitat. It can be used to identify the suitabilities and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where wetness or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

Crops and Pasture

James E. Helm, conservation agronomist, Soil Conservation Service, helped prepare this section.

General management needed for crops and pasture is suggested in this section. The crops or pasture plants best suited to the soils are identified; the system of land capability classification used by the Soil Conservation Service is explained; and the estimated yields of the main crops and hay and pasture plants are listed for each soil.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under "Detailed Soil Map Units." Specific information can be obtained from the local office of the Soil Conservation Service or the Cooperative Extension Service.

Erosion control is a major concern on most of the soils used for farming in Burke County. If slope is more than 2 percent, erosion is a hazard. Carnegie, Cowarts, Dothan, Esto, Faceville, Nankin, Orangeburg, and Tifton soils, for example, have slopes of predominantly 2 to 8 percent. The very gently sloping Carnegie soils, the gently sloping Cowarts, Esto, Nankin, and Tifton soils, the gently sloping and strongly sloping Faceville soils, and the gently sloping to moderately steep Orangeburg soils are eroded. The surface layer of these soils is a mixture of the original surface soil and the upper part of the subsoil. These soils also have galled spots and gullies.

Loss of the surface layer through erosion is damaging for two reasons. First, productivity is reduced as the surface layer is lost and part of the subsoil is incorporated into the plow layer. Loss of the surface layer is especially damaging on soils that have a clayey subsoil, such as Carnegie, Esto, Faceville, and Nankin soils. Second, soil erosion on farmland results in sedimentation of streams. Control of erosion minimizes the pollution of streams by sediment and improves the quality of water for municipal use, for recreation, and for fish and wildlife.

In many sloping fields, tilling or preparing a good seedbed is difficult on eroded spots left after the original, friable surface soil has eroded away. Such spots are common in areas of eroded Carnegie, Faceville, and Tifton soils.

Erosion control practices provide protective surface cover, reduce runoff, and increase infiltration. A cropping system that keeps plant cover on the soil for extended periods aids in maintaining the productive capacity of the soils. On livestock farms, which require pasture and hay, using grass forage crops in the cropping system reduces erosion on sloping land and improves tilth for the following crop.

Using conservation tillage systems that leave adequate amounts of crop residue on the surface increases infiltration and reduces runoff and erosion.

This practice can be used on most soils in Burke County. No-till planting of corn, grain sorghum, and soybeans reduces erosion on sloping land and can be used on most soils in Burke County. No-till planting is important in the county, and the acreage of land on which this system is used is increasing.

Terraces and diversions reduce the length of slope, reduce runoff, and control erosion. They are most practical on well drained soils that have smooth and convex slopes. Carnegie, Dothan, Faceville, Orangeburg, and Tifton soils are suitable for terraces.

Contouring and contour stripcropping are effective erosion control practices. These practices are most effective on soils that have smooth, uniform slopes, including most areas of the very gently sloping or gently sloping Carnegie, Cowarts, Dothan, Esto, Faceville, Nankin, Orangeburg, and Tifton soils.

Soil blowing is a concern on the sandy Bonifay, Kureb, Lakeland, and Troup soils. It can damage young plants if the soils are dry and have little surface mulch. Maintaining plant cover or surface mulch or keeping the surface rough through proper tillage minimizes soil blowing.

Information on the design of erosion control practices for each kind of soil is available from local offices of the Soil Conservation Service.

Drainage is a major management need on most of the seasonally wet soils used for crops and pasture in Burke County. Some soils are so wet that production of crops common in the area is generally not possible. These are the poorly drained Bibb, Chastain, Grady, Herod, Meggett, Muckalee, Osier, Rains, and Rembert soils. Much of this land is wooded.

Unless artifically drained, the somewhat poorly drained soils are so wet that crops are damaged during most years. In this category are the Ocilla and Tawcaw soils. Chipley, Clarendon, and Dogue soils are moderately well drained, but they need artifical drainage in most years, if farmed.

The design of both surface and subsurface drainage systems varies with the kind of soil. A combination of surface drainage and tile drainage is needed in most areas of poorly drained soils before they can be used for row cropping. Drains have to be more closely spaced in slowly permeable soils than in more permeable soils. Tile drainage is slow in Chastain, Meggett, and Rembert soils. Finding adequate outlets for tile drainage systems is difficult in many areas of Grady, Rains, and Rembert soils.

Soil fertility is naturally low in most soils in Burke County. However, these soils respond well to fertilization and other good management. The soils in depressions on uplands, along drainageways, and on flood plains, such as Bibb, Chastain, Grady, Herod, Meggett, Muckalee, Osier, Rains, and Rembert soils, commonly have more organic matter, and therefore are higher in soil fertility, than most better drained soils on uplands or higher lying stream terraces.

Reaction in the soils of Burke County is naturally acid. If the soils used for cultivated crops and pasture have never been limed, applications of ground limestone are needed to raise the pH level sufficiently for good growth of legumes and other crops that grow on nearly neutral soils. Available phosphorus and potash levels are naturally low in most of these soils. On all soils, additions of lime and fertilizer should be based on the results of soil tests, on the needs of the crop, and on the desired level of yields. The Cooperative Extension Service can help in determining the kinds and amounts of fertilizer and lime to apply.

Soil tilth is an important factor in the germination of seeds and the infiltration of water into the soil. Soils with good tilth are granular and porous.

Most of the soils used for crops in Burke County have a surface layer of loamy sand or sandy loam that is low in content of organic matter. Tilth is generally good, except on the eroded Carnegie, Cowarts, Esto, Faceville, Nankin, Orangeburg, and Tifton soils, in which the subsoil is exposed. Regular additions of crop residue, manure, and other organic material help to improve or maintain tilth.

Fall plowing is not a good practice unless a cover crop is used. Much of the cropland in Burke County consists of soils that are subject to damaging erosion if plowed in the fall.

Crops and pasture. The crops commonly grown in Burke County include corn, grain sorghum, soybeans, cotton, and peanuts. Wheat, rye, and oats are the common small grains. Improved bermudagrass and bahiagrass are common pasture grasses.

The moderately well drained and well drained, loamy or clayey soils in Burke County are well suited to improved bermudagrass and bahiagrass. Moderately well drained Clarendon and Dogue soils and well drained Dothan, Orangeburg, and Tifton soils are representative of these soils. Excessively drained Lakeland soils and well drained Bonifay and Troup soils are representative of those soils that have low available water capacity and are best suited to improved bermudagrass. Somewhat poorly drained Ocilla soils and poorly drained Rains soils are representative of those soils that are seasonally wet and are best suited to bahiagrass.

Special crops grown commercially in Burke County are vegetables and tree fruits. Pecans are also important.

Soils that have good natural drainage and that warm up early in spring are especially well suited to many vegetables and small fruits. In Burke County, these are the Carnegie, Cowarts, Dothan, Faceville, Orangeburg, and Tifton soils. If irrigated, Bonifay, Fuquay, Lakeland, Lucy, and Troup soils are also well suited to vegetables and small fruits. Crops can generally be planted and harvested earlier on these soils than on the other soils in Burke County.

If excess water is removed, the somewhat poorly drained Ocilla and Tawcaw soils and the moderately well drained Chipley, Clarendon, and Dogue soils are well suited to a wide range of vegetables.

Most of the well drained soils in Burke County are suited to orchards and nursery plants. Soils in low landscape positions where frost is frequent and air drainage is poor generally are poorly suited to early vegetables, small fruits, and orchards. Latest information and suggestions for growing special crops can be obtained from local offices of the Cooperative Extension Service and the Soil Conservation Service.

Yields Per Acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 6. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations are also considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green-manure crops; and harvesting that insures the smallest possible loss. Fertilizer needs of specific crops on specific soils can be determined by soil tests. General fertilizer recommendations for field crops are also available (*3*).

For yields of irrigated crops, it is assumed that the irrigation system is adapted to the soils and to the crops grown, that good quality irrigation water is uniformly applied as needed, and that tillage is kept to a minimum.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in table 6 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Soil Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The grouping does not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor does it consider possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for woodland and for engineering purposes.

In the capability system, soils are generally grouped at three levels: capability class, subclass, and unit. Only class and subclass are used in this survey. These levels are defined in the following paragraphs.

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

Class I soils have few limitations that restrict their use.

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

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

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

Class V soils are not likely to erode but have other limitations, impractical to remove, that limit their use.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production. No class VIII soils are in this survey area.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e, w,* or *s,* to the class numeral, for example, IIe. The letter *e* shows that the main limitation is risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); and *s* shows that the soil is limited mainly because it is droughty.

In class I there are no subclasses because the soils of this class have few limitations. Class V contains only the subclass indicated by *w* because the soils in class V are subject to little or no erosion. They have other limitations that restrict their use to pasture, woodland, wildlife habitat, or recreation.

The acreage of soils in each capability class and subclass is shown in table 7. The capability classification of each map unit is given in the section "Detailed Soil Map Units."

Woodland Management and Productivity

Gary L. Tyre, forester, Soil Conservation Service, helped prepare this section.

Burke County is one of the leading Georgia counties in acres of commercial forest land. According to preliminary statistics released as a result of the Fifth Forest Survey, more than 281,000 acres of Burke County is used as commercial forest land (*8*). Thirty-seven percent of this land is in pure pine stands of the longleaf-slash-loblolly-shortleaf types. Another twelve percent is in the oak-pine type, and an additional thirty-two percent is in the hardwood types--oak-hickory or oak-gum-cypress. These forest types were significant in the virgin forest of Burke County, when they made up even more of the acreage in the county. The hardwood and mixed forests predominated. Recent information suggests that acreage in forest land is decreasing. However, acreage of the more valuable commercial species appears stable, and most of the reductions are occurring in the less valuable hardwood species.

As in other Georgia counties, many of the forests are small and privately owned. More than 77,000 acres, or twenty-seven percent, is owned commercially. The small, private holdings have both the most significant management problems and the greatest potential for increases in production.

Forests in this county are found on a variety of soils. Large parts of the county are on Dothan, Tifton, Grady, and Osier soils. Well drained Dothan and Tifton soils on ridgetops and hillsides are very productive and are recommended for managing pine species. Poorly drained Grady and Osier soils on flood plains and in depressions have severe limitations for equipment operation and a low rate of seedling survival because of wetness. Such restrictions can be moderated by adequate water management. Cowarts, Fuquay, and Rains soils are also commonly associated with one another. The most productive of these soils, the Rains, has wetness-related limitations to seedling survival and equipment operation if surface drainage is not used. Fuquay soils have moderate limitations caused by sandiness and generally are less productive than Cowarts soils. All three soils are best suited to pine.

Among the most commonly forested soils in the county are Faceville and Orangeburg soils. Although neither has significant management limitations, Orangeburg soils are the more productive.

Troup and Lucy soils are extensive in Burke County. These soils are moderately productive. Their sandy nature is a limitation to equipment operation and seedling survival.

Soils that commonly occur on flood plains include the Herod and Muckalee soils. Although very productive, these soils are subject to severe equipment limitations and high seedling mortality unless measures are used to overcome the seasonal wetness of these soils.

Information in this section is provided to explain soil-tree growth relationships in Burke County. Used carefully, this information can provide a useful tool for planning conservation practices and for making investment and management decisions.

Table 8 can be used by woodland owners or forest managers in planning the use of soils for wood crops. Only those soils suitable for wood crops are listed. The table lists the ordination (woodland suitability) symbol for each soil. Soils assigned the same ordination symbol require the same general management and have about the same potential productivity.

The first part of the *ordination symbol*, a number, indicates the potential productivity of the soils for important trees. The number 1 indicates very high productivity; 2, high; 3, moderately high; 4, moderate; and 5, low. The second part of the symbol, a letter, indicates the major kind of soil limitation. The letter *w* indicates excessive water in or on the soil, and the letter *s* indicates sandy texture. The letter *o* indicates that limitations or restrictions are insignificant. If a soil has more than one limitation, the priority is: w, s.

In table 8, *slight, moderate,* and *severe* indicate the degree of the major soil limitations to be considered in management.

Ratings of the *erosion hazard* indicate the risk of loss of soil in well managed woodland. The risk is *slight* if the expected soil loss is small, *moderate* if measures are needed to control erosion during logging and road construction, and *severe* if intensive management or special equipment and methods are needed to prevent excessive loss of soil.

Ratings of *equipment limitation* reflect the characteristics and conditions of the soil that restrict use of the equipment generally needed in woodland management or harvesting. A rating of *slight* indicates that use of equipment is not limited to a particular kind of equipment or time of year; *moderate* indicates a short seasonal limitation or a need for some modification in management or in equipment; and *severe* indicates a seasonal limitation, a need for special equipment or management, or a hazard in the use of equipment.

Seedling mortality ratings indicate the degree to which the soil affects the mortality of tree seedlings. Plant competition is not considered in the ratings. The ratings apply to seedlings from good stock that are properly planted during a period of sufficient rainfall. A rating of *slight* indicates that the expected mortality is less than 25 percent; *moderate*, 25 to 50 percent; and *severe*, more than 50 percent.

The *potential productivity* of merchantable or *common trees* on a soil is expressed as a *site index*. This index is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that woodland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability.

Trees to plant are those that are suited to the soils and to commercial wood production.

Recreation

Burke County provides many opportunities for recreation. Fishing and boating are available on the Savannah River, the Ogeechee River, Brier Creek, and other large creeks, as well as on farm ponds, lakes, and smaller streams. The flood plains and stream terraces near these water areas are well suited to nature study, hunting, and similar activities. The well drained, nearly level Dothan, Faceville, and Orangeburg soils commonly are on ridgetops and are well suited to playgrounds. If necessary, the very gently sloping soils can be leveled and smoothed for ballfields and tennis courts. The well drained, nearly level to gently sloping Dothan, Faceville, Orangeburg, and Tifton soils are well suited to campsites and picnic areas. Most of the well drained soils are well suited to parks, paths and trails, golf courses, and nature study areas.

The soils of the survey area are rated in table 9 according to limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewerlines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation are also important. Soils subject to flooding are limited for recreation use by the duration and intensity of flooding and the season when flooding occurs. In planning recreation facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In table 9, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or by a combination of these measures.

The information in table 9 can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 12 and interpretations for dwellings without basements and for local roads and streets in table 11.

Camp areas require site preparation such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have mild slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing campsites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes or stones or boulders that increase the cost of shaping sites or of building access roads and parking areas.

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is free of stones and boulders, is firm after rains, and is not dusty when dry. If grading is needed, the depth of the soil over bedrock or a hardpan should be considered.

Paths and trails for hiking and horseback riding should require little or no cutting and filling. The best soils are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once a year during the period of use. They have moderate slopes and few or no stones or boulders on the surface.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. The best soils for use as golf fairways are firm when wet, are not dusty when dry, and are not subject to prolonged flooding during the period of use. They have moderate slopes and no stones or boulders on the surface. The suitability of the soil for tees or greens is not considered in rating the soils.

Wildlife Habitat

Louis Justice, biologist, and Larry Tanner, resource conservationist, Soil Conservation Service, helped prepare this section.

Burke County is largely rural, and its predominantly cropland and woodland environment provides fair wildlife habitat. Fish and wildlife are important for recreation and contribute substantially to the local economy.

About 58 percent of the survey area is forested, and nearly 40 percent is in row crops and pasture. About 50 percent of the forests are hardwoods—the cypress-gum-oaks community of the lowland and river swamp hardwoods, the gum-cypress community of the upland depressions, the oak-hickory community of the upland hardwoods, the loblolly-red-sweet bays of Carolina bays and bay swamps, and the lowland evergreen hardwoods. Thirty-three percent or more of the forests are pine, and 17 percent are mixed—longleaf-dwarf oaks of the dry pine barrens, loblolly-shortleaf-persimmons of pine plantations, and loblolly-slash-blackgum-oaks of the typical pine-deciduous hardwood stands.

Major plant species of importance to terrestrial wildlife include greenbrier, bush and annual lespedezas, panicgrass, croton, ragweed, partridgepea, paspalum, tickclover, and sumac. Overstory and understory woodland species of importance are sweetgum, blackgum, cypress, pine, oak, hickory, holly, blackberry, elderberry, hackberry, and maple. Domestic species of importance to wildlife include peanut, corn, soybeans, bahiagrass, and small grains.

Cropland and pastureland, interspersed with pine plantations and hardwood forests, provide habitat for white-tailed deer, mourning dove, raccoon, gray squirrel, opossum, fox, and other wildlife. Rabbit and bobwhite quail populations are high in areas that have suitable food and cover.

Unmanaged pasture, old fields, young pine plantations, and thinned woodlands produce numerous native woody and herbaceous plants that provide food and cover for white-tailed deer, rabbit, fox, quail, and other wildlife species.

Land use trends toward extensive clearing of woodland for row crops and the introduction of irrigation are affecting fish and wildlife populations. Removal of crop residue from fields, removal of hedgerows and odd areas, and increased siltation problems are elements of this land use trend that have an adverse effect on fish and wildlife habitat. Many of the chemicals used to increase agricultural production harm small birds and animals. The most seriously affected game species is quail.

Wildlife habitat can be improved by restoring hedgerows, field borders, windbreaks, and odd areas in fields. The capability of pine plantations in supporting wildlife can be improved by retaining mast-producing trees such as oaks wherever possible.

Wetland habitats support a variety of furbearers, including otter, beaver, bobcat, raccoon, and waterfowl. The best wetland habitat is found in the areas of hardwoods on the bottom lands along the Savannah and Ogeechee Rivers, Brier Creek, and within about 35 Carolina bays and numerous beaver ponds. Burke County has about 80,200 acres of forested wetland, about 450 small ponds, and about 142 miles of streams.

Important freshwater sport fish in these counties include largemouth bass, crappie, channel catfish, bluegill, and redear sunfish. Sport fish species that migrate up rivers from the sea to breed in fresh waters are striped bass and shad.

Because of the fragile habitat requirements of fish, special efforts are needed to restrict both point and non-point sources of water pollution in Burke County.

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

In table 10, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

The elements of wildlife habitat are described in the following paragraphs.

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, wheat, oats, and barley.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flood hazard, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are bahiagrass, lovegrass, lespedezas, clover, and alfalfa.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are bluestem, lespedezas, goldenrod, partridgepea, beggarweed, threeawn grasses, and composites.

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, the available water capacity, and wetness. Examples of these plants are oak, poplar, cherry, sweetgum, hawthorn, dogwood, hickory, blackberry, and blueberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are plum, autumn-olive, and crabapple.

Coniferous plants furnish browse and seeds. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine and cedar.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, wild millet, wildrice, rushes, sedges, and reeds.

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are marshes, waterfowl feeding areas, and ponds.

The habitat for various kinds of wildlife is described in the following paragraphs.

Habitat for openland wildlife consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. The wildlife attracted to these areas include bobwhite quail, pheasant, meadowlark, field sparrow, cottontail, and red fox.

Habitat for woodland wildlife consists of areas of deciduous plants or coniferous plants or both and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include wild turkey, woodcock, thrushes, woodpeckers, squirrels, fox, raccoon, deer, and bear.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, geese, herons, shore birds, and beaver.

Engineering

Cecil N. Martin, assistant state conservation engineer, and Walker Carter, Jr., agricultural engineer, Soil Conservation Service, assisted in preparing this section.

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. The ratings are given in the following tables: Building site development, Sanitary facilities, Construction materials, and Water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the "Soil Properties" section.

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations need to be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kind of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to (1) evaluate the potential of areas for residential, commercial, industrial, and recreation uses; (2) make preliminary estimates of construction conditions; (3) evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; (4) evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; (5)

plan detailed onsite investigations of soils and geology; (6) locate potential sources of gravel, sand, earthfill, and topsoil; (7) plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and (8) predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

Building Site Development

Table 11 shows the degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by soil texture and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and the depth to the water table.

Dwellings and small commercial buildings are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, and shrink-swell potential can cause the movement of footings. A high water table and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 to 6 feet are not considered.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material, a base of gravel, crushed rock, or stabilized soil material, and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, and depth to a high water table affect the traffic supporting capacity.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, a high water table, and the available water capacity in the upper 40 inches affect plant growth. Flooding, wetness, slope, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established.

Sanitary Facilities

Table 12 shows the degree and the kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

Table 12 also shows the suitability of the soils for use as daily cover for landfills. A rating of *good* indicates that soil properties and site features are favorable for the use and good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, a high water table, and flooding affect absorption of the effluent.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel is less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to filter the effluent effectively. Many local ordinances require that this material be of a certain thickness.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water.

Table 12 gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, a high water table, and flooding.

Excessive seepage due to rapid permeability of the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope can cause construction problems.

Sanitary landfills are areas where solid waste is disposed of by burying it in soil. There are two types of landfill—trench and area. In a trench landfill, the waste is placed in a trench. It is spread, compacted, and covered daily with a thin layer of soil excavated at the site. In an area landfill, the waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site.

Both types of landfill must be able to bear heavy vehicular traffic. Both types involve a risk of ground water pollution. Ease of excavation and revegetation needs to be considered.

The ratings in table 12 are based on soil properties, site features, and observed performance of the soils. Permeability, a high water table, slope, and flooding affect both types of landfill. Texture affects trench type landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area type sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

Soil texture, wetness, coarse fragments, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils that are free of large stones or excess gravel are the best cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread; sandy soils are subject to soil blowing.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over the water table to permit revegetation. The soil material used as final cover for a landfill should be suitable for plants. The surface layer generally has the best workability, more organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

Construction Materials

Table 13 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good, fair,* or *poor* as a source of roadfill and topsoil. They are rated as a probable or improbable source of sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing engineering index properties provides detailed information about each soil layer. This information can help determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by a high water table and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel or both. They have at least 5 feet of suitable material, low shrink-swell potential, few cobbles and stones, and slopes of 15 percent or less. Depth to the water table is more than 3 feet. Soils rated *fair* are more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have moderate shrink-swell potential or slopes of 15 to 25 percent. Depth to the water table is 1 to 3 feet. Soils rated *poor* have a plasticity index of more than 10 or a high shrink-swell potential. They are wet, and the depth to the water table is less than 1 foot. They may have layers of suitable material, but the material is less than 3 feet thick.

Sand and gravel are natural aggregates suitable for commercial use with a minimum of processing. Sand and gravel are used in many kinds of construction. Specifications for each use vary widely. In table 13, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil) and the thickness of suitable material. Acidity and stratification are given in the soil series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is up to 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope and a water table.

Soils rated *good* have friable loamy material to a depth of at least 40 inches. They are free of stones and cobbles, have little or no gravel, and have slopes of less than 8 percent. They are low in content of soluble salts, are naturally fertile or respond well to fertilizer, and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, soils that have an appreciable amount of gravel, stones, or soluble salts, or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have a large amount of gravel, stones, or soluble salts, have slopes of more than 15 percent, or have a seasonal water table at or near the surface.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

Water Management

Table 14 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas and for embankments, dikes, and levees. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives for each soil the restrictive features that affect drainage, irrigation, terraces and diversions, and grassed waterways.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. A high water table affects the amount of usable material. It also affects trafficability.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; and susceptibility to flooding.

Excavating and grading and the stability of ditchbanks are affected by slope and the hazard of cutbanks caving. Availability of drainage outlets is not considered in the ratings.

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to the water table, the need for drainage, flooding, available water capacity, permeability, erosion hazard, and slope. The performance of a system is affected by soil reaction.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to reduce erosion and conserve moisture by intercepting runoff. Slope and wetness affect the construction of terraces and diversions. Restricted permeability adversely affects maintenance.

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Wetness and slope affect the construction of grassed waterways. Low available water capacity, restricted rooting depth, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features, listed in tables, are explained on the following pages.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics. These results are reported in table 22.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas, (*11*). Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help characterize key soils.

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classifications, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

Engineering Index Properties

Table 15 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under "Soil Series and Their Morphology."

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is as much as 15 percent, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system (*2*) and the system adopted by the American Association of State Highway and Transportation Officials (*1*).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, SP-SM.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest. The AASHTO classification for soils tested, with group index numbers in parentheses, is given in table 22.

Rock fragments larger than 3 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of grain-size distribution, liquid limit, and plasticity index are rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

Physical and Chemical Properties

Table 16 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each major soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They determine the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, and plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earth-moving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3 bar moisture tension. Weight is determined after drying the soil at 105 degrees C. In this table, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability refers to the ability of a soil to transmit water or air. The estimates indicate the rate of downward movement of water when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems, septic tank absorption fields, and construction where the rate of water movement under saturated conditions affects behavior.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each major soil layer. The capacity varies, depending on soil properties that affect the retention of water and the depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Soil reaction is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The change is based on the soil fraction less than 2 millimeters in diameter. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; and *high*, more than 6 percent. *Very high*, greater than 9 percent, is sometimes used.

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.05 to 0.69. The higher the value the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Organic matter is the plant and animal residue in the soil at various stages of decomposition.

In table 16, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter of a soil can be maintained or increased by returning crop residue to the soil. Organic matter affects the available water capacity, infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

Soil and Water Features

Table 17 gives estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are used to estimate runoff from precipitation. Soils not protected by vegetation are assigned to one of four groups. They are grouped according to the intake of water when the soils are thoroughly wet and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a permanent high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Dual hydrologic soil groups. Some of the soils in table 17 that have a high water table are shown as being in two hydrologic groups, for example A/D or B/D. Under natural conditions these soils fit into hydrologic group D; however, by artificial methods the water table can be lowered to such a depth that the soils fit into hydrologic groups A or B. Onsite investigation is needed to determine the hydrologic group of the soil for a particular location, since there are different degrees of drainage or water table control.

Flooding, the temporary inundation of an area, is caused by overflowing streams or by runoff from adjacent slopes. Water standing for short periods after rainfall or snowmelt is not considered flooding, nor is water in swamps and marshes.

Table 17 gives the frequency and duration of flooding and the time of year when flooding is most likely.

Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, common, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions; *common* that it is likely under normal conditions; *occasional* that it occurs, on the average, no more than once in 2 years; and *frequent* that it occurs, on the average, more than once in 2 years. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, and *long* if more than 7 days. Probable dates are expressed in months; November-May, for example, means that flooding can occur during the period November through May.

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and absence of distinctive horizons that form in soils that are not subject to flooding.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. The depth to a seasonal high water table applies to undrained soils. The estimates are based mainly on the evidence of a saturated zone, namely grayish colors or mottles in the soil. Indicated in table 17 are the depth to the seasonal high water table; the kind of water table—that is, perched or apparent; and the months of the year that the water table commonly is high. A water table that is seasonally high for less than 1 month is not indicated in table 17.

An *apparent* water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. A *perched* water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Only saturated zones within a depth of about 6 feet are indicated. A plus sign preceding the range in depth indicates that the water table is above the surface of the soil. The first numeral in the range indicates how high the water rises above the surface. The second numeral indicates the depth below the surface.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors creates a severe corrosion environment. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low*, *moderate*, or *high*, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion is also expressed as *low*, *moderate*, or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

Physical, Chemical, and Mineralogical Analyses of Selected Soils

Physical, chemical, and mineral properties of representative pedons sampled in Burke County are given in tables 18, 19, 20, and 21. The data are for soils sampled at carefully selected sites. The pedons are typical of the series and are described in the section "Soil Series and Their Morphology." Soil samples were analyzed by the National Soil Survey Laboratory, Lincoln, Nebraska.

Most determinations, except those for grain-size analysis and bulk density, were made on soil material smaller than 2 millimeters in diameter. Measurements reported as percent or quantity of unit weight were calculated on an ovendry basis. The methods used in obtaining the data are indicated in the list that follows. The codes in parentheses refer to published methods (*12*).

Sand—(0.05-2.0 mm fraction) weight percentages of materials less than 2 mm (3A1).
Silt—(0.002-0.05 mm fraction) pipette extraction, weight percentages of all materials less than 2 mm (3A1).
Clay—(fraction less than 0.002 mm) pipette extraction, weight percentages of materials less than 2 mm (3A1).
Water retained—pressure extraction, percentage of ovendry weight of less than 2 mm material; 1/3 or 1/10 (3/10) bar (4B1), 15 bars (4B2).
Water-retention difference—between 1/3 bar and 15 bars for less than 2 mm material (4C1).
Moist bulk density—of less than 2 mm material, saran-coated clods (4A1).
Linear extensibility—change in clod dimension based on less than 2 mm material (4D).
Organic carbon—dichromate, ferric sulfate titration (6A1a).
Total nitrogen—semimicro Kjeldahl (6B2a).
Extractable cations—ammonium acetate pH 7.0, uncorrected; calcium (6N2e), magnesium (6O2d), sodium (6P2b), potassium (6Q2b).
Extractable acidity—barium chloride-triethanolamine II (6H2a).
Cation-exchange capacity—sum of cations (5A3a).
Cation-exchange capacity—ammonium acetate, pH 7.0 (5A8b).
Base saturation—ammonium acetate, pH 7.0 (5C1).
Base saturation—sum of cations, TEA, pH 8.2 (5C3).
Reaction (pH)—1:1 water dilution (8C1a).
Reaction (pH)—calcium chloride (8C1e).
Aluminum—potassium chloride extraction (6G9A).
Sesquioxides—dithionate-citrate extract; iron (6C2b), aluminum (6G7a).
Ratio to total clay—cation-exchange capacity and 15-bar water retention (8D1).
Cation-exchange capacity—sum of bases plus aluminum (5A3b).
Aluminum saturation—bases plus aluminum (5G1).
Potassium—atomic absorption (6Q3).
Iron—atomic absorption (6C7a).
Mineralogy—X-ray diffraction; thin film on glass (7A2i).
Mineralogy—optical analysis; grain mount, epoxide based (7B1a).

Engineering Index Test Data

Table 22 shows laboratory test data for several pedons sampled at carefully selected sites in the survey area. The pedons are typical of the series and are described in the section "Soil Series and Their Morphology." The soil samples were tested by the Office of Materials and Research, Georgia Department of Transportation.

The testing methods generally are those of the American Association of State Highway and Transportation Officials (AASHTO) or the American Society for Testing and Materials (ASTM).

The tests and methods are: AASHTO classification—M 145 (AASHTO), D 3282 (ASTM); Unified classification—D 2487 (ASTM); Mechanical analysis—T 88 (AASHTO), D 2217 (ASTM); Liquid limit—T 89 (AASHTO), D 423 (ASTM); Plasticity index—T 90 (AASHTO), D 424 (ASTM); Moisture density, Method A—T 99 (AASHTO), D 698 (ASTM); Volume change (Abercrombie)—Georgia Highway Standard.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (*13*). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 23 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Ten soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Entisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Aquent (*Aqu*, meaning water, plus *ent*, from Entisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Fluvaquents (*Fluv*, meaning flood plains, plus *aquent*, the suborder of the Entisols that have an aquic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Fluvaquents.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Mostly the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineral content, temperature regime, depth of the root zone, consistence, moisture equivalent, slope, and permanent cracks. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is coarse-loamy, siliceous, acid, thermic Typic Fluvaquents.

SERIES. The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. The texture of the surface layer or of the substratum can differ within a series.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. The descriptions are arranged in alphabetic order.

Characteristics of the soil and the material in which it formed are identified for each series. The soil is compared with similar soils and with nearby soils of other series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the Soil Survey Manual (*10*). Many of the technical terms used in the descriptions are defined in Soil Taxonomy (*13*). Unless otherwise stated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section "Detailed Soil Map Units."

Bibb Series

The Bibb series consists of poorly drained, moderately permeable soils that formed in loamy alluvial sediment on flood plains. The water table is at a depth of 0.5 foot to 1.5 feet from late fall to early spring. Slope is 0 to 2 percent.

Bibb soils are geographically associated mainly with Osier and Rains soils. Osier soils are mainly sandy throughout. Rains soils are in a fine-loamy family and are on stream terraces.

Typical pedon of Bibb sandy loam, in an area of Osier and Bibb soils; 0.6 mile west of the Southeast Georgia

Branch Experiment Station headquarters, near the western boundary:

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) sandy loam; weak fine granular structure; very friable; many very fine and fine roots; few very fine and fine pores; strongly acid; clear wavy boundary.

Ag—8 to 14 inches; light gray (10YR 7/2) loamy sand; single grained; loose; few very fine and fine roots; strongly acid; abrupt irregular boundary.

Cg1—14 to 21 inches; light brownish gray (10YR 6/2) sandy loam; common medium distinct yellowish brown (10YR 5/6) mottles; massive; friable; few fine roots; few medium pores; strongly acid; clear wavy boundary.

Cg2—21 to 29 inches; light gray (10YR 6/l) sandy loam; common medium prominent red (2.5YR 4/6) mottles and common medium distinct yellowish brown (10YR 5/6) mottles; massive, except that the brown areas are moderate medium subangular blocky; friable; few fine and medium roots; few fine pores; very strongly acid; clear wavy boundary.

Cg3—29 to 55 inches; light gray (10YR 6/1) sandy loam; common medium and coarse distinct yellowish brown (10YR 5/6) mottles and common medium prominent red (2.5YR 5/8) mottles primarily in ped interiors; massive; friable; few fine roots; common medium pores primarily in gray area; thin patchy clay films; very strongly acid; clear irregular boundary.

Cg4—55 to 70 inches; mottled yellowish brown (10YR 5/6) and red (2.5YR 5/8) sandy loam that has vertical areas of light gray (10YR 6/1); massive; friable; few fine roots; common medium pores; very strongly acid.

Thickness of the sediment ranges to 65 inches or more. The soil is strongly acid or very strongly acid throughout except for the surface layer in limed areas.

The A horizon is 12 to 18 inches thick. The Ap horizon has hue of 10YR, value of 2 to 4, and chroma of 1 or 2. The Ag horizon has hue of 10YR, value of 4 to 7, and chroma of 1 or 2. Some pedons have mottles in hue of 7.5YR, value of 5 to 8, and chroma of 4 or 6; or in hue of 10YR, value of 5 to 8, and chroma of 3, 4, or 6. The Ag horizon is loamy sand or sandy loam.

The Cg horizon has hue of 10YR, value of 4 to 7, and chroma of 1 or 2. It has few to many fine or medium reddish, brownish, and yellowish mottles. In some pedons, the lower part does not have a dominant gray color but is mottled reddish, brownish, yellowish, and gray. This horizon is loamy fine sand, sandy loam, or loam.

Bonifay Series

The Bonifay series consists of well drained soils that have a moderately slowly permeable subsoil. These soils formed in sandy and loamy marine sediment on uplands. Slope is 1 to 12 percent.

Bonifay soils are geographically associated mainly with Fuquay, Lakeland, and Troup soils. Fuquay soils are arenic. Lakeland soils are sandy throughout. Troup soils contain less than 5 percent plinthite within a depth of 60 inches.

Typical pedon of Bonifay fine sand, 1 to 5 percent slopes; 3.5 miles east on Brighams Landing Road from Girard, 1.5 miles south on River Road, 0.2 mile north of road:

A—0 to 8 inches; grayish brown (10YR 5/2) fine sand; weak fine granular structure; very friable; common very fine and fine roots; very strongly acid; clear smooth boundary.

E1—8 to 36 inches; light yellowish brown (10YR 6/4) fine sand; single grained; loose; few very fine roots; very strongly acid; gradual wavy boundary.

E2—36 to 50 inches; brownish yellow (10YR 6/6) fine sand; single grained; loose; few very fine roots; very strongly acid; clear wavy boundary.

Bt1—50 to 54 inches; brownish yellow (10YR 6/6) sandy loam; weak medium subangular blocky structure; very friable; strongly acid; clear wavy boundary.

Bt2—54 to 58 inches; brownish yellow (10YR 6/8) sandy clay loam; common medium distinct strong brown (7.5YR 5/6) mottles and common medium prominent red (2.5YR 4/8) mottles; moderate medium subangular blocky structure; friable; 3 percent plinthite; very strongly acid; gradual wavy boundary.

Btv—58 to 80 inches; mottled red (2.5YR 4/8), brownish yellow (10YR 6/6), strong brown (7.5YR 5/6), and light brownish gray (10YR 6/2) sandy clay loam; moderate medium angular blocky structure; friable; thin patchy clay films on faces of peds; 8 percent platy plinthite; very strongly acid; gradual wavy boundary.

Solum thickness is 76 inches or more. The soil is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Depth to the horizon having a plinthite content of 5 percent or more is 50 to 60 inches.

The sandy epipedon is 40 to 60 inches thick.

The A horizon is 3 to 10 inches thick. It has hue of 10YR, value of 5, and chroma of 2 or 3.

The E horizon is 37 to 52 inches thick. It has hue of 10YR, value of 6, and chroma of 3, 4, or 6.

The Bt horizon has hue of 10YR, value of 5 or 6, and chroma of 6 or 8; or it has hue of 7.5YR, value of 5, and chroma of 6 or 8. It has few or common red, yellowish red, and strong brown mottles. The lower part of the Bt horizon is reticulately mottled in red, brown, yellow, and gray. This horizon is sandy loam or sandy clay loam.

Carnegie Series

The Carnegie series consists of well drained soils that have moderate permeability in the upper part of the subsoil and moderately slow permeability in the lower part. These soils formed in loamy and clayey marine sediment on uplands. Slope is 3 to 8 percent.

Carnegie soils are geographically associated with Cowarts, Dothan, and Tifton soils. Cowarts soils have a thinner solum, are in a fine-loamy family, and are less than 5 percent plinthite. Dothan and Tifton soils are in a fine-loamy family and have 5 percent or more plinthite below a depth of 30 to 50 inches.

Typical pedon of Carnegie sandy loam, 5 to 8 percent slopes, eroded; 0.3 mile west of Rocky Creek on Georgia Highway 80, 1.1 miles south on field road, 200 feet west of road:

Apc—0 to 4 inches; brown (10YR 4/3) sandy loam; weak fine granular structure; very friable; many fine roots; 5 percent nodules of ironstone 0.12 to 0.50 inch in diameter; strongly acid; clear wavy boundary.

Btc—4 to 10 inches; strong brown (7.5YR 5/6) sandy clay loam; moderate medium subangular blocky structure; friable; common fine roots in upper part; patchy clay films on faces of peds; 8 percent nodules of ironstone; very strongly acid; gradual wavy boundary.

Bt—10 to 18 inches; strong brown (7.5YR 5/6) sandy clay; common medium distinct yellowish red (5YR 5/8) and brownish yellow (10YR 6/6) mottles; moderate medium subangular blocky structure; firm; few fine roots; thin patchy clay films on faces of peds; few nodules of ironstone; very strongly acid; gradual wavy boundary.

Btv1—18 to 35 inches; mottled strong brown (7.5YR 5/6) red (2.5YR 4/6), brownish yellow (10YR 6/6), and yellowish red (5YR 5/6) sandy clay; moderate medium subangular blocky structure; firm; patchy clay films on faces of peds; about 10 percent nodular plinthite; very strongly acid; gradual wavy boundary.

Btv2—35 to 62 inches; coarsely mottled strong brown (7.5YR 5/6), red (2.5YR 4/6), light gray (10YR 7/1), and yellowish brown (10YR 5/6) sandy clay; moderate medium subangular blocky structure; firm; patchy clay films on faces of peds; 8 percent plinthite; very strongly acid.

Solum thickness is 61 inches or more. The soil is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Depth to the horizon having a plinthite content of at least 5 percent is 18 to 22 inches; and between that depth and a depth of 61 inches or more, the range in plinthite content is 5 to 15 percent.

The A horizon is 4 to 6 inches thick. The Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 2 or 3. Nodules of ironstone make up 5 to 15 percent of the volume.

The Bt horizon has hue of 5YR or 7.5YR, value of 5, and chroma of 6 or 8. The middle part of the Bt horizon has many medium and coarse reddish, grayish, yellowish, or brownish mottles. The lower part of the Bt horizon is mottled reddish, grayish, yellowish, or brownish. The gray mottles are lithochromic and do not represent wetness. In some pedons nodules of ironstone make up 1 to 10 percent of the volume.

Chastain Series

The Chastain series consists of poorly drained, slowly permeable soils that formed in clayey alluvial sediment on flood plains of the Savannah River. The water table is within a depth of 1 foot from late fall to late spring. Slope is 0 to 2 percent.

Chastain soils are geographically associated with Shellbluff and Tawcaw soils. Well drained Shellbluff soils are on somewhat higher lying flood plains. Tawcaw soils are somewhat poorly drained.

Typical pedon of Chastain silty clay, in an area of Chastain-Tawcaw association; 0.62 mile north from the south tip of Red Lake along private gravel road, 0.76 mile west along graded private road, 250 feet north of road, in a swale:

A—0 to 4 inches; gray (10YR 6/1) silty clay; common medium distinct brown (7.5YR 5/4) mottles; weak fine subangular blocky structure; friable; many fine roots; strongly acid; clear smooth boundary.

Bwg1—4 to 15 inches; light brownish gray (10YR 6/2) clay; many medium distinct strong brown (7.5YR 5/6) mottles; weak fine subangular blocky structure; firm; common fine roots; strongly acid; gradual wavy boundary.

Bwg2—15 to 40 inches; light gray (10YR 6/1) silty clay; common fine prominent brown (7.5YR 4/2) mottles; weak fine subangular blocky structure; firm; very strongly acid; gradual wavy boundary.

Bwg3—40 to 62 inches; light brownish gray (10YR 6/2) clay; many fine distinct yellowish brown (10YR 5/4) mottles; weak fine subangular blocky structure, firm; many small black manganese concretions; strongly acid.

Solum thickness is 60 inches or more. The soil is strongly acid or very strongly acid.

The A horizon is 4 to 6 inches thick. It has hue of 10YR, value of 4 to 6, and chroma of 1 to 4; or it has hue of 2.5Y, value of 4 to 6, and chroma of 2 or 4. The A horizon commonly is silty clay, clay loam, or loam.

The Bwg horizon has hue of 5Y or 10YR, value of 5 or 6, and chroma of 1 or 2; or it has hue of 2.5Y, value of 5 or 6, and chroma of 2; or it is neutral and has value of 5 or 6. In some pedons, mottles range from few to many and are brownish or reddish. The Bwg horizon is clay loam, silty clay, or clay.

Chipley Series

The Chipley series consists of moderately well drained, rapidly permeable soils that formed in sandy marine sediment on uplands. The water table is at a depth of 2 to 3 feet from late fall to midspring. Slope is 0 to 2 percent.

Chipley soils are geographically associated with the Bibb, Ocilla, Osier, and Rains soils. Poorly drained Bibb and Osier soils are on flood plains; in addition, Bibb soils are in a coarse-loamy family. Somewhat poorly drained Ocilla soils are arenic. Poorly drained Rains soils are in a fine-loamy family and are on stream terraces.

Typical pedon of Chipley sand, 0 to 2 percent slopes; 0.4 mile north on U.S. Highway 25 from Brier Creek, 1.8 miles west on dirt road, 100 feet north of road:

A—0 to 6 inches; dark grayish brown (10YR 4/2) sand; single grained; loose; many fine roots; strongly acid; gradual smooth boundary.

C1—6 to 28 inches; yellowish brown (10YR 5/4) sand; single grained; loose; common fine roots; strongly acid; gradual wavy boundary.

C2—28 to 36 inches; brownish yellow (10YR 6/6) sand; common medium distinct very pale brown (10YR 7/3) mottles; single grained; loose; few fine roots; strongly acid; gradual wavy boundary.

Cg1—36 to 58 inches; mottled light gray (10YR 7/2), very pale brown (10YR 7/3), and strong brown (7.5YR 5/8) sand; single grained; loose; strongly acid; gradual wavy boundary.

Cg2—58 to 80 inches; light gray (10YR 7/1) sand; single grained; loose; strongly acid.

Thickness of the sand is 80 inches or more. The soil is strongly acid or very strongly acid throughout except for the surface layer in limed areas.

The A horizon is 5 to 9 inches thick. The A1 horizon or Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 1 or 2.

The C horizon has hue of 10YR, value of 5 to 7, and chroma of 2 to 4, 6, or 8; hue of 10YR, value of 7, and chroma of 1; or hue of 2.5Y, value of 6 to 8, and chroma of 4. The C horizon includes few or common, fine or medium mottles that are brownish, yellowish, and grayish. Some pedons have pockets of uncoated light gray sand grains in the C1 and C2 horizons.

Clarendon Series

The Clarendon series consists of moderately well drained soils. Permeability is moderate in the upper part of the subsoil and moderately slow in the lower part. These soils formed mainly in loamy marine sediment on uplands. The water table is at a depth of 1.5 to 2.5 feet in winter and early spring. Slope is 0 to 2 percent.

Clarendon soils are geographically associated with Dothan and Tifton soils. Dothan and Tifton soils are well drained; in addition, Tifton soils have more nodules of ironstone throughout.

Typical pedon of Clarendon loamy sand, 0 to 2 percent slopes; 0.4 mile east of Back Camp Creek on Georgia Highway 17, 0.9 mile north on field road, 0.4 mile east on field road, 100 feet north of road:

Ap—0 to 7 inches; grayish brown (10YR 5/2) loamy sand; weak fine granular structure; friable; many fine and very fine roots; few very fine pores; few nodules of ironstone; strongly acid; abrupt smooth boundary.

E—7 to 11 inches; pale brown (10YR 6/3) loamy sand; weak fine angular blocky and weak fine granular structure; friable; common fine and very fine roots; common very fine and medium pores; few nodules of ironstone; strongly acid; clear smooth boundary.

BE—11 to 15 inches; olive yellow (2.5Y 6/6) sandy loam; weak fine subangular blocky structure; friable; common fine roots; common fine and very fine pores; few nodules of ironstone; strongly acid; gradual wavy boundary.

Bt—15 to 24 inches; olive yellow (2.5Y 6/6) sandy clay loam; moderate medium subangular blocky structure; friable; common fine roots; common fine pores; few nodules of ironstone; thin patchy clay films; strongly acid; gradual wavy boundary.

Btv1—24 to 30 inches; brownish yellow (10YR 6/6) sandy clay loam; common medium distinct yellowish brown (10YR 5/8), gray (N 7/0), and yellowish red (5YR 5/8) mottles; moderate medium subangular blocky and angular blocky structure; friable; few fine roots; common very fine and fine pores; few nodules of ironstone; continuous clay films on faces of peds; 10 percent nodular plinthite; strongly acid; clear smooth boundary.

Btv2—30 to 60 inches; mottled gray (N 6/0), yellowish brown (10YR 5/8), and red (2.5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; few nodules of ironstone; thick continuous clay films; 6 percent nodular plinthite; strongly acid.

Solum thickness is 60 inches or more. The soil is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Depth to the horizon having plinthite content of at least 5 percent is 24 to 34 inches, and between that depth and a depth of 60 inches or more the range in plinthite content is 5 to 20 percent.

The A horizon is 6 to 14 inches thick. It has hue of 10YR, value of 4 or 5, and chroma of 2.

The E horizon has hue of 10YR, value of 5 to 7, and chroma of 3 or 4.

The BE horizon has hue of 10YR, value of 5 or 6, and chroma of 4, 6, or 8. Some pedons do not have a BE horizon.

The Bt horizon has hue of 10YR, value of 5 or 6, and chroma of 4, 6, or 8; or hue of 2.5Y, value of 6, and chroma of 4, 6, or 8; or it has hue of 2.5Y, value of 5, and chroma of 4 or 6. The Btv horizon is mainly mottled yellowish, brownish, reddish, and grayish.

Cowarts Series

The Cowarts series consists of well drained soils that have moderate permeability in the subsoil and moderately slow or slow permeability in the underlying material. Those soils formed in loamy marine sediment on uplands. Slope is 2 to 12 percent.

Cowarts soils are geographically associated with Carnegie and Esto soils. Carnegie and Esto soils are in a clayey family and have a thicker solum. In addition, Carnegie soils are made up of 5 percent or more plinthite below a depth of about 21 inches.

Typical pedon of Cowarts loamy sand, 2 to 5 percent slopes; 0.7 mile southwest on Georgia Highway 23 from the junction with Georgia Highway 24 in Sardis, Georgia; 0.6 mile northwest on county road, 25 feet east of road:

A—0 to 6 inches; brown (10YR 5/3) loamy sand; weak fine granular structure; very friable; many fine and medium roots; few nodules of ironstone; strongly acid; abrupt smooth boundary.

E—6 to 14 inches; light yellowish brown (10YR 6/4) loamy sand; weak medium granular structure; very friable; common fine roots; strongly acid; clear wavy boundary.

Bt1—14 to 22 inches; strong brown (7.5YR 5/8) sandy clay loam; moderate medium subangular blocky structure; friable; few patchy clay films on some faces of peds; few fine roots; strongly acid; gradual wavy boundary.

Bt2—22 to 32 inches; yellowish brown (10YR 5/8) sandy clay loam; common medium prominent red (2.5YR 4/8) mottles and common medium distinct brownish yellow (10YR 6/8) mottles; moderate medium subangular blocky structure; friable; thin patchy clay films on faces of peds; about 3 percent nodular plinthite; very strongly acid; gradual wavy boundary.

C1—32 to 59 inches; mottled and streaked yellowish brown (10YR 5/8), light gray (10YR 7/2), red (2.5YR 4/8), and yellowish red (5YR 4/8) sandy clay loam that has pockets of coarser and finer material; massive; firm; about 1 percent platy plinthite; very strongly acid.

C2—59 to 83 inches; red (2.5YR 4/8) sandy loam that has pockets of coarser and finer material; common medium prominent brownish yellow (10YR 6/8) and light gray (10YR 7/2) mottles; massive, friable; very strongly acid.

Solum thickness is 24 to 40 inches. The soil is strongly acid or very strongly acid throughout except for the surface layer in limed areas.

The A horizon is 4 to 10 inches thick. The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2. The Ap horizon is loamy sand or sandy loam.

The E horizon has hue of 10YR or 2.5Y, value of 6, and chroma of 4 or 6. Nodules of ironstone make up 2 to 4 percent of the volume. Some pedons do not have an E horizon.

The BE horizon has hue of 10YR or 7.5YR, value of 5, and chroma of 6 or 8. Some pedons do not have a BE horizon.

The Bt horizon has hue of 10YR or 7.5YR, value of 5, and chroma of 6 or 8. Nodules of ironstone make up 2 to 3 percent of the volume. The middle part of the Bt horizon has many medium or coarse reddish, grayish, yellowish, or brownish mottles. The gray mottles do not represent wetness. Nodules of ironstone, if present, make up 1 to 3 percent of the volume of the upper part of the Bt horizon.

The C horizon is mottled in hue of 10YR and 5YR, value of 4 to 8, and chroma of 1 to 4, 6, or 8; or it has hue of 10R, value of 4 to 6, and chroma of 1 to 4, 6, or 8; or it has hue of 7.5YR, value of 4 to 8, and chroma of 2, 4, 6 or 8; or it has hue of 2.5YR, value of 4 to 6, and chroma of 2, 4, 6 or 8. This horizon is sandy clay loam or sandy loam and is dense. Commonly it contains pockets and layers of sandier or finer materials.

Dogue Series

The Dogue series consists of moderately well drained, moderately slowly permeable soils that formed in fluvial and marine sediment on stream terraces mainly near Brier Creek and the Ogeechee River. The water table is at a depth of 1.5 to 3.0 feet in winter and early in spring. Slope is 0 to 2 percent.

Dogue soils are geographically associated with Ocilla and Rains soils. The somewhat poorly drained Ocilla soils are arenic. The poorly drained Rains soils are in a fine-loamy family; in addition, they are mainly on uplands.

Typical pedon of Dogue sandy loam, 0 to 2 percent slopes; 0.4 mile north of Brier Creek on Story Mill Road, 150 feet east of road:

A—0 to 5 inches; brown (10YR 5/3) sandy loam; weak fine granular structure; very friable; common very fine and fine roots; very strongly acid; clear wavy boundary.

E—5 to 9 inches; pale brown (10YR 6/3) sandy loam; weak medium subangular blocky structure; very friable; few very fine and fine roots; very strongly acid; gradual wavy boundary.

Bt1—9 to 15 inches; strong brown (7.5YR 5/6) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; very strongly acid; gradual wavy boundary.

Bt2—15 to 22 inches; strong brown (7.5YR 5/6) sandy clay; common fine distinct light gray (10YR 7/2) mottles and few fine distinct yellowish red (5YR 5/8) mottles; moderate medium subangular blocky structure; friable; very strongly acid; gradual wavy boundary.

Bt3—22 to 50 inches; mottled strong brown (7.5YR 5/6), light gray (10YR 7/2), yellowish red (5YR 5/6), and yellowish brown (10YR 5/8) sandy clay; moderate medium subangular blocky structure; friable; common patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.

BC—50 to 58 inches; mottled strong brown (7.5YR 5/6), light gray (10YR 7/2), yellowish red (5YR 5/6), and yellowish brown (10YR 5/8) sandy clay loam; weak medium subangular blocky structure; friable; common very fine flakes of mica; very strongly acid; gradual wavy boundary.

C—58 to 62 inches; mottled strong brown (7.5YR 5/6), light gray (10YR 7/2), yellowish red (5YR 5/6), and yellowish brown (10YR 5/8) coarse sandy loam; massive; very friable; common very fine flakes of mica; very strongly acid.

Solum thickness is 40 to 60 inches or more. The soil is very strongly acid or strongly acid throughout except for the surface layer in limed areas.

The A horizon is 4 to 8 inches thick. It has hue of 10YR, value of 4 or 5, and chroma of 2 or 3; or it has hue of 2.5Y, value of 4 or 5, and chroma of 2.

The E horizon is 4 to 8 inches thick. It has hue of 10YR, value of 5 or 6, and chroma of 3 or 4. Some pedons do not have an E horizon.

The BE horizon has hue of 10YR, value of 5 or 6, and chroma of 3, 4, or 6. Some pedons have mottles that are few or common, fine or medium, and brown or yellow. Some pedons do not have a BE horizon.

The upper part of the Bt horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 4 or 6. Some pedons have mottles that are few or common, fine or medium, and reddish, grayish, or brownish; the upper few inches are free of gray mottles.

Both the Bt horizon and the BC horizon have mottles in the lower part that are grayish, brownish, and reddish; or they have a matrix that has hue of 10YR, value of 6 or 7, and chroma of 1 to 4 or 6, or that has hue of 7.5YR, value of 6 or 7, and chroma of 2, 4, or 6; and has common grayish, brownish, or reddish mottles. The Bt horizon is sandy clay loam. The BC horizon is sandy loam or sandy clay loam.

The C horizon has colors similar to those in the lower part of the Bt horizon. It is coarse sand, sand, loamy sand, or coarse sandy loam.

Dothan Series

The Dothan series consists of well drained soils that formed mainly in loamy marine sediment on uplands. Permeability is moderate in the upper part of the subsoil and moderately slow in the lower part. Slope is 0 to 8 percent.

Dothan soils are geographically associated with Clarendon, Fuquay, and Tifton soils. Clarendon soils are moderately well drained. Fuquay soils are arenic. Tifton soils have more nodules of ironstone throughout.

Typical pedon of Dothan loamy sand, 2 to 5 percent slopes; about 9 miles northeast on Georgia Highway 56 from its junction in Midville with Georgia Highway 305, 0.9 mile southeast on dirt road, 300 feet east on a field road, 100 feet north of field road:

Ap—0 to 9 inches; grayish brown (10YR 5/2) loamy sand; weak medium granular structure; very friable; many very fine roots; few nodules of ironstone; slightly acid; abrupt wavy boundary.

E—9 to 12 inches; light yellowish brown (10YR 6/4) loamy sand; weak fine granular structure; very friable; common very fine roots; few medium pores; few nodules of ironstone; strongly acid; clear wavy boundary.

BE—12 to 14 inches; brownish yellow (10YR 6/6) sandy loam; small pockets of light yellowish brown (10YR 6/4); weak medium subangular blocky structure; very friable; common very fine roots; common fine and medium pores; few nodules of ironstone; moderately acid; clear wavy boundary.

Bt1—14 to 43 inches; yellowish brown (10YR 5/6) sandy clay loam; weak medium subangular blocky structure; friable; few very fine roots; common fine pores; thin patchy clay films on faces of some peds; few nodules of ironstone; moderately acid; gradual wavy boundary.

Bt2—43 to 48 inches; yellowish brown (10YR 5/6) sandy clay loam; common medium distinct strong brown (7.5YR 5/6) mottles and common medium prominent yellowish red (5YR 5/8) mottles; moderate medium subangular blocky structure; friable; thin patchy clay films on faces of peds; 3 percent nodular plinthite; strongly acid; gradual wavy boundary.

Btv—48 to 62 inches; reticulately mottled yellowish brown (10YR 5/6), yellowish red (5YR 4/6), gray (10YR 6/1), and red (2.5YR 4/8) sandy clay loam; moderate medium subangular blocky structure; friable thin patchy clay films on faces of peds; 8 percent nodular plinthite; strongly acid.

Solum thickness is 60 inches or more. The soil is very strongly acid to moderately acid throughout except for the surface layer in limed areas. Depth to the horizon having plinthite content of at least 5 percent is 32 to 60 inches; and between that depth and a depth of 60 inches or more, the range in plinthite content is 5 to 15 percent.

The A horizon is 8 to 12 inches thick. The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2; or it has hue of 2.5Y, value of 4 or 5, and chroma of 2 or 4.

The E horizon is 3 to 8 inches thick. It has hue of 10YR, value of 4 to 6, and chroma of 2 to 4; or it has hue of 2.5Y, value of 4 to 6, and chroma of 2. Nodules of ironstone make up 2 to 4 percent of the volume. Some pedons do not have an E horizon.

The Bt horizon has hue of 10YR, value of 5 to 7, and chroma of 6 or 8. In most pedons, the lower part of the Bt horizon has many medium and coarse brownish, yellowish, reddish, and grayish mottles. Nodules of ironstone make up 2 to 5 percent of the volume.

Esto Series

The Esto series consists of well drained, slowly permeable soils that formed mainly in clayey marine sediment on uplands. Slope is 2 to 8 percent.

Esto soils are geographically associated with Carnegie, Cowarts, and Nankin soils. Carnegie soils have a subsoil that is 5 percent or more plinthite below a depth of 18 inches. Cowarts and Nankin soils have a thinner solum. In addition, Cowarts soils are in a fine-loamy family.

Typical pedon of Esto sandy loam, in an area of Esto and Nankin soils, 2 to 5 percent slopes; 0.5 miles west on Georgia Highway 80 from the junction with Georgia Highway 305, 50 feet south of road:

A—0 to 4 inches; grayish brown (10YR 5/2) sandy loam; weak fine granular structure; very friable; many fine roots; few nodules of ironstone; strongly acid; abrupt smooth boundary.

E—4 to 10 inches; light yellowish brown (10YR 6/4) sandy loam; weak medium subangular blocky structure; very friable; strongly acid; clear wavy boundary.

Bt1—10 to 19 inches; strong brown (7.5YR 5/6) clay; moderate medium subangular blocky structure; firm; few thin patchy clay films on faces of peds; very strongly acid; clear wavy boundary.

Bt2—19 to 36 inches; strong brown (7.5YR 5/6) clay; common medium prominent reddish brown (2.5YR 4/4) and light gray (10YR 7/2) mottles; moderate fine angular blocky structure; firm; patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt3—36 to 65 inches; mottled light gray (10YR 7/2), light brownish gray (2.5Y 6/2), strong brown (7.5YR 5/6), dusky red (10YR 3/4), and red (2.5YR 5/6) clay; moderate fine angular blocky structure; firm; patchy clay films on faces of peds; very strongly acid.

Solum thickness is 60 inches or more. The soil is very strongly acid or strongly acid throughout except for the surface layer in limed areas.

The A horizon is 4 to 9 inches thick. It has hue of 10YR, value of 3 to 5, and chroma of 2 or 3.

The E horizon has hue of 10YR, value of 5 or 6, and chroma of 4 or 6. Some pedons do not have an E horizon.

The BE horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 4, 6, or 8. Some pedons do not have a BE horizon.

The upper part of the Bt horizon has hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 4, 6, or 8; most pedons are also mottled reddish, brownish, yellowish, and grayish. The gray mottles do not represent wetness. The lower part of the Bt horizon is mottled reddish, brownish, yellowish, and grayish below depths of about 30 to 38 inches.

The BC horizon is mottled in the same colors as the Bt horizon. Some pedons do not have a BC horizon.

The B horizon and BE horizon are clay or sandy clay.

Faceville Series

The Faceville series consists of well drained, moderately permeable soils that formed mainly in clayey marine sediment on uplands. Slope is 0 to 12 percent.

Faceville soils are geographically associated with Dothan and Orangeburg soils. Dothan and Orangeburg soils are in a fine-loamy family. In addition, Dothan soils have mainly a yellowish brown subsoil that has 5 percent or more plinthite in the lower part.

Typical pedon of Faceville loamy sand, 2 to 5 percent slopes; 0.5 mile north on U.S. Highway 25 from Walnut Branch, 0.9 mile west on paved road, 100 feet north of road:

Ap—0 to 8 inches; dark brown (7.5YR 4/4) loamy sand; weak fine granular structure; very friable; many fine and very fine roots; medium acid; abrupt smooth boundary.

Bt1—8 to 15 inches; yellowish red (5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; strongly acid; gradual wavy boundary.

Bt2—15 to 45 inches; red (2.5YR 4/6) sandy clay; moderate medium subangular blocky structure; friable; common patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt3—45 to 62 inches; red (2.5YR 4/6) sandy clay; common fine distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; friable; patchy clay films on faces of peds; very strongly acid.

Solum thickness is 62 inches or more. The soil is strongly acid or very strongly acid throughout except for the surface layer in limed areas.

The A horizon is 4 to 8 inches thick. It has hue of 5YR and 10YR, value of 4 or 5, and chroma of 2 to 4; or it has hue of 7.5YR, value of 4 or 5, and chroma of 2 or 4. Eroded and smoothed phases also have hue of 7.5YR, value of 5, and chroma of 6. The A horizon is loamy sand or sandy loam, except in smoothed phases where it is sandy clay loam.

The BE horizon has hue of 2.5YR, value of 4 or 5, and chroma of 6 or 8; or it has hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 6; or it has hue of 5YR and 7.5YR, value of 5, and chroma of 8. Some pedons do not have a BE horizon.

The Bt horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 or 8. The middle and lower parts of the Bt horizon commonly are mottled brownish, yellowish, or reddish.

Fuquay Series

The Fuquay series consists of well drained soils that have moderate permeability in the upper part of the subsoil and slow permeability in the lower part. These soils formed in sandy and loamy marine sediment on uplands. Slope is 1 to 8 percent.

Fuquay soils are geographically associated with Clarendon, Dothan, and Tifton soils. Moderately well drained Clarendon soils and well drained Dothan and Tifton soils have a combined A and E horizon thickness of less than 20 inches. In addition, Tifton soils have more nodules of ironstone throughout.

Typical pedon of Fuquay loamy sand, 1 to 5 percent slopes; about 5 miles northeast on Georgia Highway 56 from its junction in Midville with Georgia Highway 305, 0.5 mile west on dirt road, 50 feet north of dirt road:

A1—0 to 5 inches; dark grayish brown (10YR 4/2) loamy sand; weak fine granular structure; very friable; many fine and medium roots; strongly acid; clear smooth boundary.

E1—5 to 10 inches; pale brown (10YR 6/3) loamy sand; few medium very dark grayish brown (10YR 3/2) splotches; weak medium granular structure; very friable; common fine and medium roots; common fine pores; strongly acid; clear wavy boundary.

E2—10 to 25 inches; light yellowish brown (10YR 6/4) loamy sand; few fine dark grayish brown (10YR 4/2) splotches; weak medium granular structure; very friable; common fine and medium roots; common fine pores; few medium quartz gravel; few nodules of ironstone; strongly acid; clear wavy boundary.

EB—25 to 28 inches; yellowish brown (10YR 5/8) loamy sand; weak medium subangular blocky structure; friable; common fine roots; few fine pores; few medium quartz gravel; few nodules ot ironstone; strongly acid; gradual wavy boundary.

Bt—28 to 48 inches; strong brown (7.5YR 5/8) sandy clay loam; few medium prominent red (2.5YR 4/8) mottles; moderate medium subangular blocky structure; friable; common fine and few medium roots; many fine pores; thin patchy clay films on faces of peds; 1 to 2 percent plinthite; strongly acid; gradual wavy boundary.

Btv1—48 to 59 inches; strong brown (7.5YR 5/8) sandy clay loam; common medium prominent dark red (10YR 3/6) and red (10R 4/6) mottles; moderate medium subangular blocky and angular blocky structure; firm; common fine roots; common fine pores; moderately thick patchy clay films on faces of peds; 10 percent nodular plinthite; strongly acid; gradual wavy boundary.

Btv2—59 to 75 inches; strong brown (7.5YR 5/8) sandy clay loam; many coarse prominent dark red (10R 3/6) and red (10R 4/6) mottles, and common medium distinct light gray (10YR 7/2) mottles; moderate medium angular blocky and subangular blocky structure; firm; few fine and medium roots; few fine pores; thin patchy clay films on faces of peds; 5 percent platy plinthite; strongly acid.

Solum thickness is 81 inches or more. The soil is very strongly acid or strongly acid throughout except for the surface layer in limed areas. Depth to the horizon having plinthite content of at least 5 percent is 45 to 60 inches; and between that depth and a depth of 81 inches or more, the range in plinthite content is 5 to 15 percent.

The sandy epipedon is 25 to 35 inches thick.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 1 or 2.

The E horizon has hue of 10YR, value of 6 or 7, and chroma of 3, 4, or 6; or it has hue of 2.5Y, value of 6 or 7, and chroma of 4 or 6.

The Bt horizon has hue of 10YR, value of 5 or 6, and chroma of 4, 6, or 8. In some pedons, the lower part of the Bt horizon has mottles that are common, medium or coarse, and brownish, reddish, and grayish. In some pedons, few or common nodules of ironstone are in the upper part of the Bt horizon.

Grady Series

The Grady series consists of poorly drained, slowly permeable soils that formed in clayey marine sediment in depressions on uplands. These soils commonly are ponded, or the water table is at a depth of 1 foot or less in winter and spring. Slope is 0 to 2 percent.

Grady soils are geographically associated with Clarendon, Dothan, Fuquay, Rains, and Rembert soils. The moderately well drained Clarendon soils and the well drained Dothan and Fuquay soils contain plinthite. In addition, Clarendon and Dothan soils are in a fine-loamy family, and Fuquay soils are arenic. Rains soils are in a fine-loamy family, and Rembert soils have a thinner solum.

Typical pedon of Grady loam, in an area of Grady-Rembert association; 0.5 mile north on U.S. Highway 25 from Idlewood Crossing, 600 feet east of highway:

A—0 to 5 inches; dark gray (10YR 4/1) loam; weak fine granular structure; very friable; many fine and very fine and common medium roots; very strongly acid; clear smooth boundary.

Btg1—5 to 20 inches; gray (10YR 5/1) clay; common fine distinct strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; firm; few fine roots; very strongly acid; gradual wavy boundary.

Btg2—20 to 54 inches; gray (10YR 5/1) clay; common medium distinct yellowish brown (10YR 5/6) mottles, and common fine prominent red (2.5YR 4/6) mottles; moderate medium subangular blocky structure; firm; few fine roots; thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.

Btg3—54 to 65 inches; gray (10YR 5/1) sandy clay; common medium distinct yellowish brown (10YR 5/6) mottles, common medium prominent yellowish red (5YR 5/6) mottles, and common medium faint light gray (10YR 6/1) mottles; moderate medium subangular blocky structure; firm; thin patchy clay films on faces of peds; very strongly acid; diffuse wavy boundary.

Btg4—65 to 79 inches; gray (10YR 5/1), clay; few fine distinct brown (7.5YR 5/4) mottles; moderate medium subangular blocky structure; firm; thin patchy clay films on faces of peds; very strongly acid.

Solum thickness is 60 inches or more. The soil is very strongly acid or strongly acid throughout except for the surface layer in limed areas.

The A horizon is 4 to 8 inches thick. The A horizon or Ap horizon has hue of 10YR, value of 2 to 4, and chroma of 1.

The E horizon is 5 to 10 inches thick. It has hue of 10YR, value of 5 or 6, and chroma of 1 or 2. It is sandy loam or loam. Some pedons do not have an E horizon.

The B1g horizon has hue of 10YR, value of 5 or 6, and chroma of 1 or 2. Some pedons contain few or common, brownish or grayish mottles. Some pedons do not have a B1g horizon.

The Btg horizon has hue of 10YR, value of 5 to 7, and chroma of 1. It has few to many brownish, yellowish, reddish, and grayish mottles. The Btg horizon is sandy clay or clay.

Herod Series

The Herod series consists of poorly drained, moderately permeable soils that formed in loamy alluvial sediment mainly on the flood plain of Brier Creek. The water table is at a depth of 0.5 foot to 1.5 feet from late fall to early spring. Slope is 0 to 2 percent.

Herod soils are geographically associated with Meggett, Muckalee, and Rains soils. Meggett soils are in a fine family. Muckalee soils are in a coarse-loamy family. Rains soils are in a fine-loamy family and are on stream terraces.

Typical pedon of Herod loam, in an area of Herod and Muckalee loams; 0.3 mile south on U.S. Highway 25 from Brier Creek, 500 feet east of highway:

A—0 to 6 inches; very dark grayish brown (10YR 3/2) loam; weak fine granular structure; very friable; many fine and medium roots; many partly decayed bits of forest litter; strongly acid; clear wavy boundary.

Cg1—6 to 10 inches; light brownish gray (10YR 6/2) sandy loam; weak medium granular structure; friable; many fine and medium roots; few bits of partly decomposed forest litter; moderately acid; clear wavy boundary.

Cg2—10 to 22 inches; gray (10YR 6/1) sandy loam; common strata of loamy sand (0.2 inch thick); common medium distinct yellowish brown (10YR 5/4) mottles; massive; friable; few medium roots; few bits of partly decomposed forest litter; slightly acid; gradual wavy boundary.

Cg3—22 to 39 inches; gray (10YR 6/1) sandy clay loam; common medium distinct yellowish brown (10YR 5/4) and light yellowish brown (10YR 6/4) mottles; massive; friable; sightly acid; gradual wavy boundary.

Cg4—39 to 62 inches; gray (10YR 6/1) sand; massive; friable; neutral.

Thickness of loamy sediments ranges from 20 to 40 inches or more. The A horizon is strongly acid or moderately acid. The C horizon is moderately acid through neutral.

The A horizon is 3 to 6 inches thick. It has hue of 10YR, value of 3 to 5, and chroma of 1 or 2.

The Cg1 horizon and the Cg2 horizon have hue of 10YR, value of 4 to 6, and chroma of 1 or 2. They are sandy loam, loam, or sandy clay loam. These horizons have common gray or brown mottles.

The Cg3 horizon is sandy loam or sandy clay loam.

The Cg4 horizon is sand, loamy sand, sandy loam, or sandy clay loam. Thin sandy or clayey strata are common throughout the C horizon.

Kureb Series

The Kureb series consists of excessively drained, rapidly permeable soils that formed in coarse sandy marine sediment on uplands. Slope is 1 to 8 percent.

Kureb soils are geographically associated with Lakeland and Troup soils. Lakeland soils do not have an E horizon or C/Bh horizon. Troup soils are grossarenic.

Typical pedon of Kureb sand, 1 to 8 percent slopes; 0.4 mile west of Farmers Bridge Road from Brier Creek, 100 feet south of road:

A—0 to 3 inches; gray (10YR 5/1) sand; single grained; loose; many fine and medium roots; very strongly acid; clear smooth boundary.

E—3 to 32 inches; light gray (10YR 7/1) sand; single grained; loose; few fine and medium roots; very strongly acid; clear irregular boundary.

C/Bh—32 to 50 inches; yellowish brown (10YR 5/6) sand; common medium distinct dark reddish brown (5YR 3/2) and dark brown (7.5YR 4/4) organic bodies; single grained; loose; very strongly acid; gradual irregular boundary.

C1—50 to 90 inches; brownish yellow (10YR 6/6) sand; single grained; loose; very strongly acid.

Thickness of the sand is 85 inches or more. The soil is very strongly acid or strongly acid throughout except for the surface layer in limed areas.

The A horizon is 3 to 5 inches thick. It has hue of 10YR, value of 3 to 5, and chroma of 1.

The E horizon has hue of 10YR, value of 7 or 8, and chroma of 1 or 2.

The C part of the C/Bh horizon has hue of 10YR, value of 5 to 7, and chroma of 4 or 6. The Bh part of the C/Bh horizon has hue of 5YR, value of 3 or 4, and chroma of 2 to 4; or it has hue of 7.5YR, value of 3 or 4, and chroma of 2 or 4.

The C horizon has hue of 10YR, value of 5 to 8, and chroma of 4, 6, or 8.

Lakeland Series

The Lakeland series consists of excessively drained, very rapidly permeable soils that formed in sandy marine deposits on uplands. Slope is 1 to 17 percent.

Lakeland soils are geographically associated with Bonifay, Fuquay, and Troup soils. These associated soils are well drained and have a loamy B horizon. In addition, Bonifay and Fuquay soils contain plinthite.

Typical pedon of Lakeland sand, 1 to 8 percent slopes; 0.6 mile southeast on River Road from Beaverdam Creek, 2.7 miles southwest on dirt road, 0.2 mile north on dirt road, 10 feet west of road:

A1—0 to 5 inches; brown (10YR 4/3) sand; single grained; loose; common very fine and fine roots; strongly acid; clear smooth bowndary.

C1—5 to 20 inches; yellowish brown (10YR 5/4) sand; single grained; loose; few fine roots; very strongly acid; gradual wavy boundary.

C2—20 to 72 inches; strong brown (7.5YR 5/6) sand; single grained; loose; many uncoated sand grains; very strongly acid; gradual wavy boundary.

C3—72 to 100 inches; reddish yellow (7.5YR 6/6) sand; single grained; loose; very strongly acid.

Thickness of the sand is 81 inches or more. The soil is strongly acid or very strongly acid throughout except for the surface layer in limed areas.

The A horizon is 4 to 8 inches thick. It has hue of 10YR, value of 3 to 5, and chroma of 1 to 3.

The C horizon has hue of 7.5YR or 10YR, value of 5 to 7, and chroma of 4, 6 or 8; or it has hue of 5YR, value of 5, and chroma of 6 or 8.

Lucy Series

The Lucy series consists of well drained, moderately permeable soils that formed in sandy and loamy marine sediment on uplands. Slope is 0 to 25 percent.

Lucy soils are geographically associated with Faceville, Orangeburg, and Troup soils. Faceville and Orangeburg soils have a sandy epipedon less than 20 inches thick; in addition, Faceville soils are in a clayey family. Troup soils are grossarenic.

Typical pedon of Lucy loamy sand, 5 to 8 percent slopes; 1.1 miles south on U.S. Highway 25 from Brier Creek, 2.3 miles west on county road, 100 feet northeast of road:

A—0 to 5 inches; brown (10YR 4/3) loamy sand; weak fine granular structure; very friable; many fine roots; strongly acid; clear wavy boundary.

E—5 to 22 inches; strong brown (7.5YR 5/6) loamy sand; weak medium granular structure; very friable; common fine roots; strongly acid; clear smooth boundary.

EB—22 to 29 inches; yellowish red (5YR 5/6) loamy sand; weak medium subangular blocky structure; very friable; strongly acid; gradual wavy boundary.

Bt—29 to 72 inches; red (2.5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; friable; few patchy clay films on faces of peds; strongly acid; gradual wavy boundary.

Solum thickness is 60 inches or more. The soil is very strongly acid or strongly acid throughout except for the surface layer in limed areas.

The sandy epipedon is 21 to 38 inches thick.

The A horizon or Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 2 or 3; or it has hue of 7.5YR, value of 3 to 5, and chroma of 2.

The E horizon has hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 4 or 6. The EB horizon has hue of 7.5YR or 5YR, value of 4 or 5, and chroma of 6; or it has hue of 7.5YR or 5YR, value of 5, and chroma of 8. Some pedons do not have an EB horizon.

The BE horizon has hue of 2.5YR, value of 4 or 5, and chroma of 6 or 8; or it has hue of 5YR, value of 4 or 5, and chroma of 6; or it has hue of 5YR, value of 5, and chroma of 8. Some pedons do not have a BE horizon.

The Bt horizon has hue of 2.5YR, value of 4 or 5, and chroma of 6 or 8; it has hue of 5YR, value of 4 or 5, and chroma of 6; or it has hue of 5YR, value of 5, and chroma of 8. Some pedons have yellowish or brownish mottles below a depth of 36 inches. The Bt horizon is mainly sandy clay loam, but sandy loam is in some pedons.

Meggett Series

The Meggett series consists of poorly drained, slowly permeable soils that formed in clayey alluvial sediment mainly on the flood plain of the Ogeechee River. The water table is at the surface or within a depth of 1 foot from late fall to midspring. Slope is 0 to 2 percent.

Meggett soils are geographically associated with Herod, Muckalee, and Rains soils. Muckalee soils are in a coarse-loamy family. Herod and Rains soils are in a fine-loamy family; in addition, Rains soils are on stream terraces.

Typical pedon of Meggett loam; in Midville, Georgia, 0.3 mile south of Georgia Highway 17 along Georgia-Florida Railroad, 75 feet west:

A—0 to 4 inches; dark grayish brown (10YR 4/2) loam; common fine distinct dark yellowish brown (10YR 4/4) mottles; weak fine granular structure; very friable; many fine and medium roots; moderately acid; abrupt smooth boundary.

Btg1—4 to 25 inches; dark gray (10YR 4/1) clay; common medium distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm; common fine roots; few patchy clay films on faces of peds; mildly alkaline; gradual wavy boundary.

Btg2—25 to 40 inches, dark gray (10YR 4/1) sandy clay; common medium distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm; few fine roots; few concretions of calcium carbonate; patchy clay films on faces of peds; mildly alkaline; gradual wavy boundary.

Btg3—40 to 61 inches; gray (N 5/0) clay; common medium distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm; few fine concretions of calcium carbonate; thin patchy clay films on faces of peds; mildly alkaline.

Solum thickness is 60 to 80 inches. The A horizon is moderately acid or strongly acid. The B horizon is moderately acid to mildly alkaline in the upper part and neutral to mildly alkaline in the lower part.

The A horizon is 3 to 6 inches thick. It has hue of 10YR, value of 4 or 5, and chroma of 1 or 2. Some pedons have an E horizon that has hue of 10YR, value of 5, and chroma of 1 or 2. If the E horizon is absent, the A horizon has an abrupt textural change to the B horizon.

The Btg horizon has hue of 10YR, value of 4 to 6, and chroma of 1 or 2; or it has hue of 2.5Y, value of 4 to 6, and chroma of 2; or it is neutral and has value of 5. Few to many brownish yellow, yellowish brown, and strong brown mottles are throughout the horizon. Concretions of calcium carbonate are few or common in the Btg2 horizon and Btg3 horizon. It is clay, sandy clay, or clay loam.

Some pedons have a BCg horizon that has colors similar to those of the Bt horizon. Shell fragments and concretions of calcium carbonate are few or common. This horizon is sandy clay or sandy clay loam.

Muckalee Series

The Muckalee series consists of poorly drained, moderately permeable soils that formed in loamy and sandy sediment mainly on the flood plains of Brier Creek. The water table is at a depth of 0.5 foot to 1.5 feet from late fall to early spring. Slope is 0 to 2 percent.

Muckalee soils are geographically associated with Herod, Meggett, and Rains soils. Herod and Rains soils are in a fine-loamy family; in addition, Rains soils are on stream terraces. Meggett soils are in a fine family.

Typical pedon of Muckalee loam, in an area of Herod and Muckalee loams; 0.3 mile south on U.S. Highway 25 from Brier Creek, 500 feet east of highway.

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

Cg1—6 to 55 inches; gray (10YR 5/1) sandy loam; common medium distinct yellowish brown (10YR 5/6) and strong brown (7.5YR 5/8) mottles; massive; very friable; many fine and medium roots; medium acid; gradual wavy boundary.

Cg2—55 to 62 inches; gray (10YR 5/1) sandy loam; massive; very friable; common medium roots; thin layers of light gray (10YR 7/1) sandy clay loam; slightly acid.

Loamy and sandy sediment is 60 inches or more thick. The A horizon is strongly acid or moderately acid. The Cg horizons are moderately acid to neutral.

The A horizon is 3 to 8 inches thick. It has hue of 10YR, value of 3 to 5, and chroma of 1 or 2.

The Cg1 horizon and the Cg2 horizon have hue of 10YR, value of 4 to 6, and chroma of 1 or 2. These horizons are streaked in hue of 10YR, value of 4 to 7, and chroma of 2 to 4 or 6; or in hue of 10YR, value of 5 to 7, and chroma of 8; or they are streaked in hue of 2.5Y, value of 4 to 7, and chroma of 2 or 4; or in hue of 2.5Y, value of 5 to 7, and chroma of 6; or in hue of 2.5Y, value of 6 or 7, and chroma of 8. These Cg horizons are sandy loam or loamy sand. Thin strata of sandy clay loam are in some pedons.

Nankin Series

The Nankin series consists of well drained soils that have moderately slow permeability. These soils formed mainly in clayey marine sediment on uplands. Slope is 2 to 8 percent.

Nankin soils are geographically associated with Dothan, Esto, Orangeburg, and Tifton soils. These associated soils are Paleudults. Dothan, Orangeburg, and Tifton soils are in a fine-loamy family. In addition, Dothan and Tifton soils have 5 percent or more plinthite in the lower part of the subsoil.

Typical pedon of Nankin sandy loam, in an area of Esto and Nankin sandy loams, 5 to 8 percent slopes, eroded; 0.2 mile west on Georgia Highway 80 from the junction with Georgia Highway 305, 450 feet north of highway:

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

Bt1—4 to 16 inches; strong brown (7.5YR 5/6) sandy clay; moderate medium subangular blocky structure; friable; few patchy clay films on faces of peds; common fine and medium roots; strongly acid; clear wavy boundary.

Bt2—16 to 28 inches; strong brown (7.5YR 5/6) clay; common medium distinct pale brown (10YR 6/3) mottles and common medium prominent red (2.5YR 4/8) mottles; strong medium angular blocky structure; firm; many continuous clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt3—28 to 41 inches; mottled yellowish red (5YR 4/6), red (2.5YR 4/6), light gray (10YR 7/1), and dusky red (10R 3/4) sandy clay; strong medium angular blocky structure; strong medium angular blocky structure; firm; many continuous clay films on faces of peds; few fine roots; very strongly acid; gradual wavy boundary.

BC—41 to 47 inches; mottled dusky red (10R 3/4), yellowish brown (10YR 5/6), light gray (10YR 7/1), and red (2.5YR 4/6) sandy clay loam; weak medium subangular blocky structure; firm; few patchy clay films on faces of peds; few fine roots; very strongly acid; gradual wavy boundary.

C—47 to 84 inches; mottled light gray (10YR 7/1), pale brown (10YR 6/3), yellowish red (5YR 5/6), and red (2.5YR 4/6) sandy loam; thin strata and veins of sandy clay loam; massive, parting to weak coarse subangular blocky structure; very firm and cemented in places; very strongly acid.

Solum thickness is 40 to 60 inches or more. The soil is strongly acid or very strongly acid except for the surface layer in limed areas.

The A horizon is 2 to 9 inches thick. The Ap horizon has hue of 10YR, value of 3 or 4, and chroma of 2 to 4. It is sandy loam or loamy sand.

The BA horizon has hue of 5YR to 10YR, value of 5 or 6, and chroma of 4 or 6. It is sandy loam or sandy clay loam. Some pedons do not have a BA horizon.

The upper part of the Bt horizon has hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 6 or 8; or it has hue of 10YR, value of 5, and chroma of 6 or 8. The lower part of the Bt horizon has hue of 5YR and 7.5YR, value of 4 or 5, and chroma of 6 or 8; mottles are reddish, brownish, yellowish, and grayish. Texture is sandy clay or clay.

The BC horizon is mottled reddish, yellowish, brownish, and grayish. It is sandy clay loam or sandy loam.

The C horizon is mottled reddish, yellowish, brownish, and grayish; some pedons are mainly gray. Commonly, this horizon has veins and thin strata that are clayey and sandy.

Ocilla Series

The Ocilla series consists of somewhat poorly drained, moderately permeable soils that formed in sandy and loamy marine sediment on uplands and stream terraces. The water table is at a depth of 1 foot to 2.5 feet in winter to midspring. Slope is 0 to 2 percent.

Ocilla soils are geographically associated with Clarendon, Dogue, and Rains soils. None of the associated soils are arenic. The moderately well drained Clarendon soils and the poorly drained Rains soils are in a fine-loamy family and are mainly on uplands; in addition, Clarendon soils contain 5 percent or more plinthite below a depth of 24 to 34 inches. Moderately well drained Dogue soils are in a clayey family.

Typical pedon of Ocilla loamy sand, 0 to 2 percent slopes, 0.3 mile north on U.S. Highway 25 from Brier Creek, 0.6 mile west on dirt road, 150 feet south of road:

A—0 to 7 inches; dark grayish brown (10YR 4/2) loamy sand; weak fine granular structure; very friable; many fine and very fine roots; moderately acid; abrupt smooth boundary.

E1—7 to 16 inches; light brownish gray (2.5Y 6/2) loamy sand; weak fine granular structure; loose, very friable; common fine and medium roots; very strongly acid; clear wavy boundary.

E2—16 to 21 inches; yellowish brown (10YR 5/4) loamy sand; single grained; loose; strongly acid; clear smooth boundary.

BE—21 to 25 inches; yellowish brown (10YR 5/6) sandy loam; many medium distinct pale brown (10YR 6/3), yellowish red (5YR 5/8), and red (2.5YR 4/8) mottles; moderate medium subangular blocky structure; friable; strongly acid; gradual wavy boundary.

Bt1—25 to 32 inches; yellowish brown (10YR 5/6) sandy clay loam; many medium distinct pale brown (10YR 6/3), yellowish red (5YR 5/8), and gray (10YR 6/1) mottles; moderate medium subangular blocky structure; friable; very strongly acid; clear wavy boundary.

Bt2—32 to 60 inches; light brownish gray (10YR 6/2) sandy clay loam; few medium distinct yellowish brown (10YR 5/6) mottles and few medium prominent red (2.5YR 4/8) mottles; massive; friable; very strongly acid.

Solum thickness is 60 inches or more. The soil is strongly acid or very strongly acid throughout except for the surface layer in limed areas.

The sandy epipedon is 21 to 35 inches thick. The A horizon or Ap horizon is 5 to 10 inches thick. The A horizon has hue of 10YR, value of 3 or 4, and chroma of 1 or 2.

The E horizon has hue of 10YR, value of 5 or 6, and chroma of 2 to 4; or it has hue of 2.5Y, value of 5 or 6, and chroma of 2. Some pedons have few fine brown mottles in the lower part of the E horizon.

The BE horizon has hue of 10YR, value of 5 or 6, and chroma of 4, 6, or 8; or it has hue of 2.5Y, value of 5 or 6, and chroma of 4 or 6. Some pedons have few or common reddish, brownish, and grayish mottles.

The Bt1 horizon has hue of 10YR, value of 5 to 7, and chroma of 4 or 6. Mottles are reddish, brownish, and grayish. The Bt2 horizon has the same colors as above, or it is mottled grayish, brownish, or reddish. It is sandy clay loam or sandy loam.

Orangeburg Series

The Orangeburg series consists of well drained, moderately permeable soils that formed mainly in loamy marine sediment on uplands. Slope is 0 to 17 percent.

Orangeburg soils are geographically associated with Dothan, Faceville, and Lucy soils. Dothan soils have a predominantly yellowish brown subsoil that contains 5 percent or more plinthite below a depth of 32 to 60 inches. Faceville soils are in a clayey family. Lucy soils are arenic.

Typical pedon of Orangeburg loamy sand, 2 to 5 percent slopes; 0.2 mile northeast on Georgia Highway 56 from the Waynesboro Water Works, 100 feet northwest of highway:

Ap—0 to 6 inches; brown (7.5YR 5/4) loamy sand; weak fine granular structure; very friable; many very fine and fine roots; strongly acid; clear smooth boundary.

BE—6 to 13 inches; yellowish red (5YR 5/8) sandy loam; weak medium subangular blocky structure; very friable; common very fine, fine, and medium roots; very strongly acid; gradual wavy boundary.

Bt1—13 to 32 inches; red (2.5YR 4/8) sandy clay loam; moderate medium subangular blocky structure; friable; few fine and medium roots; very strongly acid; gradual wavy boundary.

Bt2—32 to 60 inches; red (2.5YR 4/8) sandy clay loam; few to fine prominent strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; friable; few patchy clay films on faces of peds; very strongly acid.

Solum thickness is 70 inches or more. The soil is strongly acid or very strongly acid throughout except for the surface layer in limed areas.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 to 4; or it has hue of 7.5YR, value of 4 or 5, and chroma of 2 or 4. It is loamy sand or sandy loam.

The BE horizon has hue of 5YR, 7.5YR, or 10YR, value of 4 or 5, and chroma of 4 or 6; or it has hue of 5YR, 7.5YR, or 10YR, value or 5, and chroma of 8. It is sandy loam or sandy clay loam.

The Bt horizon has hue of 2.5YR, value of 4 or 5, and chroma of 6 or 8; or it has hue of 5YR, value of 4 or 5, and chroma of 6; or it has hue of 5YR, value of 5, and chroma of 8. In some pedons, brown mottles are in the lower part of the Bt horizon.

Osier Series

The Osier series consists of poorly drained, rapidly permeable soils that formed in sandy alluvial sediment on flood plains. The water table is at the surface or within a depth of 1 foot from late fall to early spring. Slope is 0 to 2 percent.

Osier soils are geographically associated with Bibb and Rains soils. Bibb soils are in a coarse-loamy family. Rains soils are in a fine-loamy family and are on stream terraces.

Typical pedon of Osier loamy sand, in an area of Osier and Bibb soils; 0.9 mile east on Quaker Road from Boggs Academy, 1.5 miles south on county road, 200 feet west of road:

A—0 to 4 inches; dark grayish brown (10YR 4/2) loamy sand; weak fine granular structure; very friable; many fine and very fine roots; strongly acid; clear smooth boundary.

Cg1—4 to 15 inches; light brownish gray (10YR 6/2) sand; common medium distinct yellowish brown (10YR 5/4) mottles and common medium prominent yellowish red (5YR 5/8) mottles; single grained; loose; common fine and very fine roots; strongly acid; clear smooth boundary.

Cg2—15 to 28 inches; light brownish gray (10YR 6/2) loamy sand; common medium distinct yellowish brown (10YR 5/6) and dark grayish brown (10YR

4/2) mottles; single grained; loose; few fine and very fine roots; strongly acid; clear wavy boundary.

Cg3—28 to 61 inches; dark gray (10YR 4/1) loamy sand; common medium faint gray (10YR 5/1) mottles; single grained; loose; strongly acid.

Thickness of the sandy sediment is 60 inches or more. The soil is very strongly acid or strongly acid throughout. Thin strata that are as fine as fine sandy loam are in most pedons.

The A horizon is 4 to 12 inches thick. It has hue of 10YR, value of 3 to 5, and chroma of 1 or 2.

The Cg horizon has hue of 10YR, value of 4 to 7, and chroma of 1 or 2. Mottles are few or common and are grayish, yellowish, brownish, or reddish. This horizon is coarse sand, sand, or loamy sand.

Rains Series

The Rains series consists of poorly drained, moderately permeable soils that formed in loamy marine sediment on uplands and stream terraces. The water table is within a depth of 1 foot from late fall to midspring. Slope is 0 to 2 percent.

Rains soils are geographically associated with Bibb, Herod, Meggett, Muckalee, and Osier soils. The associated soils are on flood plains. Bibb and Muckalee soils are in a coarse-loamy family, and Meggett soils are in a fine family. Osier soils are sandy and do not have a Bt horizon.

Typical pedon of Rains sandy loam; 0.3 mile west on Georgia Highway 17 from Bark Camp Area, 1.8 miles north on paved road; 0.2 mile west on dirt road; 100 feet south of road:

A—0 to 8 inches; very dark grayish brown (10YR 3/2) sandy loam; weak fine granular structure; very friable; many very fine and fine roots; very strongly acid; clear smooth boundary.

E—8 to 15 inches; grayish brown (10YR 5/2) loamy sand; weak fine granular structure; very friable; common fine and medium roots; very strongly acid; clear wavy boundary.

Btg1—15 to 24 inches; gray (10YR 5/1) sandy clay loam; common fine distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; few medium roots; very strongly acid; gradual wavy boundary.

Btg2—24 to 48 inches gray (10YR 5/1) sandy clay loam; common medium distinct yellowish brown (10YR 5/6) mottles and common medium faint light brownish gray (10YR 6/2) mottles; moderate medium subangular blocky structure; friable; patchy clay films on faces of peds; few medium roots; very strongly acid; gradual wavy boundary.

Btg3—48 to 62 inches; gray (10YR 6/1) sandy clay loam; common medium distinct brown (10YR 5/3) and yellowish brown (10YR 5/8) mottles and few fine prominent strong brown (7/5YR 5/8) mottles; moderate medium subangular blocky structure; friable; few patchy clay films on faces of peds; very strongly acid.

Solum thickness is 60 inches or more. The soil is strongly acid or very strongly acid throughout except for the surface layer in limed areas.

The combined thickness of the A and E horizons is 8 to 18 inches. The A horizon or Ap horizon has hue of 10YR, value of 3 or 4, and chroma of 1. The E horizon has hue of 10YR, value of 5 or 6, and chroma of 1 or 2.

Some pedons have a BEg horizon. This horizon has hue of 10YR, value of 5 to 7, and chroma of 1.

The Btg horizon has hue of 10YR, value or 5 to 7, and chroma of 1; or it is neutral and has value of 5 to 7. This horizon has common light yellowish brown, strong brown, or brownish yellow mottles.

Rembert Series

The Rembert series consists of poorly drained, slowly permeable soils that formed in clayey marine sediment in depressions on uplands. This soil commonly is ponded, or the water table is at a depth of 1 foot or less in winter and spring. Slope is 0 to 2 percent.

Rembert soils are geographically associated with Clarendon, Grady, and Rains soils. The moderately well drained Clarendon soils and the poorly drained Rains soils are in a fine-loamy family. In addition, Clarendon soils contain plinthite. Grady soils have a thicker solum.

Typical pedon of Rembert sandy loam in an area of Grady-Rembert association; 3 miles south of Magruder on Georgia Highway 305, 500 feet east of highway:

Ap—0 to 5 inches; dark grayish brown (10YR 4/2) sandy loam; weak fine granular structure; very friable; common fine and very fine roots; strongly acid; clear smooth boundary.

BEg—5 to 9 inches; grayish brown (10YR 5/2) sandy clay loam; common fine distinct strong brown (7.5YR 5/8) mottles; weak medium subangular blocky structure; friable; common fine and very fine roots; very strongly acid; clear smooth boundary.

Btg1—9 to 23 inches; gray (10YR 5/1) clay; common medium distinct yellowish brown (10YR 5/8) mottles and common fine prominent reddish brown (5YR 5/4) mottles; moderate medium subangular blocky structure; firm; few fine and very fine roots between peds; common discontinuous clay films; very strongly acid; gradual wavy boundary.

Btg2—23 to 55 inches; gray (10YR 5/1) sandy clay that has thin vertical coats of sandy clay loam on the surfaces of the peds; common medium distinct yellowish brown (10YR 5/8) mottles and few fine prominent reddish brown (5YR 5/4) mottles; moderate medium subangular blocky structure;

friable; many discontinuous clay films; very strongly acid; gradual wavy boundary.

BC—55 to 64 inches; mottled light gray (N 7/0), yellowish brown (10YR 5/8), and reddish brown (5YR 5/4) sandy clay loam; weak medium subangular blocky structure; friable; very strongly acid; clear wavy boundary.

C—64 to 96 inches; mottled light gray (N 7/0), yellowish brown (10YR 5/8), and red (2.5YR 4/6) coarse sandy loam; massive; friable; very strongly acid.

Solum thickness is 60 inches or more. The soil is very strongly acid or strongly acid throughout except for the surface layer in limed areas.

The A horizon is 3 to 8 inches thick. The A horizon and Ap horizon have hue of 10YR, value of 3 or 4, and chroma of 1 or 2.

Some pedons have an E horizon that has hue of 10YR, value of 5 or 6, and chroma of 1 or 2. Some pedons contain common brown mottles.

The Btg horizon has hue of 10YR, value of 4 to 6, and chroma of 1. It has few to many brownish, yellowish, reddish, and grayish mottles. The Btg horizon is sandy clay or clay.

The BC horizon has the same colors as the Btg horizon, or it is mottled grayish, reddish, and brownish. Some pedons do not have a BC horizon.

The C horizon has the same colors as the Btg horizon, or it is mottled grayish, reddish, and brownish. It is sandy loam or sandy clay loam.

Shellbluff Series

The Shellbluff series consists of well drained, moderately permeable soils that formed mainly in loamy alluvial sediment. These soils are mainly on flood plains of the Savannah River. The water table is at a depth of 3 to 5 feet in winter to midspring. Slope is 0 to 2 percent.

The Shellbluff soils in this survey area are a taxadjunct to the Shellbluff series because the clay mineralogy is oxidic rather than mixed, as is defined for the Shellbluff series. This difference does not alter the use or behavior of the soils.

Shellbluff soils are geographically associated with Chastain and Tawcaw soils. The associated soils are in a fine family. The poorly drained Chastain soils are mainly in sloughs and low-lying areas. The somewhat poorly drained Tawcaw soils commonly are on slightly lower lying parts of the flood plain.

Typical pedon of Shellbluff clay loam, in an area of Tawcaw-Shellbluff association; 0.6 mile north from the south tip of Red Lake along private gravel road, 30 feet west of road:

A—0 to 4 inches; brown (7.5YR 4/4) clay loam; weak medium subangular blocky structure; friable; many very fine roots; many very fine flakes of mica; strongly acid; clear smooth boundary.

Bw1—4 to 15 inches; reddish brown (5YR 4/4) silty clay loam; weak fine subangular blocky structure; friable; common fine roots; many fine flakes of mica; very strongly acid; gradual wavy boundary.

Bw2—15 to 31 inches; reddish brown (5YR 4/4) clay loam; weak fine subangular blocky structure; friable; common fine roots; few fine flakes of mica; strongly acid; gradual wavy boundary.

Bw3—31 to 54 inches; reddish brown (5YR 4/4) clay loam; few fine faint brown mottles; weak fine subangular blocky structure; friable; few fine flakes of mica; strongly acid; gradual wavy boundary.

BC—54 to 65 inches; reddish brown (5YR 5/4) silty clay; common fine faint brown mottles; weak fine subangular blocky structure; friable; few fine flakes of mica; strongly acid.

Solum thickness is 40 inches or more. The soil is moderately acid to very strongly acid throughout except for the surface layer in limed areas.

The A horizon is 4 to 6 inches thick. It has hue of 10YR, value of 3 to 5, and chroma of 2 to 4 or 6; or it has hue of 10YR, value of 5, and chroma of 8; or it has hue of 7.5YR, value of 3 to 5, and chroma of 2 or 4; or it has hue of 7.5YR, value of 4 or 5, and chroma of 6; or it has hue of 7.5YR, value of 5, and chroma of 8.

The B horizon has hue of 10YR to 5YR, value of 4 or 5, and chroma of 4 or 6; or it has hue of 10YR to 5YR, value of 5, and chroma of 8. This horizon is silty clay loam or clay loam. Below 40 inches, some pedons are silty clay or clay. In some pedons, few or common mottles of chroma 2 are at a depth of 24 inches or more.

The C horizon is fine sandy loam, loam, silt loam, silty clay loam, silty clay, or clay. Some pedons do not have a C horizon.

Tawcaw Series

The Tawcaw series consists of somewhat poorly drained, slowly permeable soils that formed in clayey alluvial sediment on flood plains of the Savannah River. The water table is at a depth of 1.5 to 2.5 feet from late fall to midspring. Slope is 0 to 2 percent.

The Tawcaw soils in this survey area are considered a taxadjunct to the Tawcaw series because the clay mineralogy is mixed rather than kaolinitic, as is defined for the Tawcaw series. This difference does not alter the usefulness or behavior of the soils.

Tawcaw soils are geographically associated with Chastain and Shellbluff soils. Chastain soils are poorly drained. Well drained Shellbluff soils are on somewhat higher lying flood plains.

Typical pedon of Tawcaw silty clay, in an area of Tawcaw-Shellbluff association; 3.4 miles north from the south tip of Red Lake along private gravel road, 0.6 mile south along ungraded road:

A—0 to 3 inches; brown (7.5YR 4/4) silty clay; weak fine granular structure; very friable; many very fine and fine roots; few fine flakes of mica; very strongly acid; clear smooth boundary.

Bw1—3 to 17 inches; reddish brown (5YR 4/4) silty clay; weak medium subangular blocky structure; friable; common very fine roots; few fine flakes of mica; very strongly acid; gradual wavy boundary.

Bw2—17 to 26 inches; brown (7.5YR 4/4) silty clay; common fine prominent light brownish gray (10YR 6/2) mottles; weak fine subangular blocky structure; friable; few very fine roots; few very fine flakes of mica; very strongly acid; gradual wavy boundary.

Bwg—26 to 42 inches; light brownish gray (10YR 6/2) silty clay loam; many fine prominent brown (10YR 4/3) mottles; weak fine subangular blocky structure; friable; many small manganese concretions; strongly acid; gradual wavy boundary.

BCg—42 to 70 inches; grayish brown (10YR 5/2) silty clay loam; many medium prominent yellowish brown (10YR 5/4) mottles; weak medium subangular blocky structure; firm; common small manganese concretions; strongly acid.

C—70 to 90 inches; mottled yellowish brown (10YR 5/4) and grayish brown (10YR 5/2) silty clay loam; massive; friable; many small black manganese concretions; strongly acid.

Solum thickness is 60 inches or more. The soil is moderately acid to very strongly acid throughout except for the surface layer in limed areas.

The A horizon is 3 to 10 inches thick. It has hue of 10YR, value of 3 or 4, and chroma of 3 or 4; or it has hue of 7.5YR, value of 3 or 4, and chroma of 4. In some pedons, mottles are few or common. The A horizon commonly is silty clay or clay.

Some pedons have a BA horizon. This horizon has hue of 10YR, value of 4, and chroma of 3 or 4; or it has hue of 7.5YR, value of 4, and chroma of 4. In some pedons, mottles are few or common and have hue of 10YR, value of 5 to 7, and chroma of 1 to 3.

The upper part of the Bw horizon has hue of 5YR or 10YR, value of 4 to 6, and chroma of 3 or 4; or it has hue of 7.5YR, value of 4 to 6, and chroma of 4. Mottles are few to many and have hue of 10YR, value of 5 to 7, and chroma of 1 to 4. The lower part of the Bw horizon has hue of 10YR, value of 5 or 6, and chroma of 1 or 2. Mottles are few to many and fine or medium. The Bw horizon is silty clay loam, clay loam, silty clay, or clay.

The BC horizon commonly is grayish brown and has few to many brown or yellow mottles.

The C horizon has colors similar to those in the lower part of the Bw horizon, or it is mottled grayish and brownish. This horizon has variable texture.

Tifton Series

The Tifton series consists of well drained, moderately permeable soils that formed predominantly in clayey marine sediment on uplands. Slope is 0 to 8 percent.

Tifton soils are geographically associated with Carnegie, Clarendon, and Dothan soils. Carnegie soils are in a clayey family and have 5 percent or more plinthite at a depth of 18 to 22 inches. Clarendon and Dothan soils contain fewer nodules of ironstone, and in addition, Clarendon soils are moderately well drained.

Typical pedon of Tifton loamy sand, 2 to 5 percent slopes; 2.3 miles north on U.S. Highway 25 from Jenkins County line, 1.3 miles west on paved county road, 0.3 mile north on dirt road, 25 feet west of road:

Apc—0 to 8 inches; grayish brown (10YR 5/2) loamy sand; weak fine granular structure; very friable; many fine roots; 10 percent nodules of ironstone 0.12 to 0.5 inch in diameter; strongly acid; abrupt smooth boundary.

Btc—8 to 34 inches; yellowish brown (10YR 5/8) sandy clay loam; moderate medium subangular blocky structure; friable; sand grains coated and bridged with clay; patchy clay films on faces of peds; 7 percent nodules of ironstone; very strongly acid; gradual wavy boundary.

Btv1—34 to 44 inches; brownish yellow (10YR 6/8) sandy clay loam; common medium prominent red (2.5YR 4/8) mottles and common medium distinct strong brown (7.5YR 5/8) mottles; moderate medium subangular blocky structure; friable; thin patchy clay films on faces of peds; 3 percent nodules of ironstone; 8 percent nodular plinthite; very strongly acid; gradual smooth boundary.

Btv2—44 to 65 inches; mottled brownish yellow (10YR 6/6), red (2.5YR 4/6), strong brown (7.5YR 5/8), and light gray (10YR 7/2) sandy clay loam; weak medium subangular blocky structure; friable; patchy clay films on faces of peds; 5 percent plinthite that is mainly nodular; very strongly acid.

Solum thickness is 60 inches or more. The soil is very strongly acid or strongly acid throughout except for the surface layer in limed areas. Depth to horizons that have plinthite content of at least 5 percent is 34 to 48 inches; and between that depth and a depth of 60 inches or more, the range in plinthite content is 5 to 15 percent.

The A horizon is 4 to 10 inches thick. The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 to 4; or it has hue of 7.5YR, value of 4 or 5, and chroma of 2 to 4. It is loamy sand or sandy loam. The Ap horizon is loamy sand or sandy loam. Some pedons have an E horizon that has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 4 or 6. Nodules of ironstone make up 5 to 15 percent by volume of the A and E horizons.

The Btc horizon and Btv1 horizon have hue of 10YR or 7.5YR, value of 5, and chroma of 4, 6, or 8. Red and gray mottles are few or common in the Btv1 horizon. The Btv2 horizon is mottled yellowish, reddish, brownish, and grayish, or it has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 4, 6 or 8. Nodules of ironstone are 5 to 20 percent in the A horizon and the Btc horizon. If present, nodules of ironstone make up 1 to 10 percent by volume of the Btv horizon.

Troup Series

The Troup series consists of well drained soils that have a moderately permeable subsoil. These soils formed in thick sandy and loamy marine sediment on uplands. Slope is 1 to 25 percent.

Troup soils are geographically associated with Dothan, Lakeland, Lucy, and Orangeburg soils. Dothan and Orangeburg soils have a surface and subsurface layer that is less than 20 inches thick; in addition, Dothan soils contain 5 percent or more plinthite below a depth of 32 to 60 inches. Lakeland soils are sandy throughout. Lucy soils are arenic.

Typical pedon of Troup fine sand, 5 to 8 percent slopes; 2.6 miles southeast on Georgia Highway 24 from U.S. Highway 25 in Waynesboro, Georgia, 3 miles northeast on Thompson Bridge Road, 100 feet north of road:

A—0 to 4 inches; brown (10YR 5/3) fine sand; weak fine granular structure; very friable; common very fine roots; strongly acid; clear smooth boundary.

E1—4 to 20 inches; light yellowish brown (10YR 6/4) fine sand; single grained; loose; common very fine roots; strongly acid; gradual wavy boundary.

E2—20 to 26 inches; reddish yellow (7.5YR 6/6) fine sand; single grained; loose; common very fine roots; strongly acid; gradual wavy boundary.

E3—26 to 42 inches; yellowish red (5YR 5/8) sand; single grained; loose; few fine roots; strongly acid; gradual wavy boundary.

BE—42 to 48 inches; red (2.5YR 5/8) loamy sand; weak medium subangular blocky structure; very friable; few fine roots; strongly acid; gradual wavy boundary.

Bt1—48 to 52 inches; red (2.5YR 4/8) sandy loam; weak medium subangular blocky structure; very friable; strongly acid.

Bt2—52 to 80 inches; red (2.5YR 4/8) sandy clay loam; weak medium subangular blocky structure; friable; very strongly acid.

Solum thickness is 76 inches or more. The soil is strongly acid or very strongly acid throughout except for the surface layer in limed areas.

The sandy epipedon is 41 to 69 inches thick.

The A horizon has hue of 10YR, value of 3 to 6, and chroma of 2, 4, or 6; or it has hue of 10YR, value of 5 or 6, and chroma of 8; or it has hue of 7.5YR, value of 3 to 6, and chroma of 2 or 4; or it has hue of 7.5YR, value of 4 to 6, and chroma of 6; or it has hue of 7.5YR, value of 5 or 6, and chroma of 8.

The E horizon has hue of 10YR to 5YR, value of 4 to 6, and chroma of 4 or 6; or it has hue of 10YR to 5YR, value of 5 or 6, and chroma of 8.

The BE horizon has hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 6; or it has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 8; or it has hue of 2.5YR, value of 4 to 6, and chroma of 6 or 8. In some pedons, yellowish red or red mottles are few or common and fine or medium. Some pedons do not have a BE horizon.

The Bt horizon has hue of 5YR to 10YR, value of 4 to 6, and chroma of 6; or it has hue of 5YR to 10YR, value of 5 or 6, and chroma of 8; or it has hue of 2.5YR, value of 4 to 6, and chroma of 6 or 8. In some pedons, reddish and brownish mottles are few to many and fine or medium. This horizon is sandy loam or sandy clay loam.

Factors of Soil Formation

Soil characteristics are determined by the physical and mineral composition of the parent material; the climate under which the parent material accumulated and has existed since accumulation; the plant and animal life on and in the soil; the relief, or lay of the land; and the length of time that the forces of soil formation have acted on the soil material (*4*). All of these factors influence every soil, but the significance of each factor varies from place to place. In one area, one factor may dominate soil formation; in another area a different factor may be the most important.

The interrelationships among these five factors are complex, and the effects of any one factor cannot be isolated and completely evaluated. It is convenient, however, to discuss each factor separately and to indicate the probable effects of each.

Parent Material

Parent material is the unconsolidated mass in which soil forms. It is largely responsible for the chemical and mineralogical composition of the soil. Burke County is underlain by Coastal Plain sedimentary rock (*7*). Sandy and loamy marine sediments commonly overlie the rock.

The Irwinton Sand and Twiggs Clay of the Tertiary Period underlie most of the ridgetops on uplands in the northern part of Burke County. The main soils that formed in these areas are the well drained Faceville, Lucy, Orangeburg, and Troup soils. These soils are nearly level to strongly sloping. They have a brownish, sandy surface layer and a reddish, loamy and clayey subsoil. Some also have a thick, sandy, brownish or yellowish subsurface layer.

The McBean Formation of the Tertiary Period underlies the more sloping hillsides, mainly near Boggy Creek, Gut Creek, Spring Branch, and McBean Creek. The main soils that formed in these areas are the well drained Lucy, Orangeburg, and Troup soils. These soils are strongly sloping to steep. They are similar to the soils on the less sloping ridgetops, but they do not have a clayey subsoil. Of lesser extent in the three formations are the excessively drained Lakeland soils.

Twiggs Clay of the Tertiary Period is associated with soils mainly on the hillsides of uplands near Buckhead Creek, Rocky Creek, and the Ogeechee River. The main soils that formed in these areas are the well drained Dothan and Tifton soils. These soils are mainly gently sloping. They have a brownish sandy or loamy surface layer and a brownish mottled loamy subsoil.

The Neogene Undifferentiated Formation of the Tertiary Period underlies the rest of Burke County, mainly on the ridgetops of uplands. The main soils that formed in these areas are the well drained Cowarts, Dothan, and Tifton soils. These soils are mainly nearly level and very gently sloping. They have a brownish, sandy surface layer and a brownish, mottled, loamy subsoil; in places, the subsoil is dense. Of lesser extent are the well drained Fuquay soils and the poorly drained Grady and Rains soils.

Stream terraces are near some of the creeks and rivers in Burke County. The soils in these deposits formed in more recent sediments than the soils on uplands. However, these sediments are older than those on the lower lying alluvial plain. The somewhat poorly drained Ocilla soils and the moderately well drained Dogue soils are the main soils formed on stream terraces. These soils are nearly level. They have a mainly brownish surface layer or a sandy surface and subsurface layer, or they have a brownish, loamy surface layer and a yellowish or brownish, mottled subsoil.

Stream alluvium is adjacent to all the streams in Burke County. The soils in this alluvium formed in more recent sediments than the soils that formed on uplands and stream terraces. The poorly drained Chastain soils, the somewhat poorly drained Tawcaw soils, and the well drained Shellbluff soils are the main soils on the flood plain near the Savannah River. These soils are nearly level. The poorly drained soils are grayish and clayey throughout; the somewhat poorly drained soils are clayey throughout and have a brownish surface layer and a brownish, mottled subsoil; and the well drained soils are brownish and loamy throughout.

The poorly drained Herod and Muckalee soils are the main soils on flood plains in the rest of Burke County. These soils are nearly level. They are mainly grayish and loamy throughout. Of lesser extent are the poorly drained Meggett soils.

Plants and Animals

The role of plants, animals, and other organisms is significant in soil development. Plants and animals increase the amounts of organic matter and nitrogen, increase or decrease content of plant nutrients, and change soil structure and porosity.

Plants recycle nutrients, accumulate organic matter, and provide food and cover for animals. Plants stabilize the surface layer so that soil-forming processes can continue. Vegetation also provides a more stable environment for soil-forming processes by protecting the soils from extremes in temperature.

The soils in Burke County formed under a succession of briars, brambles, and woody plants that yielded to pines and hardwood trees. Later, the hardwoods suppressed most other plants and became the climax vegetation.

Animals rearrange soil material by roughening the surface, forming and filling channels, and shaping the peds and voids. The soil is mixed by ants, wasps, worms, and spiders that make channels; by crustacea, such as crabs and crayfish; and by turtles and foxes that dig burrows. Humans affect the soil-forming process by tilling the crops, removing natural vegetation and establishing different plants, and reducing or increasing fertility.

Bacteria, fungi, and other micro-organisms hasten decomposition of organic matter and increase the release of minerals for plant growth.

The net gains and losses caused by plants and animals in the soil-forming process are important in Burke County. However, the relationship between plants and animals, climate, and parent material is very close; therefore, the soils do not differ significantly because of the role of plants and animals.

Climate

The present climate of Burke County is thought to be similar to the climate that existed as the soils formed. The relatively high rainfall and warm temperature contribute to rapid soil formation and are the two most important climatic features that relate to soil properties.

Water from precipitation is essential in the formation of soil. Water dissolves soluble materials and is used by plants and animals. It transports material from one part of the soil to another part or from one area to another area.

Soils in Burke County formed under a thermic temperature regime; that is, the mean soil temperature at a depth of 20 inches is between 59° and 72° F. Based on the mean annual air temperature, it is estimated that the soil temperature in Burke County is 66° or 67° F. The rate of chemical reactions and other processes in the soil depends to some extent on temperature. In addition, temperature affects the type and quantity of vegetation, the amount and kind of organic matter, and the rate of decomposition of organic matter.

Relief

Relief is the elevations, or inequalities, of land surface considered collectively. Color of the soil, wetness, thickness of the A horizon, content of organic matter, and plant cover are commonly related to relief. In Burke County, the obvious effects of relief are color of the soil and wetness.

The Dothan and Tifton soils have mainly a yellowish brown subsoil, whereas the Grady and Rains soils are primarily gray throughout the subsoil. This color difference results from a difference in relief and a corresponding difference in internal drainage. Dothan and Tifton soils are higher lying and better drained than the other soils; therefore, the soil material is better oxidized and the subsoil is browner.

To a large extent, relief controls the movement of water across the surface and through the soil. Water flowing over the soil commonly carries solid particles and causes erosion or deposition, depending on the kind of relief. More water runs off sloping areas and less water enters the soil, so that sloping soils are drier. Lower lying areas receive the water that flows off and through the higher soils and are commonly wetter.

Time

The length of time that soil-forming factors act on the parent material determines to a large degree the characteristics of the soil. Determinations of when soil formation began in the survey area are not exact, but most soils in Burke County are considered mature. A mature soil is in equilibrium with the environment. It has readily recognized pedogenic horizons and a regular decrease in content of carbon with depth. Some areas of Dothan and Tifton soils are on rather broad, stable landscapes where the soil-forming processes have been active for thousands of years. These mature soils have a thick solum and well expressed zones of eluviation and illuviation.

Osier soils receive sediment annually from floodwaters. These young soils are stratified and are not old enough to have a zone of illuviation. Young soils do not have pedogenic horizons. Their content of carbon decreases irregularly with depth.

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Glossary

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Association, soil. A group of soils geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as—

	Inches
Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	more than 12

Base saturation. The degree to which material having cation exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, K), expressed as a percentage of the total cation exchange capacity.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity, but is more precise in meaning.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Climax vegetation. The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Complex, soil. A map unit of two or more kinds of soil in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils are somewhat similar in all areas.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrated compounds or cemented soil grains. The composition of most concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are common compounds in concretions.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are—

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—When wet, adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Cemented.—Hard; little affected by moistening.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Corrosive. High risk of corrosion to uncoated steel or deterioration of concrete.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:

Excessively drained.—Water is removed from the soil very rapidly. Excessively drained soils are commonly very coarse textured, rocky, or shallow. Some are steep. All are free of the mottling related to wetness.

Somewhat excessively drained.—Water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy and rapidly pervious. Some are shallow. Some are so steep that much of the water they receive is lost as runoff. All are free of the mottling related to wetness.

Well drained.—Water is removed from the soil readily, but not rapidly. It is available to plants throughout most of the growing season, and wetness does not inhibit growth of roots for significant periods during most growing seasons. Well drained soils are commonly medium textured. They are mainly free of mottling.

Moderately well drained.—Water is removed from the soil somewhat slowly during some periods. Moderately well drained soils are wet for only a short time during the growing season, but periodically they are wet long enough that most mesophytic crops are affected. They commonly have a slowly pervious layer within or directly below the solum, or periodically receive high rainfall, or both.

Somewhat poorly drained.—Water is removed slowly enough that the soil is wet for significant periods during the growing season. Wetness markedly restricts the growth of mesophytic crops unless artificial drainage is provided. Somewhat poorly drained soils commonly have a slowly pervious layer, a high water table, additional water from seepage, nearly continuous rainfall, or a combination of these.

Poorly drained.—Water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Free water is commonly at or near the surface for long enough during the growing season that most mesophytic crops cannot be grown unless the soil is artificially drained. The soil is not continuously saturated in layers directly below plow depth. Poor drainage results from a high water table, a slowly pervious layer within the profile, seepage, nearly continuous rainfall, or a combination of these.

Very poorly drained.—Water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. Unless the soil is artificially drained, most mesophytic crops cannot be grown. Very poorly drained soils are commonly level or depressed and are frequently ponded. Yet, where rainfall is high and nearly continuous, they can have moderate or high slope gradients.

Drainage, surface. Runoff, or surface flow of water, from an area.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of the activities of man or other animals or of a catastrophe in nature, for example, fire, that exposes the surface.

Excess fines (in tables). Excess silt and clay in the soil. The soil is not a source of gravel or sand for construction purposes.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity.*

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors and mottles.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock up to 3 inches (2 millimeters to 7.5 centimeters) in diameter. An individual piece is a pebble.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an upper case letter represents the major horizons. Numbers or lower case letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the *Soil Survey Manual*. The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue at the surface of a mineral soil.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, alluminum, or some combination of these.

B horizon.—The mineral horizon below an O, A, or E horizon. The B horizon is in part a layer of transition from the overlying horizon to the underlying C horizon. The B horizon also has distinctive characteristics such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these. The combined A and B horizons are generally called the solum, or true soil. If a soil does not have a B horizon, the A horizon alone is the solum.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the A or B horizon. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, the Arabic numeral 2 precedes the letter C.

R layer.—Consolidated rock beneath the soil. The rock commonly underlies a C horizon, but can be directly below an A or a B horizon.

Hydrologic soil groups. Refers to soils grouped according to their runoff-producing characteristics. The chief consideration is the inherent capacity of soil bare of vegetation to permit infiltration. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff. Soils are assigned to four groups. In group A are soils having a high infiltration rate when thoroughly wet and having a low runoff potential. They are mainly deep, well drained, and sandy or gravelly. In group D, at the other extreme, are soils having a very slow infiltration rate and thus a high runoff potential. They have a claypan or clay layer at or near the surface, have a permanent high water table, or are shallow over nearly impervious bedrock or other material. A soil is assigned to two hydrologic groups if part of the acreage is artificially drained and part is undrained.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are—

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

Leaching. The removal of soluble material from soil or other material by percolating water.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Low strength. The soil is not strong enough to support loads.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

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

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

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

Neutral soil. A soil having a pH value between 6.6 and 7.3. (See Reaction, soil.)

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

Percs slowly (in tables). The slow movement of water through the soil adversely affecting the specified use.

Permeability. The quality of the soil that enables water to move downward through the profile. Permeability is measured as the number of inches per hour that water moves downward through the saturated soil. Terms describing permeability are:

Very slow	less than 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management. For example, slope, stoniness, and thickness.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

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

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

Plinthite. The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents. It commonly appears as red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates on repeated wetting and drying, especially if it is exposed also to heat from the sun. In a moist soil, plinthite can be cut with a spade. It is a form of laterite.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Poor filter (in tables). Because of rapid permeability the soil may not adequately filter effluent from a waste disposal system.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degree of acidity or alkalinity is expressed as—

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

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

Rill. A steep sided channel resulting from accelerated erosion. A rill is generally a few inches deep and not wide enough to be an obstacle to farm machinery.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer or of the underlying material. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shrink-swell. The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75 feet.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Slope (in tables). Slope is great enough that special practices are required to insure satisfactory performance of the soil for a specific use.

Small stones (in tables). Rock fragments less than 3 inches (7.5 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and plant and animal activities are largely confined to the solum.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsurface layer. Technically, the A2 horizon. Generally refers to a leached horizon lighter in color and lower in content of organic matter than the overlying surface layer.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Tables

TABLE 1.--TEMPERATURE AND PRECIPITATION

[Recorded in the period 1952-79 at Waynesboro, Georgia]

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average	2 years in 10 will have-- Maximum temperature higher than--	2 years in 10 will have-- Minimum temperature lower than--	Average number of growing degree days[1]	Average	2 years in 10 will have-- Less than--	2 years in 10 will have-- More than--	Average number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January----	57.0	32.9	45.0	80	12	118	3.96	2.15	5.54	7	0
February---	61.2	35.5	48.4	81	16	132	4.08	2.08	5.82	7	.9
March------	68.8	42.0	55.4	86	24	203	4.39	2.92	5.73	7	0
April------	77.4	49.7	63.6	91	32	408	3.11	1.39	4.57	5	0
May--------	84.3	58.2	71.3	96	40	660	4.40	2.22	6.30	6	0
June-------	88.5	64.2	76.4	101	50	792	4.18	1.90	6.12	6	0
July-------	91.3	68.3	79.8	100	58	924	4.03	1.96	5.82	7	0
August-----	91.0	67.4	79.2	100	58	905	4.88	2.76	6.75	6	0
September--	86.1	62.1	74.1	97	45	723	3.60	1.15	5.60	5	0
October----	77.6	49.1	63.4	91	29	415	2.82	.38	4.67	3	0
November---	68.8	40.0	54.4	84	19	162	2.26	1.14	3.23	4	0
December---	59.9	34.6	47.3	80	13	98	3.44	1.79	4.87	5	0
Year-----	76.0	50.3	63.2	101	11	5,540	45.15	37.97	51.58	68	.9

[1]A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50° F).

TABLE 2.--FREEZE DATES IN SPRING AND FALL

[Recorded in the period 1952-79 at Waynesboro, Georgia]

Probability	Temperature		
	24° F or lower	28° F or lower	32° F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	March 23	March 27	April 15
2 years in 10 later than--	March 13	March 20	April 9
5 years in 10 later than--	February 22	March 6	March 26
First freezing temperature in fall:			
1 year in 10 earlier than--	November 6	October 30	October 18
2 years in 10 earlier than--	November 14	November 4	October 23
5 years in 10 earlier than--	November 28	November 13	November 2

TABLE 3.--GROWING SEASON

[Recorded in the period 1952-79 at Waynesboro, Georgia]

Probability	Length of growing season if daily minimum temperature is--		
	Higher than 24° F	Higher than 28° F	Higher than 32° F
	Days	Days	Days
9 years in 10	239	226	192
8 years in 10	252	234	202
5 years in 10	278	251	220
2 years in 10	304	267	238
1 year in 10	318	276	248

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
BoA	Bonifay fine sand, 1 to 5 percent slopes	17,434	3.3
BoC	Bonifay fine sand, 5 to 8 percent slopes	8,286	1.6
BoD	Bonifay fine sand, 8 to 12 percent slopes	1,756	0.3
CaB2	Carnegie sandy loam, 3 to 5 percent slopes, eroded	2,100	0.4
CaC2	Carnegie sandy loam, 5 to 8 percent slopes, eroded	2,436	0.5
CC	Chastain-Tawcaw association	2,650	0.5
ChA	Chipley sand, 0 to 2 percent slopes	1,064	0.2
CnA	Clarendon loamy sand, 0 to 2 percent slopes	4,028	0.8
CoB	Cowarts loamy sand, 2 to 5 percent slopes	10,638	2.0
CoD	Cowarts loamy sand, 8 to 12 percent slopes	1,813	0.3
CwC2	Cowarts sandy loam, 5 to 8 percent slopes, eroded	11,306	2.1
DgA	Dogue sandy loam, 0 to 2 percent slopes	1,110	0.2
DoA	Dothan loamy sand, 0 to 2 percent slopes	19,609	3.7
DoB	Dothan loamy sand, 2 to 5 percent slopes	97,212	18.3
DoC	Dothan loamy sand, 5 to 8 percent slopes	5,454	1.0
DuB	Dothan-Urban land complex, 2 to 5 percent slopes	1,190	0.2
ENB	Esto and Nankin soils, 2 to 5 percent slopes	2,415	0.5
ENC2	Esto and Nankin sandy loams, 5 to 8 percent slopes, eroded	1,020	0.2
FaA	Faceville loamy sand, 0 to 2 percent slopes	376	0.1
FaB	Faceville loamy sand, 2 to 5 percent slopes	18,629	3.5
FeC2	Faceville sandy loam, 5 to 8 percent slopes, eroded	9,624	1.8
FeD2	Faceville sandy loam, 8 to 12 percent slopes, eroded	2,705	0.5
FmA	Faceville sandy clay loam, 0 to 2 percent slopes, smoothed	160	*
FsB	Fuquay loamy sand, 1 to 5 percent slopes	25,386	4.8
FsC	Fuquay loamy sand, 5 to 8 percent slopes	6,615	1.2
GR	Grady-Rembert association	19,927	3.7
HM	Herod and Muckalee loams	14,061	2.6
KuB	Kureb sand, 1 to 8 percent slopes	160	*
LaB	Lakeland sand, 1 to 8 percent slopes	6,490	1.2
LaD	Lakeland sand, 8 to 17 percent slopes	613	0.1
LmB	Lucy loamy sand, 0 to 5 percent slopes	13,444	2.5
LmC	Lucy loamy sand, 5 to 8 percent slopes	8,915	1.7
LmD	Lucy loamy sand, 8 to 17 percent slopes	6,881	1.3
Me	Meggett loam	2,013	0.4
Mu	Muckalee loam	8,903	1.7
OcA	Ocilla loamy sand, 0 to 2 percent slopes	3,701	0.7
OeA	Orangeburg loamy sand, 0 to 2 percent slopes	817	0.2
OeB	Orangeburg loamy sand, 2 to 5 percent slopes	16,962	3.2
OgC2	Orangeburg sandy loam, 5 to 8 percent slopes, eroded	8,618	1.6
OgD2	Orangeburg sandy loam, 8 to 17 percent slopes, eroded	4,596	0.9
OI	Osier and Bibb soils	38,391	7.2
Ra	Rains sandy loam	18,063	3.4
TA	Tawcaw-Shellbluff association	5,358	1.0
TfA	Tifton loamy sand, 0 to 2 percent slopes	7,408	1.4
TfB	Tifton loamy sand, 2 to 5 percent slopes	41,891	7.9
ThC2	Tifton sandy loam, 5 to 8 percent slopes, eroded	2,940	0.6
TrB	Troup fine sand, 1 to 5 percent slopes	22,024	4.1
TrC	Troup fine sand, 5 to 8 percent slopes	15,437	2.9
TrD	Troup fine sand, 8 to 17 percent slopes	7,946	1.5
TUF	Troup and Lucy fine sands, 17 to 25 percent slopes	945	0.2
	Total	531,520	100.0

* Less than 0.1 percent.

TABLE 5.--IMPORTANT FARMLAND

[Acreage is according to date fieldwork was completed. Soils not listed do not qualify as prime farmland or as additional farmland of statewide importance]

Map symbol and soil name	Prime farmland	Additional farmland of statewide importance
BoA----------------------- Bonifay	---	17,434
BoC----------------------- Bonifay	---	8,286
CaB2---------------------- Carnegie	2,100	---
CaC2---------------------- Carnegie	---	2,436
ChA----------------------- Chipley	---	1,064
CnA----------------------- Clarendon	4,028	---
CoB----------------------- Cowarts	10,638	---
CoD----------------------- Cowarts	---	1,813
CwC2---------------------- Cowarts	---	11,306
DgA----------------------- Dogue	1,110	---
DoA----------------------- Dothan	19,609	---
DoB----------------------- Dothan	97,212	---
DoC----------------------- Dothan	5,454	---
ENB----------------------- Esto and Nankin	2,415	---
ENC2---------------------- Esto and Nankin	---	1,020
FaA----------------------- Faceville	376	---
FaB----------------------- Faceville	18,629	---
FeC2---------------------- Faceville	---	9,624
FmA----------------------- Faceville	160	---
FsB----------------------- Fuquay	---	25,386
FsC----------------------- Fuquay	---	6,615
LaB----------------------- Lakeland	---	6,490
LmB----------------------- Lucy	---	13,444
LmC----------------------- Lucy	---	8,915
OcA----------------------- Ocilla	---	3,701
OeA----------------------- Orangeburg	817	---
OeB----------------------- Orangeburg	16,962	---
OgC2---------------------- Orangeburg	8,618	---

See footnote at end of table.

TABLE 5.--IMPORTANT FARMLAND--Continued

Map symbol and soil name	Prime farmland	Additional farmland of statewide importance
TA----------------------- Tawcaw-Shellbluff	---	1,607*
TfA---------------------- Tifton	7,408	---
TfB---------------------- Tifton	41,891	---
ThC2--------------------- Tifton	2,940	---
TrB---------------------- Troup	---	22,024
TrC---------------------- Troup	---	15,437
Total------------------	240,367	156,602

* Includes only the Shellbluff part of the association.

TABLE 6.--YIELDS PER ACRE OF CROPS AND PASTURE

[Yields in the N columns are for nonirrigated soils; those in the I columns are for irrigated soils. Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil]

Map symbol and soil name	Corn		Soybeans		Wheat		Cotton lint		Peanuts		Improved bermudagrass	
	N	I	N	I	N	I	N	I	N	I	N	I
	Bu	Bu	Bu	Bu	Bu	Bu	Lbs	Lbs	Lbs	Lbs	AUM*	AUM*
BoA----------------------- Bonifay	60	160	25	45	25	45	500	600	2,200	3,850	7.5	10.0
BoC----------------------- Bonifay	55	130	20	35	20	35	450	550	1,800	3,000	7.5	10.0
BoD----------------------- Bonifay	---	---	---	---	---	---	---	---	---	---	7.5	10.0
CaB2---------------------- Carnegie	65	105	30	35	30	35	500	600	3,200	4,300	6.5	8.5
CaC2---------------------- Carnegie	55	90	25	30	25	30	400	500	2,600	3,500	6.0	8.0
CC------------------------ Chastain-Tawcaw	---	---	---	---	---	---	---	---	---	---	---	---
ChA----------------------- Chipley	60	160	20	40	20	40	---	---	---	---	8.0	10.5
CnA----------------------- Clarendon	110	175	40	50	40	50		---	---	---	10.5	13.0
CoB----------------------- Cowarts	80	125	35	40	35	40	650	800	2,400	3,250	8.0	10.5
CoD----------------------- Cowarts	---	---	---	---	---	---	---	---	---	---	7.0	9.5
CwC2---------------------- Cowarts	60	95	20	25	20	25	500	600	1,600	2,150	7.0	9.5
DgA----------------------- Dogue	125	200	45	55	60	70	---	---	---	---	10.5	13.0
DoA----------------------- Dothan	120	190	40	45	45	55	900	1,000	3,800	5,100	10.5	14.0
DoB----------------------- Dothan	120	190	35	40	40	50	900	1,000	3,600	4,850	10.5	14.0
DoC----------------------- Dothan	100	160	30	35	35	45	800	950	3,600	4,850	10.0	13.0
DuB----------------------- Dothan-Urban land	---	---	---	---	---	---	---	---	---	---	---	---
ENB----------------------- Esto and Nankin	60	95	30	35	30	35	500	600	1,900	2,550	7.0	9.0
ENC2---------------------- Esto and Nankin	40	65	20	25	20	25	400	500	1,500	2,000	6.0	7.5
FaA----------------------- Faceville	115	185	45	50	40	50	875	1,050	4,000	4,750	10.0	13.0
FaB----------------------- Faceville	115	185	45	50	40	50	875	1,050	4,000	4,750	10.0	13.0

See footnote at end of table.

TABLE 6.--YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Map symbol and soil name	Corn		Soybeans		Wheat		Cotton lint		Peanuts		Improved bermudagrass	
	N	I	N	I	N	I	N	I	N	I	N	I
	Bu	Bu	Bu	Bu	Bu	Bu	Lbs	Lbs	Lbs	Lbs	AUM*	AUM*
FeC2 Faceville	85	135	25	40	30	40	550	650	2,800	3,800	8.5	11.0
FeD2 Faceville	---	---	---	---	---	---	---	---	---	---	6.0	8.0
FmA Faceville	115	185	45	50	40	50	875	1,050	4,000	4,750	10.0	13.0
FsB Fuquay	80	180	30	50	30	50	650	800	2,900	4,350	7.5	10.0
FsC Fuquay	75	170	25	45	25	45	600	750	2,600	3,500	7.0	9.5
GR Grady-Rembert	---	---	---	---	---	---	---	---	---	---	---	---
HM Herod and Muckalee	---	---	---	---	---	---	---	---	---	---	---	---
KuB Kureb	---	---	---	---	---	---	---	---	---	---	---	---
LaB Lakeland	55	160	20	40	20	40	450	550	2,000	3,500	7.0	9.5
LaD Lakeland	---	---	---	---	---	---	---	---	---	---	6.0	---
LmB Lucy	80	180	35	50	30	35	650	800	3,000	4,500	8.0	10.5
LmC Lucy	70	160	25	45	25	30	600	750	2,500	3,750	7.5	10.0
LmD Lucy	---	---	---	---	---	---	---	---	---	---	7.0	---
Me Meggett	---	---	---	---	---	---	---	---	---	---	---	---
Mu Muckalee	---	---	---	---	---	---	---	---	---	---	---	---
OcA Ocilla	75	120	35	40	35	40	---	---	---	---	8.5	10.5
OeA Orangeburg	120	190	45	55	45	55	900	1,100	4,000	5,400	10.5	14.0
OeB Orangeburg	120	190	45	55	45	55	900	1,100	4,000	5,400	10.5	14.0
OgC2 Orangeburg	85	135	35	40	35	45	700	850	2,800	3,800	10.0	12.5
OgD2 Orangeburg	---	---	---	---	---	---	---	---	---	---	8.0	---
OI Osier and Bibb	---	---	---	---	---	---	---	---	---	---	---	---
Ra Rains	---	---	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 6.--YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Map symbol and soil name	Corn		Soybeans		Wheat		Cotton lint		Peanuts		Improved bermudagrass	
	N	I	N	I	N	I	N	I	N	I	N	I
	Bu	Bu	Bu	Bu	Bu	Bu	Lbs	Lbs	Lbs	Lbs	AUM*	AUM*
TA:												
Tawcaw	---	---	---	---	---	---	---	---	---	---	---	---
Shellbluff	120	190	40	45	45	55	900	1,000	4,000	5,400	10.5	14.0
TfA Tifton	115	185	45	55	45	50	950	1,150	3,800	5,100	10.5	14.0
TfB Tifton	115	185	45	55	45	50	950	1,150	3,800	5,100	10.5	14.0
ThC2 Tifton	80	130	35	40	35	45	650	800	3,000	4,050	9.0	11.5
TrB Troup	60	160	25	45	25	45	500	600	2,200	3,850	7.5	10.0
TrC Troup	55	130	20	35	20	35	450	550	1,800	3,000	7.5	10.0
TrD Troup	---	---	---	---	---	---	---	---	---	---	6.0	---
TUF Troup and Lucy	---	---	---	---	---	---	---	---	---	---	---	---

* Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

TABLE 7.--CAPABILITY CLASSES AND SUBCLASSES

[Miscellaneous areas are excluded. Absence of an entry indicates no acreage]

Class	Total acreage	Major management concerns (Subclass)		
		Erosion (e)	Wetness (w)	Soil problem (s)
		Acres	Acres	Acres
I	28,210	---	---	---
II	231,912	186,337	6,745	38,830
III	89,696	29,943	4,765	54,988
IV	71,069	15,912	18,063	37,094
V	81,282	---	81,282	---
VI	25,769	7,811	7,878	10,080
VII	1,245	---	---	1,245

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY

[Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available]

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Potential productivity: Common trees	Potential productivity: Site index	Trees to plant
BoA, BoC, BoD------ Bonifay	3s	Slight	Moderate	Moderate	Slash pine-----------	80	Slash pine.
					Longleaf pine--------	65	
					Loblolly pine--------	80	
CaB2, CaC2--------- Carnegie	2o	Slight	Slight	Slight	Loblolly pine--------	86	Loblolly pine, slash pine.
					Slash pine-----------	86	
					Longleaf pine--------	72	
CC*:							
Chastain----------	2w	Slight	Severe	Severe	Sweetgum-------------	94	Loblolly pine, American sycamore, sweetgum, cherrybark oak.
					Water oak------------	89	
					Eastern cottonwood---	90	
					Green ash------------	88	
					Loblolly pine--------	90	
					Water tupelo---------	---	
					White oak------------	---	
					Southern red oak-----	---	
					Baldcypress----------	---	
Tawcaw------------	1w	Slight	Moderate	Moderate	Loblolly pine--------	100	Loblolly pine, eastern cottonwood, American sycamore, sweetgum, water oak, cherrybark oak.
					Sweetgum-------------	100	
					Water oak------------	90	
					Water tupelo---------	---	
ChA---------------- Chipley	2s	Slight	Moderate	Slight	Slash pine-----------	90	Slash pine, loblolly pine.
					Loblolly pine--------	90	
					Longleaf pine--------	80	
					Post oak-------------	---	
					Turkey oak-----------	---	
					Blackjack oak--------	---	
CnA---------------- Clarendon	2w	Slight	Moderate	Slight	Loblolly pine--------	90	Loblolly pine, slash pine, American sycamore, yellow-poplar, sweetgum.
					Slash pine-----------	90	
					Sweetgum-------------	85	
CoB, CoD, CwC2----- Cowarts	2o	Slight	Slight	Slight	Loblolly pine--------	86	Loblolly pine, longleaf pine, slash pine.
					Slash pine-----------	86	
					Longleaf pine--------	67	
DgA---------------- Dogue	2w	Slight	Moderate	Slight	Loblolly pine--------	90	Loblolly pine.
					Southern red oak-----	80	
					Sweetgum-------------	90	
					Yellow-poplar--------	93	
					White oak------------	80	
DoA, DoB, DoC------ Dothan	2o	Slight	Slight	Slight	Slash pine-----------	89	Slash pine, loblolly pine, longleaf pine.
					Longleaf pine--------	70	
					Loblolly pine--------	---	
ENB*, ENC2*:							
Esto--------------	3o	Slight	Slight	Slight	Loblolly pine--------	80	Loblolly pine, slash pine, longleaf pine.
					Longleaf pine--------	65	
					Slash pine-----------	80	

See footnote at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Map symbol and soil name	Ordination symbol	Management concerns			Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Common trees	Site index	
ENB*, ENC2*:							
Nankin	3o	Slight	Slight	Slight	Loblolly pine	80	Loblolly pine, slash pine.
					Slash pine	80	
					Longleaf pine	70	
FaA, FaB, FeC2, FeD2, FmA Faceville	3o	Slight	Slight	Slight	Loblolly pine	82	Loblolly pine, slash pine.
					Slash pine	80	
					Longleaf pine	65	
FsB, FsC Fuquay	3s	Slight	Moderate	Moderate	Loblolly pine	83	Slash pine, longleaf pine.
					Slash pine	83	
					Longleaf pine	67	
GR*:							
Grady	4w	Slight	Severe	Severe	Baldcypress	---	American sycamore, water tupelo.
					Blackgum	65	
					Water oak	65	
Rembert	5w	Slight	Severe	Severe	Baldcypress	---	Baldcypress, water tupelo.
					Water tupelo	---	
HM*:							
Herod	1w	Slight	Severe	Severe	Loblolly pine	100	Loblolly pine, slash pine, sweetgum, eastern cottonwood.
					Sweetgum	95	
					Water oak	90	
					Eastern cottonwood	100	
Muckalee	2w	Slight	Severe	Severe	Sweetgum	90	Sweetgum, loblolly pine, American sycamore, eastern cottonwood.
					Loblolly pine	90	
					Slash pine	90	
					Water oak	90	
					Green ash	85	
					Eastern cottonwood	100	
KuB Kureb	5s	Slight	Severe	Severe	Longleaf pine	52	Longleaf pine, slash pine.
					Slash pine	---	
					Sand pine	---	
LaB, LaD Lakeland	4s	Slight	Moderate	Moderate	Slash pine	75	Slash pine, loblolly pine.
					Loblolly pine	75	
					Longleaf pine	60	
LmB, LmC, LmD Lucy	3s	Slight	Moderate	Moderate	Slash pine	85	Slash pine, longleaf pine, loblolly pine.
					Longleaf pine	74	
					Loblolly pine	85	
Me Meggett	1w	Slight	Severe	Severe	Slash pine	100	Slash pine, loblolly pine.
					Loblolly pine	100	
					Pond pine	75	
Mu Muckalee	2w	Slight	Severe	Severe	Sweetgum	90	Sweetgum, loblolly pine, American sycamore, eastern cottonwood.
					Loblolly pine	90	
					Slash pine	90	
					Water oak	90	
					Green ash	85	
					Eastern cottonwood	100	
OcA Ocilla	3w	Slight	Moderate	Moderate	Loblolly pine	85	Loblolly pine, slash pine.
					Slash pine	85	
					Longleaf pine	75	
OeA, OeB, OgC2, OgD2 Orangeburg	2o	Slight	Slight	Slight	Loblolly pine	80	Slash pine, loblolly pine.
					Slash pine	86	
					Longleaf pine	77	

See footnote at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Map symbol and soil name	Ordination symbol	Management concerns			Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Common trees	Site index	
OI*:							
Osier	3w	Slight	Severe	Severe	Slash pine	85	Slash pine, loblolly pine.
					Loblolly pine	87	
					Longleaf pine	69	
Bibb	2w	Slight	Severe	Severe	Loblolly pine	95	Eastern cottonwood, loblolly pine, sweetgum, yellow-poplar.
					Sweetgum	90	
					Water oak	90	
					Blackgum	---	
Ra: Rains	2w	Slight	Severe	Severe	Loblolly pine	94	Loblolly pine, slash pine, sweetgum, American sycamore.
					Slash pine	91	
					Sweetgum	90	
TA*:							
Tawcaw	1w	Slight	Moderate	Moderate	Loblolly pine	100	Loblolly pine, eastern cottonwood, American sycamore, sweetgum, water oak, cherrybark oak.
					Sweetgum	100	
					Water oak	90	
					Water tupelo	---	
Shellbluff	1o	Slight	Slight	Slight	Sweetgum	100	Loblolly pine.
					Yellow-poplar	105	
					Cherrybark oak	105	
					Eastern cottonwood	105	
					Scarlet oak	100	
					Black walnut	100	
TfA, TfB, ThC2: Tifton	2o	Slight	Slight	Slight	Loblolly pine	86	Loblolly pine, slash pine.
					Slash pine	86	
					Longleaf pine	72	
TrB, TrC, TrD: Troup	3s	Slight	Moderate	Moderate	Loblolly pine	77	Loblolly pine, longleaf pine, slash pine.
					Longleaf pine	76	
					Slash pine	85	
TUF*:							
Troup	3s	Slight	Moderate	Moderate	Loblolly pine	77	Loblolly pine, longleaf pine, slash pine.
					Longleaf pine	76	
					Slash pine	85	
Lucy	3s	Moderate	Moderate	Severe	Longleaf pine	71	Longleaf pine, loblolly pine.
					Loblolly pine	84	

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 9.--RECREATIONAL DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated]

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
BoA-------------------- Bonifay	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
BoC, BoD--------------- Bonifay	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Severe: droughty.
CaB2------------------- Carnegie	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, percs slowly.	Slight----------	Slight.
CaC2------------------- Carnegie	Moderate: percs slowly	Moderate: percs slowly.	Severe: slope.	Slight----------	Slight.
CC*:					
Chastain--------------	Severe: flooding, wetness, too clayey.	Severe: wetness, too clayey.	Severe: too clayey, wetness, flooding.	Severe: wetness, too clayey.	Severe: wetness, flooding.
Tawcaw----------------	Severe: flooding, too clayey.	Severe: too clayey.	Severe: too clayey, flooding.	Severe: too clayey.	Severe: flooding.
ChA-------------------- Chipley	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
CnA-------------------- Clarendon	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.
CoB-------------------- Cowarts	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, percs slowly.	Slight----------	Slight.
CoD-------------------- Cowarts	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight----------	Moderate: slope.
CwC2------------------- Cowarts	Moderate: percs slowly.	Moderate: percs slowly.	Severe: slope.	Slight----------	Slight.
DgA-------------------- Dogue	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness.	Slight----------	Slight.
DoA-------------------- Dothan	Slight----------	Slight----------	Slight----------	Slight----------	Slight.
DoB-------------------- Dothan	Slight----------	Slight----------	Moderate: slope.	Slight----------	Slight.
DoC-------------------- Dothan	Slight----------	Slight----------	Severe: slope.	Slight----------	Slight.
DuB*:					
Dothan----------------	Slight----------	Slight----------	Moderate: slope.	Slight----------	Slight.

See footnote at end of table.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
DuB*:					
Urban land.					
ENB*:					
Esto	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, percs slowly.	Slight	Slight.
Nankin	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, percs slowly.	Slight	Slight.
ENC2*:					
Esto	Moderate: percs slowly.	Moderate: percs slowly.	Severe: slope.	Slight	Slight.
Nankin	Moderate: percs slowly.	Moderate: percs slowly.	Severe: slope.	Slight	Slight.
FaA Faceville	Slight	Slight	Slight	Slight	Slight.
FaB Faceville	Slight	Slight	Moderate: slope.	Slight	Slight.
FeC2 Faceville	Slight	Slight	Severe: slope.	Slight	Slight.
FeD2 Faceville	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
FmA Faceville	Slight	Slight	Slight	Slight	Slight.
FsB Fuquay	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.	Moderate: droughty.
FsC Fuquay	Moderate: too sandy.	Moderate: too sandy.	Severe: slope.	Moderate: too sandy.	Moderate: droughty.
GR*:					
Grady	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
Rembert	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
HM*:					
Herod	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
Muckalee	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
KuB Kureb	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
LaB Lakeland	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty, too sandy.

See footnote at end of table.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
LaD: Lakeland	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Moderate: droughty, slope, too sandy.
LmB: Lucy	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.	Moderate: droughty.
LmC: Lucy	Moderate: too sandy.	Moderate: too sandy.	Severe: slope.	Moderate: too sandy.	Moderate: droughty.
LmD: Lucy	Moderate: slope, too sandy.	Moderate: slope, too sandy.	Severe: slope.	Moderate: too sandy.	Moderate: droughty, slope.
Me: Meggett	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
Mu: Muckalee	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
OcA: Ocilla	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness, droughty.
OeA: Orangeburg	Slight	Slight	Slight	Slight	Slight.
OeB: Orangeburg	Slight	Slight	Moderate: slope.	Slight	Slight.
OgC2: Orangeburg	Slight	Slight	Severe: slope.	Slight	Slight.
OgD2: Orangeburg	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
OI*:					
Osier	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, droughty, flooding.
Bibb	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
Ra: Rains	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
TA*:					
Tawcaw	Severe: flooding, too clayey.	Severe: too clayey.	Severe: too clayey, flooding.	Severe: too clayey.	Severe: flooding.
Shellbluff	Severe: flooding.	Moderate: flooding.	Severe: flooding.	Moderate: flooding.	Severe: flooding.
TfA: Tifton	Slight	Slight	Moderate: small stones.	Slight	Slight.

See footnote at end of table.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
TfB-------------------- Tifton	Slight----------	Slight----------	Moderate: slope, small stones.	Slight----------	Slight.
ThC2------------------- Tifton	Slight----------	Slight----------	Severe: slope.	Slight----------	Slight.
TrB-------------------- Troup	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty.
TrC-------------------- Troup	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Moderate: droughty.
TrD-------------------- Troup	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Moderate: droughty, slope.
TUF*:					
Troup-----------------	Severe: slope, too sandy.	Severe: slope, too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Severe: slope.
Lucy------------------	Severe: slope, too sandy.	Severe: slope, too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Severe: slope.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 10.--WILDLIFE HABITAT

[See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated]

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
BoA, BoC, BoD------ Bonifay	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
CaB2---------------- Carnegie	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
CaC2---------------- Carnegie	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
CC*:										
Chastain-----------	Very poor.	Poor	Poor	Fair	Poor	Good	Good	Poor	Fair	Good.
Tawcaw-------------	Very poor.	Poor	Poor	Good	Fair	Fair	Fair	Poor	Fair	Fair.
ChA----------------- Chipley	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
CnA----------------- Clarendon	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
CoB, CoD----------- Cowarts	Poor	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
CwC2---------------- Cowarts	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
DgA----------------- Dogue	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
DoA, DoB, DoC------ Dothan	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
DuB*:										
Dothan-------------	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Urban land.										
ENB*:										
Esto---------------	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Nankin-------------	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
ENC2*:										
Esto---------------	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Nankin-------------	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
FaA----------------- Faceville	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
FaB----------------- Faceville	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
FeC2, FeD2---------- Faceville	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.

See footnote at end of table.

TABLE 10.--WILDLIFE HABITAT--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
FmA: Faceville	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
FsB: Fuquay	Fair	Fair	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
FsC: Fuquay	Poor	Fair	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
GR*:										
Grady	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Rembert	Very poor.	Poor	Very poor.	Poor	Very poor.	Good	Good	Very poor.	Poor	Good.
HM*:										
Herod	Poor	Poor	Fair	Fair	Fair	Good	Fair	Poor	Fair	Fair.
Muckalee	Poor	Poor	Fair	Fair	Fair	Good	Fair	Poor	Fair	Fair.
KuB: Kureb	Very poor.	Poor	Poor	Very poor.	Poor	Very poor.	Very poor.	Poor	Very poor.	Very poor.
LaB, LaD: Lakeland	Poor	Fair	Fair	Poor	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
LmB, LmC: Lucy	Fair	Fair	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
LmD: Lucy	Fair	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Me: Meggett	Poor	Fair	Fair	Fair	Good	Good	Good	Fair	Good	Good.
Mu: Muckalee	Poor	Poor	Fair	Fair	Fair	Good	Fair	Poor	Fair	Fair.
OcA: Ocilla	Fair	Fair	Good	Fair	Good	Fair	Fair	Fair	Good	Fair.
OeA, OeB: Orangeburg	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
OgC2, OgD2: Orangeburg	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
OI*:										
Osier	Very poor.	Poor	Fair	Fair	Fair	Fair	Good	Poor	Fair	Fair.
Bibb	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
Ra: Rains	Very poor.	Very poor.	Very poor.	Fair	Fair	Good	Good	Very poor.	Poor	Good.
TA*:										
Tawcaw	Very poor.	Poor	Poor	Good	Fair	Fair	Fair	Poor	Fair	Fair.
Shellbluff	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
TfA: Tifton	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.

See footnote at end of table.

TABLE 10.--WILDLIFE HABITAT--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
TfB: Tifton	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
ThC2: Tifton	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
TrB, TrC, TrD: Troup	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
TUF*:										
Troup	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
Lucy	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 11.--BUILDING SITE DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition and does not eliminate the need for onsite investigation.]

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
BoA---------------- Bonifay	Severe: cutbanks cave.	Slight----------	Moderate: wetness.	Slight----------	Slight----------	Moderate: droughty.
BoC---------------- Bonifay	Severe: cutbanks cave.	Slight----------	Moderate: wetness.	Moderate: slope.	Slight----------	Moderate: droughty.
BoD---------------- Bonifay	Severe: cutbanks cave.	Moderate: slope.	Moderate: wetness, slope.	Severe: slope.	Moderate: slope.	Moderate: droughty.
CaB2, CaC2-------- Carnegie	Moderate: too clayey.	Slight----------	Slight----------	Moderate: slope.	Moderate: low strength.	Slight.
CC*:						
Chastain----------	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: wetness, flooding.
Tawcaw------------	Severe: wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: low strength, flooding.	Severe: flooding.
ChA---------------- Chipley	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: droughty.
CnA---------------- Clarendon	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.
CoB---------------- Cowarts	Slight----------	Slight----------	Slight----------	Slight----------	Slight----------	Slight.
CoD---------------- Cowarts	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
CwC2--------------- Cowarts	Slight----------	Slight----------	Slight----------	Moderate: slope.	Slight----------	Slight.
DgA---------------- Dogue	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: low strength.	Moderate: wetness.
DoA, DoB----------- Dothan	Moderate: wetness.	Slight----------	Moderate: wetness.	Slight----------	Slight----------	Slight.
DoC---------------- Dothan	Moderate: wetness.	Slight----------	Moderate: wetness.	Moderate: slope.	Slight----------	Slight.
DuB*:						
Dothan------------	Moderate: wetness.	Slight----------	Moderate: wetness.	Slight----------	Slight----------	Slight.
Urban land.						
ENB*:						
Esto--------------	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: low strength, shrink-swell.	Slight.
Nankin------------	Moderate: too clayey.	Slight----------	Slight----------	Slight----------	Slight----------	Slight.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
ENC2*:						
Esto	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Moderate: low strength, shrink-swell.	Slight.
Nankin	Moderate: too clayey.	Slight	Slight	Moderate: slope.	Slight	Slight.
FaA, FaB Faceville	Moderate: too clayey.	Slight	Slight	Slight	Moderate: low strength.	Slight.
FeC2 Faceville	Moderate: too clayey.	Slight	Slight	Moderate: slope.	Moderate: low strength.	Slight.
FeD2 Faceville	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.	Moderate: slope.
FmA Faceville	Moderate: too clayey.	Slight	Slight	Slight	Moderate: low strength.	Slight.
FsB Fuquay	Moderate: cutbanks cave.	Slight	Moderate: wetness.	Slight	Slight	Moderate: droughty.
FsC Fuquay	Moderate: cutbanks cave.	Slight	Moderate: wetness.	Moderate: slope.	Slight	Moderate: droughty.
GR*:						
Grady	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: low strength, ponding.	Severe: ponding.
Rembert	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: low strength, ponding.	Severe: ponding.
HM*:						
Herod	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: wetness, flooding.
Muckalee	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: wetness, flooding.
KuB Kureb	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Severe: droughty.
LaB Lakeland	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty, too sandy.
LaD Lakeland	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope, too sandy.
LmB Lucy	Moderate: cutbanks cave.	Slight	Slight	Slight	Slight	Moderate: droughty.
LmC Lucy	Moderate: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
LmD Lucy	Moderate: cutbanks cave, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
Me Meggett	Severe: wetness, too clayey.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: shrink-swell, wetness, flooding.	Severe: wetness, flooding.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
Mu----------------- Muckalee	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: wetness, flooding.
OcA---------------- Ocilla	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, droughty.
OeA, OeB----------- Orangeburg	Slight---------	Slight---------	Slight---------	Slight---------	Slight---------	Slight.
OgC2--------------- Orangeburg	Slight---------	Slight---------	Slight---------	Moderate: slope.	Slight---------	Slight.
OgD2--------------- Orangeburg	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
OI*:						
Osier-------------	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, droughty, flooding.
Bibb--------------	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: wetness, flooding.
Ra----------------- Rains	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
TA*:						
Tawcaw------------	Severe: wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: low strength, flooding.	Severe: flooding.
Shellbluff--------	Moderate: wetness, flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: low strength, flooding.	Severe: flooding.
TfA, TfB----------- Tifton	Moderate: wetness.	Slight---------	Moderate: wetness.	Slight---------	Slight---------	Slight.
ThC2--------------- Tifton	Moderate: wetness.	Slight---------	Moderate: wetness.	Moderate: slope.	Slight---------	Slight.
TrB---------------- Troup	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Slight---------	Moderate: droughty, too sandy.
TrC---------------- Troup	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Slight---------	Moderate: droughty, too sandy.
TrD---------------- Troup	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope, too sandy.
TUF*:						
Troup-------------	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Lucy--------------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 12.--SANITARY FACILITIES

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition and does not eliminate the need for onsite investigation.]

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
BoA, BoC------------ Bonifay	Moderate: wetness, percs slowly.	Severe: seepage.	Severe: too sandy.	Severe: seepage.	Poor: too sandy.
BoD----------------- Bonifay	Moderate: wetness, percs slowly, slope.	Severe: seepage, slope.	Severe: too sandy.	Severe: seepage.	Poor: too sandy.
CaB2, CaC2---------- Carnegie	Severe: percs slowly.	Moderate: slope.	Moderate: too clayey.	Slight-----------	Fair: too clayey.
CC*:					
Chastain-----------	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
Tawcaw-------------	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: too clayey, hard to pack.
ChA----------------- Chipley	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: too sandy, seepage.
CnA----------------- Clarendon	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: wetness.
CoB, CwC2----------- Cowarts	Severe: percs slowly.	Moderate: slope.	Slight-----------	Slight-----------	Good.
CoD----------------- Cowarts	Severe: percs slowly.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
DgA----------------- Dogue	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: hard to pack.
DoA----------------- Dothan	Moderate: wetness, percs slowly.	Moderate: seepage.	Slight-----------	Slight-----------	Good.
DoB, DoC------------ Dothan	Moderate: wetness, percs slowly.	Moderate: seepage, slope.	Slight-----------	Slight-----------	Good.
DuB*:					
Dothan-------------	Moderate: wetness, percs slowly.	Moderate: seepage, slope.	Slight-----------	Slight-----------	Good.
Urban land.					
ENB*, ENC2*:					
Esto---------------	Severe: percs slowly.	Moderate: slope.	Moderate: too clayey.	Slight-----------	Fair: too clayey, hard to pack

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
ENB*, ENC2*:					
Nankin	Severe: percs slowly.	Moderate: slope.	Moderate: too clayey.	Slight	Fair: too clayey.
FaA Faceville	Slight	Moderate: seepage.	Moderate: too clayey.	Slight	Fair: too clayey.
FaB, FeC2 Faceville	Slight	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: too clayey.
FeD2 Faceville	Moderate: slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, slope.
FmA Faceville	Slight	Moderate: seepage.	Moderate: too clayey.	Slight	Fair: too clayey.
FsB, FsC Fuquay	Moderate: percs slowly.	Moderate: slope.	Slight	Slight	Fair: too sandy.
GR*:					
Grady	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding, too clayey.	Severe: ponding.	Poor: ponding.
Rembert	Severe: ponding, percs slowly.	Severe: seepage, ponding.	Severe: seepage, ponding.	Severe: ponding.	Poor: ponding.
HM*:					
Herod	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
Muckalee	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
KuB Kureb	Severe: poor filter.	Severe: seepage.	Severe: too sandy.	Severe: seepage.	Poor: seepage, too sandy.
LaB Lakeland	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
LaD Lakeland	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
LmB, LmC Lucy	Slight	Moderate: seepage.	Slight	Slight	Good.
LmD Lucy	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair:
Me Meggett	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness, too clayey.	Severe: flooding, wetness.	Poor: too clayey, hard to pack, wetness.
Mu Muckalee	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
OcA----------------- Ocilla	Severe: wetness.	Severe: seepage, wetness.	Severe: wetness.	Severe: seepage, wetness.	Fair: wetness.
OeA----------------- Orangeburg	Slight-----------	Moderate: seepage.	Slight-----------	Slight-----------	Good.
OeB, OgC2----------- Orangeburg	Slight-----------	Moderate: seepage, slope.	Slight-----------	Slight-----------	Good.
OgD2---------------- Orangeburg	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
OI*:					
Osier--------------	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, seepage.	Poor: seepage, too sandy, wetness.
Bibb---------------	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
Ra------------------ Rains	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
TA*:					
Tawcaw-------------	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: too clayey, hard to pack,
Shellbluff---------	Severe: flooding.	Severe: flooding.	Severe: flooding. wetness.	Severe: flooding.	Fair: too clayey.
TfA----------------- Tifton	Moderate: percs slowly, wetness.	Moderate: seepage.	Slight-----------	Slight-----------	Fair: small stones.
TfB, ThC2----------- Tifton	Moderate: percs slowly, wetness.	Moderate: slope, seepage.	Slight-----------	Slight-----------	Fair: small stones.
TrB, TrC------------ Troup	Slight-----------	Severe: seepage.	Severe: too sandy.	Severe: seepage.	Poor: too sandy.
TrD----------------- Troup	Moderate: slope.	Severe: seepage, slope.	Severe: too sandy.	Severe: seepage.	Poor: too sandy.
TUF*:					
Troup--------------	Severe: slope.	Severe: seepage, slope.	Severe: slope, too sandy.	Severe: seepage, slope.	Poor: too sandy, slope.
Lucy---------------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 13.--CONSTRUCTION MATERIALS

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," "poor," "probable," and "improbable." Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition and does not eliminate the need for onsite investigation.]

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
BoA, BoC, BoD: Bonifay	Good	Probable	Improbable: too sandy.	Poor: too sandy.
CaB2, CaC2: Carnegie	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
CC*:				
Chastain	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
Tawcaw	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
ChA: Chipley	Fair: wetness.	Probable	Improbable: too sandy.	Poor: too sandy.
CnA: Clarendon	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
CoB, CoD, CwC2: Cowarts	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
DgA: Dogue	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
DoA, DoB, DoC: Dothan	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
DuB*:				
Dothan	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Urban land.				
ENB*, ENC2*:				
Esto	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Nankin	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
FaA, FaB, FeC2, FeD2, FmA: Faceville	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
FsB, FsC: Fuquay	Good	Improbable: excess fines, thin layer.	Improbable: excess fines.	Fair: too sandy.
GR*:				
Grady	Poor: ponding.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
Rembert	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
HM*:				
Herod	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Muckalee	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
KuB Kureb	Good	Probable	Improbable: too sandy.	Poor: too sandy.
LaB, LaD Lakeland	Good	Probable	Improbable: too sandy.	Poor: too sandy.
LmB, LmC Lucy	Good	Improbable: excess fines, thin layer.	Improbable: excess fines.	Fair: too sandy.
LmD Lucy	Good	Improbable: excess fines, thin layer.	Improbable: excess fines.	Fair: too sandy, slope.
Me Meggett	Poor: wetness, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
Mu Muckalee	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
OcA Ocilla	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
OeA, OeB, OgC2 Orangeburg	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
OgD2 Orangeburg	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
OI*:				
Osier	Poor: wetness.	Probable	Improbable: too sandy.	Poor: wetness.
Bibb	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Ra Rains	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
TA*:				
Tawcaw	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Shellbluff	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
TfA, TfB, ThC2 Tifton	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
TrB, TrC, TrD Troup	Good	Probable	Improbable: too sandy.	Poor: too sandy.
TUF*:				
Troup	Fair: slope.	Probable	Improbable: too sandy.	Poor: too sandy, slope.
Lucy	Fair: slope.	Improbable: excess fines, thin layer.	Improbable: excess fines.	Poor: slope.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 14.--WATER MANAGEMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not evaluated. The information in this table indicates the dominant soil condition and does not eliminate the need for onsite investigation.]

Map symbol and soil name	Limitations for-- Pond reservoir areas	Limitations for-- Embankments, dikes, and levees	Features affecting-- Drainage	Features affecting-- Irrigation	Features affecting-- Terraces and diversions	Features affecting-- Grassed waterways
BoA, BoC: Bonifay	Severe: seepage.	Severe: seepage.	Deep to water	Droughty	Too sandy	Droughty.
BoD: Bonifay	Severe: seepage.	Severe: seepage.	Deep to water	Droughty	Slope, too sandy.	Slope, droughty.
CaB2, CaC2: Carnegie	Slight	Slight	Deep to water	Slope	Favorable	Favorable.
CC*:						
Chastain	Slight	Severe: hard to pack, wetness.	Percs slowly, flooding.	Wetness, slow intake, percs slowly.	Wetness, percs slowly.	Wetness, percs slowly.
Tawcaw	Slight	Severe: wetness.	Percs slowly, flooding.	Wetness, slow intake, percs slowly.	Wetness, percs slowly.	Percs slowly.
Cha: Chipley	Severe: seepage.	Severe: seepage.	Cutbanks cave	Wetness, droughty.	Wetness, too sandy.	Droughty.
CnA: Clarendon	Moderate: seepage.	Moderate: wetness.	Favorable	Wetness	Wetness	Favorable.
CoB, CwC2: Cowarts	Slight	Slight	Deep to water	Percs slowly, slope.	Percs slowly	Percs slowly.
CoD: Cowarts	Slight	Slight	Deep to water	Percs slowly, slope.	Slope, percs slowly.	Slope, percs slowly.
DgA: Dogue	Slight	Moderate: wetness, hard to pack.	Favorable	Wetness	Wetness	Favorable.
DoA: Dothan	Moderate: seepage.	Slight	Deep to water	Favorable	Favorable	Favorable.
DoB, DoC: Dothan	Moderate: seepage.	Slight	Deep to water	Slope	Favorable	Favorable.
DuB*:						
Dothan	Moderate: seepage.	Slight	Deep to water	Slope	Favorable	Favorable.
Urban land.						
ENB*:						
Esto	Slight	Severe: hard to pack.	Deep to water	Percs slowly, slope.	Percs slowly	Percs slowly.
Nankin	Moderate: seepage.	Slight	Deep to water	Slope	Favorable	Favorable.
ENC2*:						
Esto	Slight	Severe: hard to pack.	Deep to water	Percs slowly, slope.	Percs slowly	Percs slowly.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
ENC2*:						
Nankin	Moderate: seepage.	Slight	Deep to water	Slope	Favorable	Favorable.
FaA Faceville	Moderate: seepage.	Slight	Deep to water	Favorable	Favorable	Favorable.
FaB, FeC2 Faceville	Moderate: seepage.	Slight	Deep to water	Slope	Favorable	Favorable.
FeD2 Faceville	Moderate: seepage.	Slight	Deep to water	Slope	Slope	Slope.
FmA Faceville	Moderate: seepage.	Slight	Deep to water	Favorable	Favorable	Favorable.
FsB, FsC Fuquay	Moderate: seepage.	Moderate: piping.	Deep to water	Droughty, slope.	Too sandy	Droughty.
GR*:						
Grady	Slight	Severe: ponding.	Ponding, percs slowly.	Ponding, percs slowly.	Ponding, percs slowly.	Wetness, percs slowly.
Rembert	Moderate: seepage.	Severe: ponding.	Ponding, percs slowly.	Ponding, percs slowly.	Ponding, percs slowly.	Wetness, percs slowly.
HM*:						
Herod	Moderate: seepage.	Severe: wetness.	Flooding	Wetness, flooding.	Wetness	Wetness.
Muckalee	Moderate: seepage.	Severe: piping, wetness.	Flooding, cutbanks cave.	Wetness, droughty, flooding.	Wetness, too sandy.	Wetness, droughty.
KuB Kureb	Severe: seepage.	Severe: seepage, piping.	Deep to water	Droughty, slope.	Too sandy	Droughty.
LaB Lakeland	Severe: seepage.	Severe: seepage.	Deep to water	Droughty	Too sandy,	Droughty.
LaD Lakeland	Severe: seepage, slope.	Severe: seepage.	Deep to water	Droughty	Slope, too sandy.	Slope, droughty.
LmB Lucy	Moderate: seepage.	Moderate: piping.	Deep to water	Droughty	Too sandy	Droughty.
LmC Lucy	Moderate: seepage.	Moderate: piping.	Deep to water	Droughty, slope	Too sandy	Droughty.
LmD Lucy	Moderate: seepage.	Moderate: piping.	Deep to water	Droughty, slope.	Too sandy, slope.	Slope, droughty.
Me Meggett	Moderate: seepage.	Severe: hard to pack, wetness.	Percs slowly, flooding.	Wetness, percs slowly.	Wetness, percs slowly.	Wetness, percs slowly.
Mu Muckalee	Moderate: seepage.	Severe: piping, wetness.	Flooding, cutbanks cave.	Wetness, droughty, flooding.	Wetness, too sandy.	Wetness, droughty.

See footnote at end of table.

TABLE 14--WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Limitations for-- Embankments, dikes, and levees	Features affecting-- Drainage	Features affecting-- Irrigation	Features affecting-- Terraces and diversions	Features affecting-- Grassed waterways
OcA: Ocilla	Severe: seepage.	Severe: piping, wetness.	Favorable	Wetness, droughty.	Wetness	Droughty.
OeA: Orangeburg	Moderate: seepage.	Slight	Deep to water	Favorable	Favorable	Favorable.
OeB, OgC2: Orangeburg	Moderate: seepage.	Slight	Deep to water	Slope	Favorable	Favorable.
OgD2: Orangeburg	Moderate: seepage.	Slight	Deep to water	Slope	Slope	Slope.
OI*:						
Osier	Severe: seepage.	Severe: seepage, piping, wetness.	Flooding, cutbanks cave.	Wetness flooding, droughty.	Wetness too sandy.	Wetness droughty.
Bibb	Moderate: seepage.	Severe: piping, wetness.	Flooding	Wetness, flooding.	Wetness	Wetness.
Ra: Rains	Moderate: seepage.	Severe: piping, wetness.	Favorable	Wetness	Wetness	Wetness.
TA*:						
Tawcaw	Slight	Severe: wetness.	Percs slowly, flooding.	Wetness, slow intake, percs slowly.	Wetness, percs slowly.	Percs slowly.
Shellbluff	Moderate: seepage.	Moderate: piping.	Deep to water	Flooding	Favorable	Favorable.
TfA: Tifton	Moderate: seepage.	Slight	Deep to water	Favorable	Favorable	Favorable.
TfB, ThC2: Tifton	Moderate: seepage.	Slight	Deep to water	Slope	Favorable	Favorable.
TrB, TrC: Troup	Severe: seepage.	Severe: seepage, piping.	Deep to water	Droughty, slope.	Too sandy	Droughty.
TrD: Troup	Severe: seepage, slope.	Severe: seepage, piping.	Deep to water	Droughty, slope.	Slope, too sandy.	Slope, droughty.
TUF*:						
Troup	Severe: seepage, slope.	Severe: seepage, piping.	Deep to water	Droughty, slope.	Slope, too sandy.	Slope, droughty.
Lucy	Severe: slope.	Moderate: piping.	Deep to water	Droughty, slope.	Slope, too sandy.	Slope, droughty.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 15.--ENGINEERING INDEX PROPERTIES

[The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated. NP means nonplastic. Some soils may have Unified classifications and USDA textures in addition to those shown. In general, the dominant classifications and textures are shown]

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
BoA, BoC, BoD---- Bonifay	0-50	Fine sand--------	SP-SM	A-3, A-2-4	0	98-100	98-100	60-95	5-12	---	NP
	50-58	Sandy loam, sandy clay loam.	SM-SC, SC, SM	A-2-4, A-4	0	95-100	90-100	63-95	23-50	<30	NP-12
	58-64	Sandy clay loam, sandy clay.	SM-SC, SC	A-2, A-4, A-6, A-7	0	95-100	90-100	60-95	30-50	25-45	5-22
CaB2, CaC2------- Carnegie	0-4	Sandy loam-------	SM, SM-SC	A-2	0	95-100	90-95	51-75	13-30	<25	NP-5
	4-18	Sandy clay, sandy clay loam.	CL	A-6, A-7	0	95-100	90-99	90-95	65-70	36-49	13-25
	18-62	Sandy clay, clay.	CL	A-6, A-7	0	92-100	90-98	89-98	63-76	36-49	13-25
CC*:											
Chastain--------	0-4	Silty clay-------	ML, CL, MH, CH	A-6, A-7	0	100	100	90-100	75-98	35-75	12-40
	4-62	Silty clay loam, silty clay, clay.	CL, CH, ML, MH	A-6, A-7	0	100	100	95-100	85-98	35-75	12-40
Tawcaw----------	0-3	Silty clay-------	CL, MH, CH, ML	A-7	0	100	100	90-100	75-98	40-75	16-40
	3-70	Silty clay loam, silty clay, clay.	CL, CH	A-6, A-7	0	100	100	90-100	51-98	30-65	11-33
	70-90	Variable---------									
ChA-------------- Chipley	0-6	Sand-------------	SP-SM	A-3, A-2-4	0	100	100	80-100	6-12	---	NP
	6-80	Sand, fine sand	SP-SM	A-3, A-2-4	0	100	100	80-100	6-12	---	NP
CnA-------------- Clarendon	0-11	Loamy sand-------	SM, SP-SM	A-2	0	98-100	92-100	65-90	10-30	<20	NP-3
	11-24	Sandy clay loam	SC, CL, SM-SC, CL-ML	A-4, A-6	0	98-100	92-100	75-95	36-55	20-40	5-15
	24-60	Sandy clay loam, sandy loam, sandy clay.	SC, CL, SM-SC, CL-ML	A-2, A-4 A-6.	0	99-100	96-100	80-95	25-55	<40	NP-15
CoB, CoD--------- Cowarts	0-14	Loamy sand-------	SM	A-2	0	90-100	85-100	50-80	13-30	---	NP
	14-32	Sandy clay loam, sandy clay.	SM-SC, SM, SC	A-6, A-7	0	95-100	90-100	60-90	25-50	30-54	11-23
	32-83	Sandy loam, sandy clay loam.	SM-SC, SC, CL-ML, CL	A-2, A-4, A-6, A-7	0	85-100	80-100	60-95	30-58	25-53	5-20
CwC2------------- Cowarts	0-4	Sandy loam-------	SM, SM-SC	A-2, A-4	0	95-100	90-100	75-90	20-40	<20	NP-5
	4-32	Sandy clay loam, sandy clay.	SM-SC, SM, SC	A-6, A-7	0	95-100	90-100	60-90	25-50	30-54	11-23
	32-72	Sandy loam, sandy clay loam.	SM-SC, SC, CL-ML, CL	A-2, A-4, A-6, A-7	0	85-100	80-100	60-95	30-58	25-53	5-20
DgA-------------- Dogue	0-9	Sandy loam-------	SM, SC, SM-SC	A-2, A-4	0	95-100	75-100	50-100	20-50	<25	NP-10
	9-58	Clay loam, clay, sandy clay loam.	CL, CH, SC	A-6, A-7	0	95-100	75-100	65-100	40-90	35-60	16-40
	58-62	Stratified sand to sandy clay loam.	SM, SC, SP-SM, SM-SC	A-2, A-4, A-1	0	80-100	60-100	35-100	10-40	<30	NP-10
DoA, DoB, DoC/--- Dothan	0-12	Loamy sand-------	SM	A-2	0	95-100	92-100	60-80	13-30	---	NP
	12-48	Sandy clay loam, sandy loam.	SM-SC, SC, SM	A-2, A-4, A-6	0	95-100	92-100	68-90	23-49	<40	NP-16
	48-62	Sandy clay loam, sandy clay.	SM-SC, SC, SM, CL	A-2, A-4, A-6, A-7	0	95-100	92-100	70-95	30-53	25-45	4-23

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
DuB*:											
Dothan----------	0-16	Loamy sand-------	SM	A-2	0	95-100	92-100	60-80	13-30	---	NP
	16-48	Sandy clay loam, sandy loam.	SM-SC, SC, SM	A-2, A-4, A-6	0	95-100	92-100	68-90	23-49	<40	NP-16
	48-62	Sandy clay loam, sandy clay.	SM-SC, SC, SM, CL	A-2, A-4, A-6, A-7	0	95-100	92-100	70-95	30-53	25-45	4-23
Urban land.											
ENB*:											
Esto------------	0-10	Sandy loam-------	SM, SM-SC, ML, CL-ML	A-4, A-2	0	95-100	95-100	70-96	25-55	<25	NP-6
	10-65	Clay loam, clay, sandy clay.	CL, CH, ML	A-6, A-7	0	95-100	95-100	85-100	51-98	40-80	18-52
Nankin----------	0-7	Loamy sand-------	SM	A-2	0	85-100	85-100	70-90	13-30	---	NP
	7-41	Sandy clay, clay, sandy clay loam.	SC, CL	A-4, A-6, A-7	0	98-100	95-100	75-95	40-70	25-45	7-20
	41-68	Sandy clay loam, sandy loam.	SC, SM-SC, CL, CL-ML	A-2, A-4, A-6	0	98-100	95-100	70-85	25-55	<30	NP-12
ENC2*:											
Esto------------	0-4	Sandy loam-------	SM, SM-SC, ML, CL-ML	A-4, A-2	0	95-100	95-100	70-96	25-55	<25	NP-6
	4-65	Clay loam, clay, sandy clay.	CL, CH, ML	A-6, A-7	0	95-100	95-100	85-100	51-98	40-80	18-52
Nankin----------	0-4	Sandy loam-------	SM	A-2	0	85-100	85-100	70-90	13-30	---	NP
	4-47	Sandy clay, clay, sandy clay loam.	SC, CL	A-4, A-6, A-7	0	98-100	95-100	75-95	40-70	25-45	7-20
	47-84	Sandy clay loam, sandy loam.	SC, SM-SC, CL, CL-ML	A-2, A-4, A-6	0	98-100	95-100	70-85	25-55	<30	NP-12
FaA, FaB--------- Faceville	0-8	Loamy sand-------	SM	A-2	0	90-100	85-100	72-97	13-25	---	NP
	8-15	Sandy clay loam, sandy clay.	SC, ML, CL, SM	A-4, A-6	0	98-100	90-100	85-98	46-66	<35	NP-13
	15-62	Sandy clay, clay, clay loam.	CL, SC, CH	A-6, A-7	0	98-100	95-100	75-99	45-72	25-52	11-25
FeC2, FeD2------- Faceville	0-5	Sandy loam-------	SM, SM-SC	A-2, A-4	0	90-100	85-100	72-97	17-38	<25	NP-7
	5-11	Sandy clay loam, sandy clay.	SC, ML, CL, SM	A-4, A-6	0	98-100	90-100	85-98	46-66	<35	NP-13
	11-72	Sandy clay, clay, clay loam.	CL, SC, CH	A-6, A-7	0	98-100	95-100	75-99	45-72	25-52	11-25
FmA-------------- Faceville	0-5	Sandy clay loam	SM, CL-ML, ML, SM-SC	A-4	0	90-100	90-100	63-97	40-58	<25	NP-7
	5-62	Sandy clay, clay, clay loam.	CL, SC, CH	A-6, A-7	0	98-100	95-100	75-99	45-72	25-52	11-25
FsB, FsC--------- Fuquay	0-28	Loamy sand-------	SP-SM, SM	A-2, A-3	0	95-100	90-100	50-83	5-35	---	NP
	28-75	Sandy clay loam	SC	A-2, A-4, A-6, A-7-6	0	95-100	90-100	60-93	28-49	20-49	8-25
GR*:											
Grady-----------	0-5	Loam-------------	ML, CL-ML	A-4, A-6	0	100	99-100	85-100	50-75	<30	NP-15
	5-79	Clay, sandy clay	CL, ML, CH	A-6, A-7	0	100	100	90-100	55-90	30-51	12-25
Rembert---------	0-5	Sandy loam-------	SM, SM-SC	A-4	0	100	95-100	60-80	36-50	<20	NP-7
	5-23	Clay, sandy clay, clay loam.	CL	A-6, A-7	0	100	98-100	85-98	55-85	35-50	15-25
	23-55	Sandy clay loam, clay loam, sandy clay.	SC, SM-SC, CL, CL-ML	A-2, A-4, A-6	0	100	95-100	80-98	30-60	16-35	4-15
	55-96	Sandy clay loam, sandy loam, loamy sand.	SC, SM, SM-SC	A-2, A-4	0	100	98-100	60-90	20-50	<30	NP-10

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
HM*:											
Herod	0-6	Loam	ML, CL-ML	A-4	0	100	95-100	80-95	50-75	20-30	2-7
	6-62	Sandy loam, sandy clay loam.	CL, SM, ML, SC	A-4, A-6	0	100	95-100	70-90	36-60	<30	NP-15
Muckalee	0-6	Loam	ML, SC, SM, SM-SC	A-2, A-4	0	95-100	90-100	50-95	30-60	<30	NP-10
	6-62	Sandy loam, loamy sand.	SM	A-2, A-4	0	95-100	80-100	60-90	20-40	<20	NP-4
KuB Kureb	0-90	Sand	SP, SP-SM	A-3	0	100	100	60-100	0-7	---	NP
LaB, LaD Lakeland	0-20	Sand	SP-SM	A-3, A-2-4	0	90-100	90-100	60-100	5-12	---	NP
	20-99	Sand, fine sand	SP, SP-SM	A-3, A-2-4	0	90-100	90-100	50-100	1-12	---	NP
LmB, LmC, LmD Lucy	0-29	Loamy sand	SM, SP-SM	A-2	0	98-100	95-100	50-87	10-30	---	NP
	29-72	Sandy loam, fine sandy loam, sandy clay loam.	SM, SC, SM-SC	A-2, A-4, A-6	0	97-100	95-100	55-95	15-50	16-30	NP-15
Me Meggett	0-4	Loam	ML, CL-ML	A-4	0	100	90-100	85-100	51-75	<35	NP-10
	4-61	Clay, sandy clay, clay loam.	CH, MH, CL	A-6, A-7	0	100	90-100	85-100	51-90	30-60	20-30
Mu Muckalee	0-6	Loam	ML, SC, SM, SM-SC	A-2, A-4	0	95-100	90-100	50-95	30-60	<30	NP-10
	6-62	Sandy loam, loamy sand.	SM	A-2, A-4	0	95-100	80-100	60-90	20-40	<20	NP-4
OcA Ocilla	0-21	Loamy sand	SM, SP-SM	A-2, A-3	0	100	95-100	75-100	8-35	---	NP
	21-61	Sandy loam, sandy clay loam.	SM, CL, SC	A-2, A-4, A-6	0	100	95-100	80-100	30-55	<40	NP-18
OeA, OeB Orangeburg	0-6	Loamy sand	SM	A-2	0	98-100	95-100	60-87	14-28	---	NP
	6-13	Sandy loam	SM	A-2	0	98-100	95-100	70-96	25-35	<30	NP-4
	13-32	Sandy clay loam, sandy loam.	SC, CL, SM, SM-SC	A-6, A-4	0	98-100	95-100	71-96	38-58	22-40	3-19
	32-60	Sandy clay loam, sandy clay, sandy loam.	SC, CL	A-6, A-4, A-7	0	98-100	95-100	70-97	40-65	24-46	8-21
OgC2, OgD2 Orangeburg	0-4	Sandy loam	SM	A-2	0	98-100	95-100	75-95	20-35	---	NP
	4-60	Sandy clay loam, sandy loam.	SC, CL, SM, SM-SC	A-6, A-4	0	98-100	95-100	71-96	38-58	22-40	3-19
OI*:											
Osier	0-4	Loamy sand	SP-SM	A-2, A-3	0	100	98-100	60-85	5-12	---	NP
	4-61	Sand, loamy sand, loamy fine sand.	SP-SM, SM	A-2, A-3	0	100	95-100	65-96	5-20	---	NP
Bibb	0-14	Sandy loam	SM, SM-SC, ML, CL-ML	A-2, A-4	0-5	95-100	90-100	60-90	30-60	<25	NP-7
	14-70	Sandy loam, loam, silt loam.	SM, SM-SC, ML, CL-ML	A-2, A-4	0-10	60-100	50-100	40-100	30-90	<30	NP-7
Ra Rains	0-15	Sandy loam	SM, ML	A-2, A-4	0	100	95-100	50-85	25-56	<35	NP-10
	15-62	Sandy clay loam, clay loam.	SC, SM-SC, CL, CL-ML	A-2, A-4, A-6	0	100	95-100	55-98	30-70	18-40	4-20
TA*:											
Tawcaw	0-3	Silty clay	CL, MH, CH, ML	A-7	0	100	100	90-100	75-98	40-75	16-40
	3-70	Silty clay loam, silty clay, clay.	CL, CH	A-6, A-7	0	100	100	90-100	51-98	30-65	11-33
	70-90	Variable									

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
TA*:											
Shellbluff-------	0-4	Clay loam--------	ML, CL, CL-ML	A-4, A-6	0	98-100	95-100	90-100	75-95	18-38	3-15
	4-65	Silty clay loam, silt loam, loam.	CL, CL-ML	A-4, A-6	0	98-100	95-100	70-100	70-95	20-40	4-22
TfA, TfB--------- Tifton	0-8	Loamy sand-------	SM, SP-SM	A-2	0	70-97	62-94	53-85	11-27	---	NP
	8-34	Sandy clay loam	SC, CL	A-2, A-6	0	70-98	65-94	60-89	22-53	22-40	10-22
	34-65	Sandy clay loam, sandy clay.	SC, CL	A-2, A-6, A-7, A-4	0	87-100	80-99	50-94	34-55	24-45	8-23
ThC2------------- Tifton	0-4	Sandy loam-------	SM, SM-SC	A-2	0	70-95	60-89	55-89	15-30	<20	NP-6
	4-32	Sandy clay loam	SC, CL	A-2, A-6	0	70-98	65-94	60-89	22-53	22-40	10-22
	32-65	Sandy clay loam, sandy clay.	SC, CL	A-2, A-6, A-7, A-4	0	87-100	80-99	50-94	34-55	24-45	8-23
TrB, TrC, TrD---- Troup	0-48	Fine sand--------	SM, SP-SM	A-2, A-3, A-4	0	100	100	50-90	10-40	---	NP
	48-80	Sandy clay loam, sandy loam, fine sandy loam.	SC, SM-SC, CL-ML, CL	A-4, A-2	0	95-100	95-100	60-90	24-55	19-34	4-12
TUF*:											
Troup-----------	0-44	Fine sand--------	SM, SP-SM	A-2, A-3, A-4	0	100	100	50-90	10-40	---	NP
	44-62	Sandy clay loam, sandy loam, fine sandy loam.	SC, SM-SC, CL-ML, CL	A-4, A-2	0	95-100	95-100	60-90	24-55	19-34	4-12
Lucy------------	0-33	Fine sand--------	SM, SP-SM	A-2	0	98-100	95-100	50-87	10-30	---	NP
	33-62	Sandy loam, fine sandy loam, sandy clay loam.	SM, SC, SM-SC	A-2, A-4, A-6	0	97-100	95-100	55-95	15-50	16-30	NP-15

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS

[The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated]

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	G/cm3	In/hr	In/in	pH				Pct
BoA, BoC, BoD----Bonifay	0-50	3-9	1.35-1.60	6.0-20	0.03-0.08	4.5-6.5	Low-----------	0.10	5	1-3
	50-58	15-35	1.60-1.70	0.6-2.0	0.10-0.15	4.5-6.5	Low-----------	0.24		
	58-64	20-45	1.60-1.70	0.2-0.6	0.10-0.15	4.5-6.5	Low-----------	0.24		
CaB2, CaC2-------Carnegie	0-4	3-8	---	2.0-6.0	0.05-0.08	4.5-6.0	Low-----------	0.28	3	1-2
	4-18	36-43	---	0.2-0.6	0.10-0.14	4.5-5.5	Low-----------	0.32		
	18-62	36-51	---	0.2-0.6	0.10-0.12	4.5-5.5	Low-----------	0.28		
CC*:										
Chastain---------	0-4	27-50	1.20-1.40	0.06-0.2	0.12-0.16	4.5-6.0	Moderate-----	0.28	5	2-6
	4-62	35-60	1.30-1.50	0.06-0.2	0.12-0.16	4.5-6.0	Moderate-----	0.37		
Tawcaw----------	0-3	40-60	1.30-1.60	0.06-0.2	0.12-0.18	4.5-6.5	Moderate-----	0.32	5	2-5
	3-70	35-70	1.30-1.60	0.06-0.2	0.12-0.16	4.5-6.5	Moderate-----	0.37		
	70-90	---	---	---	---	---	-------------	---		
ChA--------------Chipley	0-6	1-5	1.35-1.45	6.0-20	0.05-0.10	3.6-6.0	Low-----------	0.10	5	2-5
	6-80	1-7	1.45-1.60	6.0-20	0.03-0.08	4.5-6.5	Low-----------	0.10		
CnA--------------Clarendon	0-11	2-10	1.40-1.60	2.0-6.0	0.08-0.12	4.5-6.5	Low-----------	0.15	5	.5-3
	11-24	18-35	1.40-1.60	0.6-2.0	0.10-0.15	4.5-5.5	Low-----------	0.20		
	24-60	15-40	1.40-1.70	0.2-0.6	0.08-0.12	4.5-5.5	Low-----------	0.15		
CoB, CoD---------Cowarts	0-14	3-10	---	2.0-6.0	0.06-0.10	4.5-5.5	Low-----------	0.15	3	<1
	14-32	25-40	---	0.2-2.0	0.10-0.16	4.5-5.5	Low-----------	0.28		
	32-83	---	---	0.06-0.6	0.08-0.12	4.5-5.5	Low-----------	0.24		
CwC2-------------Cowarts	0-4	5-20	---	2.0-6.0	0.08-0.13	4.5-5.5	Low-----------	0.24	3	<1
	4-32	25-40	---	0.2-2.0	0.10-0.16	4.5-5.5	Low-----------	0.28		
	32-72	---	---	0.06-0.6	0.08-0.12	4.5-5.5	Low-----------	0.24		
DgA--------------Dogue	0-9	5-10	1.35-1.50	2.0-6.0	0.08-0.15	3.6-5.5	Low-----------	0.28	4	.5-1
	9-58	35-50	1.45-1.60	0.2-0.6	0.12-0.19	3.6-5.5	Moderate-----	0.28		
	58-62	5-30	1.30-1.50	0.6-6.0	0.05-0.14	3.6-5.5	Low-----------	0.17		
DoA, DoB, DoC----Dothan	0-12	5-15	---	2.0-6.0	0.06-0.10	4.5-5.5	Very low-----	0.15	5	<.5
	12-48	18-35	---	0.6-2.0	0.12-0.16	4.5-5.5	Low-----------	0.28		
	48-62	18-40	---	0.2-0.6	0.08-0.12	4.5-5.5	Low-----------	0.28		
DuB*:										
Dothan----------	0-16	5-15	---	2.0-6.0	0.06-0.10	4.5-5.5	Very low-----	0.15	5	<.5
	16-48	18-35	---	0.6-2.0	0.12-0.16	4.5-5.5	Low-----------	0.28		
	48-62	18-40	---	0.2-0.6	0.08-0.12	4.5-5.5	Low-----------	0.28		
Urban land.										
ENB*:										
Esto------------	0-10	8-20	---	2.0-6.0	0.11-0.15	4.5-5.5	Low-----------	0.28	3	<1
	10-65	35-60	---	0.06-0.2	0.12-0.18	4.5-5.5	Moderate-----	0.32		
Nankin----------	0-7	5-15	1.45-1.55	2.0-6.0	0.05-0.08	4.5-5.5	Low-----------	0.28	3	.5-1
	7-41	35-50	1.60-1.70	0.2-0.6	0.11-0.16	4.5-5.5	Low-----------	0.24		
	41-68	15-35	1.60-1.70	0.6-2.0	0.10-0.15	4.5-5.5	Low-----------	0.24		
ENC2*:										
Esto------------	0-4	8-20	---	2.0-6.0	0.11-0.15	4.5-5.5	Low-----------	0.28	3	<1
	4-65	35-60	---	0.06-0.2	0.12-0.18	4.5-5.5	Moderate-----	0.32		
Nankin----------	0-4	5-15	1.45-1.55	2.0-6.0	0.05-0.08	4.5-5.5	Low-----------	0.28	3	.5-1
	4-47	35-50	1.60-1.70	0.2-0.6	0.11-0.16	4.5-5.5	Low-----------	0.24		
	47-84	15-35	1.60-1.70	0.6-2.0	0.10-0.15	4.5-5.5	Low-----------	0.24		

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	G/cm3	In/hr	In/in	pH				Pct
FaA, FaB--------- Faceville	0-8	2-10	---	6.0-20	0.06-0.09	4.5-5.5	Low-----------	0.17	5	.5-1
	8-15	20-36	---	0.6-2.0	0.12-0.15	4.5-5.5	Low-----------	0.37		
	15-62	35-55	---	0.6-2.0	0.12-0.18	4.5-6.0	Low-----------	0.37		
FeC2, FeD2------- Faceville	0-5	5-20	---	6.0-20	0.06-0.09	4.5-5.5	Low-----------	0.28	5	.5-2
	5-11	20-36	---	0.6-2.0	0.12-0.15	4.5-5.5	Low-----------	0.37		
	11-72	35-55	---	0.6-2.0	0.12-0.18	4.5-6.0	Low-----------	0.37		
FmA-------------- Faceville	0-5	20-28	---	0.6-2.0	0.10-0.13	4.5-5.5	Low-----------	0.32	5	.5-1
	5-62	35-55	---	0.6-2.0	0.12-0.18	4.5-6.0	Low-----------	0.37		
FsB, FsC--------- Fuquay	0-28	2-10	1.60-1.70	>6.0	0.04-0.09	4.5-6.0	Low-----------	0.15	5	.5-2
	28-75	20-35	1.40-1.60	0.06-0.2	0.10-0.13	4.5-6.0	Low-----------	0.20		
GR*:										
Grady-----------	0-5	20-30	1.20-1.45	0.6-2.0	0.10-0.18	3.6-5.5	Low-----------	0.24	5	---
	5-79	45-65	1.50-1.60	0.06-0.2	0.12-0.16	3.6-5.5	Moderate-----	0.10		
Rembert---------	0-5	5-18	1.40-1.60	0.6-2.0	0.10-0.14	4.5-6.5	Low-----------	0.20	5	1-5
	5-23	35-60	1.20-1.50	0.6-2.0	0.12-0.16	4.5-5.5	Low-----------	0.20		
	23-55	22-45	1.30-1.50	0.6-2.0	0.12-0.15	4.5-5.5	Low-----------	0.17		
	55-96	8-25	1.30-1.60	0.6-6.0	0.07-0.12	4.5-5.5	Low-----------	0.17		
HM:										
Herod-----------	0-6	15-25	1.25-1.55	0.6-2.0	0.12-0.20	5.1-6.0	Low-----------	0.24	5	2-6
	6-62	10-30	1.30-1.50	0.6-2.0	0.12-0.16	5.6-7.3	Low-----------	0.20		
Muckalee--------	0-6	10-25	---	0.6-2.0	0.09-0.15	5.1-7.3	Low-----------	0.20	5	---
	6-62	5-20	---	0.6-2.0	0.08-0.12	5.6-8.4	Low-----------	0.20		
KuB-------------- Kureb	0-90	0-3	1.60-1.80	6.0-20	<0.05	4.5-7.3	Low-----------	0.10	5	<2
LaB, LaD--------- Lakeland	0-20	2-8	1.35-1.65	6.0-20	0.05-0.09	4.5-6.0	Low-----------	0.10	5	<1
	20-99	1-6	1.50-1.60	6.0-20	0.02-0.08	4.5-6.0	Low-----------	0.10		
LmB, LmC, LmD---- Lucy	0-29	1-12	---	6.0-20	0.06-0.10	5.1-5.5	Low-----------	0.15	5	.5-1
	29-72	10-30	---	2.0-6.0	0.10-0.12	4.5-5.5	Low-----------	0.24		
Me--------------- Meggett	0-4	15-25	1.20-1.40	0.6-2.0	0.15-0.20	4.5-6.5	Low-----------	0.28	5	2-8
	4-61	40-60	1.50-1.75	0.06-0.2	0.13-0.18	6.1-8.4	High----------	0.32		
Mu--------------- Muckalee	0-6	10-25	---	0.6-2.0	0.09-0.15	5.1-7.3	Low-----------	0.20	5	---
	6-62	5-20	---	0.6-2.0	0.08-0.12	5.6-8.4	Low-----------	0.20		
OcA-------------- Ocilla	0-21	4-10	---	2.0-20	0.05-0.08	4.5-5.5	Low-----------	0.10	5	1-2
	21-61	15-35	---	0.6-2.0	0.09-0.12	4.5-5.5	Low-----------	0.24		
OeA, OeB--------- Orangeburg	0-6	4-10	---	2.0-6.0	0.06-0.09	4.5-6.0	Low-----------	0.10	5	.5-1
	6-13	7-18	---	2.0-6.0	0.09-0.12	4.5-6.0	Low-----------	0.20		
	13-32	18-35	---	0.6-2.0	0.11-0.14	4.5-5.5	Low-----------	0.24		
	32-60	20-45	---	0.6-2.0	0.11-0.14	4.5-5.5	Low-----------	0.24		
OgC2, OgD2------- Orangeburg	0-4	7-15	---	2.0-6.0	0.07-0.10	4.5-6.0	Low-----------	0.20	5	.5-2
	4-60	18-35	---	0.6-2.0	0.11-0.14	4.5-5.5	Low-----------	0.24		
OI*:										
Osier-----------	0-4	1-10	1.35-1.60	6.0-20	0.03-0.10	3.6-6.0	Low-----------	0.10	5	---
	4-61	1-10	1.40-1.60	6.0-20	0.03-0.10	3.6-6.0	Low-----------	0.10		
Bibb------------	0-14	2-18	1.25-1.55	0.6-2.0	0.12-0.18	4.5-5.5	Low-----------	0.20	5	.5-2
	14-70	2-18	1.30-1.60	0.6-2.0	0.12-0.20	4.5-5.5	Low-----------	0.37		
Ra--------------- Rains	0-15	5-20	1.30-1.60	2.0-6.0	0.08-0.12	4.5-6.5	Low-----------	0.20	5	1-6
	15-62	18-35	1.30-1.50	0.6-2.0	0.10-0.15	4.5-5.5	Low-----------	0.24		
TA*:										
Tawcaw----------	0-3	40-60	1.30-1.60	0.06-0.2	0.12-0.18	4.5-6.5	Moderate-----	0.32	5	2-5
	3-70	35-70	1.30-1.60	0.06-0.2	0.12-0.16	4.5-6.5	Moderate-----	0.37		
	70-90	---	---	---	---	---	-------------	---		

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	G/cm3	In/hr	In/in	pH				Pct
TA*:										
Shellbluff------	0-4	27-35	1.20-1.45	0.6-2.0	0.15-0.20	4.5-6.5	Low----------	0.28	5	.5-3
	4-65	18-35	1.20-1.50	0.6-2.0	0.12-0.22	4.5-6.5	Low----------	0.28		
TfA, TfB--------- Tifton	0-8	3-8	---	6.0-20	0.03-0.08	4.5-5.5	Low----------	0.10	4	<1
	8-34	20-35	---	0.6-2.0	0.12-0.15	4.5-5.5	Low----------	0.24		
	34-65	25-40	---	0.2-0.6	0.10-0.13	4.5-5.5	Low----------	0.17		
ThC2------------- Tifton	0-4	10-20	---	6.0-20	0.06-0.10	4.5-5.5	Low----------	0.17	4	1-2
	4-32	20-35	---	0.6-2.0	0.12-0.15	4.5-5.5	Low----------	0.24		
	32-65	25-40	---	0.2-0.6	0.10-0.13	4.5-5.5	Low----------	0.17		
TrB, TrC, TrD---- Troup	0-48	1-10	---	6.0-20	0.05-0.10	4.5-5.5	Very low-----	0.17	5	<1
	48-80	15-35	---	0.6-2.0	0.10-0.13	4.5-5.5	Low----------	0.20		
TUF*:										
Troup-----------	0-44	1-10	---	6.0-20	0.05-0.10	4.5-5.5	Very low-----	0.17	5	<1
	44-62	15-35	---	0.6-2.0	0.10-0.13	4.5-5.5	Low----------	0.20		
Lucy------------	0-33	1-12	---	6.0-20	0.06-0.10	5.1-5.5	Low----------	0.15	5	.5-1
	33-62	10-30	---	2.0-6.0	0.10-0.12	4.5-5.5	Low----------	0.24		

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 17.--SOIL AND WATER FEATURES

["Flooding" and "water table" and terms such as "frequent," "brief," "apparent," and "perched" are explained in the text. The symbol > means more than. Absence of an entry indicates that the feature is not a concern]

Soil name and map symbol	Hydrologic group	Flooding			High water table			Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Uncoated steel	Concrete
					Ft				
BoA, BoC, BoD----- Bonifay	A	None--------	---	---	4.0-5.0	Perched	Jan-Feb	Low------	High.
CaB2, CaC2-------- Carnegie	C	None--------	---	---	>6.0	---	---	Low------	Moderate.
CC*:									
Chastain---------	D	Frequent----	Very long	Dec-Apr	0-1.0	Apparent	Nov-May	High-----	High.
Tawcaw-----------	C	Frequent----	Long------	Dec-Apr	1.5-2.5	Apparent	Nov-Apr	High-----	High.
ChA--------------- Chipley	C	None--------	---	---	2.0-3.0	Apparent	Dec-Apr	Low------	High.
CnA--------------- Clarendon	C	None--------	---	---	2.0-3.0	Apparent	Dec-Mar	Moderate	High.
CoB, CoD, CwC2---- Cowarts	C	None--------	---	---	>6.0	---	---	Moderate	Moderate.
DgA--------------- Dogue	C	None--------	---	---	1.5-3.0	Apparent	Jan-Mar	High-----	High.
DoA, DoB, DoC----- Dothan	B	None--------	---	---	3.0-5.0	Perched	Jan-Apr	Moderate	Moderate.
DuB*:									
Dothan-----------	B	None--------	---	---	3.0-5.0	Perched	Jan-Apr	Moderate	Moderate.
Urban land.									
EnB*, EnC2*:									
Esto-------------	B	None--------	---	---	>6.0	---	---	High-----	High.
Nankin-----------	C	None--------	---	---	>6.0	---	---	High-----	High.
FaA, FaB, FeC2, FeD2, FmA-------- Faceville	B	None--------	---	---	>6.0	---	---	Low------	Moderate.
FsB, FsC---------- Fuquay	B	None--------	---	---	4.0-6.0	Perched	Jan-Mar	Low------	High.
GR**:									
Grady------------	D	None--------	---	---	+2-1.0	Apparent	Dec-Jun	High-----	High.
Rembert----------	D	None--------	---	---	+1-1.0	Apparent	Nov-Apr	High-----	High.
HM*:									
Herod------------	D	Frequent----	Brief-----	Nov-Apr	0.5-1.5	Apparent	Dec-Mar	High-----	Moderate.
Muckalee---------	D	Frequent----	Brief-----	Nov-Apr	0.5-1.5	Apparent	Dec-Mar	High-----	Moderate.
KuB--------------- Kureb	A	None--------	---	---	>6.0	---	---	Low------	Low.
LaB, LaD---------- Lakeland	A	None--------	---	---	>6.0	---	---	Low------	Moderate.
LmB, LmC, LmD----- Lucy	A	None--------	---	---	>6.0	---	---	Low------	High.

See footnotes at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Uncoated steel	Concrete
					Ft				
Me----------------- Meggett	D	Frequent----	Long------	Dec-Apr	0-1.0	Apparent	Nov-Apr	High-----	Moderate.
Mu----------------- Muckalee	D	Frequent----	Brief-----	Nov-Apr	0.5-1.5	Apparent	Dec-Mar	High-----	Moderate.
OcA---------------- Ocilla	C	None--------	---	---	1.0-2.5	Apparent	Dec-Apr	High-----	Moderate.
OeA, OeB, OgC2, OgD2-------------- Orangeburg	B	None--------	---	---	>6.0	---	---	Moderate	Moderate.
Oi*:									
Osier------------	A/D	Frequent----	Brief-----	Dec-Apr	0-1.0	Apparent	Nov-Mar	High-----	High.
Bibb-------------	C	Frequent----	Brief-----	Dec-May	0.5-1.5	Apparent	Dec-Apr	High-----	Moderate.
Ra----------------- Rains	B/D	None--------	---	---	0-1.0	Apparent	Nov-Apr	High-----	High.
TA*:									
Tawcaw-----------	C	Frequent----	Long------	Dec-Apr	1.5-2.5	Apparent	Nov-Apr	High-----	High.
Shellbluff-------	B	Frequent----	Brief-----	Dec-Apr	3.0-5.0	Apparent	Dec-Apr	Moderate	Moderate.
TfA, TfB, ThC2---- Tifton	B	None--------	---	---	3.5-6.0	Perched	Jan-Feb	Low------	Moderate.
TrB, TrC, TrD----- Troup	A	None--------	---	---	>6.0	---	---	Low------	Moderate.
TuF*:									
Troup------------	A	None--------	---	---	>6.0	---	---	Low------	Moderate.
Lucy-------------	A	None--------	---	---	>6.0	---	---	Low------	High.

* See description of the map unit for composition and behavior characteristics of the map unit.

** In the "High water table--Depth" column, a plus sign preceding the range in depth indicates that the water table is above the surface of the soil. The first numeral indicates how high the water rises above the surface. The second numeral indicates the depth below the surface.

TABLE 18.--PHYSICAL TEST DATA

[Dashes indicate that test was not performed]

Soil name, report number, horizon, and depth in inches	Ratio to total clay		Bulk density		COLE[1]	Water content at tension[2]		Water retention difference
	Cation-exchange capacity	15 bar water	1/3 bar	Oven-dry	(whole soil)	1/3 bar	15 bar	(whole soil)
			G/cm^3		Cm/cm	Pct		Cm/cm
Chastain:[3]								
S81GA-33-3								
Bwg1----------4-15	0.27	0.45	---	---	---	---	28.1	---
Bwg2---------15-40	0.36	0.47	---	---	---	---	21.8	---
Bwg3---------40-62	0.34	0.59	---	---	---	---	27.7	---
Shellbluff:[4]								
S81GA-33-1								
A-------------0-4	0.43	0.49	1.43	1.57	0.032	27.3	16.8	0.15
Bw1------------4-15	0.32	0.46	1.33	1.44	0.027	32.2	18.0	0.19
Bw2-----------15-31	0.33	0.45	1.22	1.30	0.021	27.2	13.5	0.17
Bw3-----------31-54	0.37	0.45	1.20	1.27	0.019	30.6	15.8	0.18
BC------------54-65	0.36	0.48	1.16	1.31	0.041	38.4	20.7	0.21
C-------------65-93	0.34	0.47	1.22	1.38	0.042	36.7	24.3	0.15
Tawcaw:[5]								
S81GA-33-2								
A--------------0-3	0.45	0.49	1.10	---	---	---	27.5	---
Bw1------------3-13	0.29	0.46	1.19	1.33	0.038	37.2	25.6	0.14
Bw2-----------13-24	0.38	0.47	1.23	1.37	0.037	33.7	21.7	0.15
Bw3-----------24-34	0.39	0.48	1.38	1.49	0.026	30.7	21.2	0.13
Bw4-----------34-43	0.36	0.47	1.31	1.43	0.030	32.5	22.0	0.14
Bw5-----------43-63	0.33	0.45	1.56	1.64	0.017	20.2	14.6	0.09
Bw6-----------63-80	0.62	0.49	1.52	1.70	0.038	25.7	13.1	0.19
BC------------80-90	0.40	0.56	1.50	---	---	---	24.2	---
Tawcaw:[6]								
S81GA-33-4								
A--------------0-3	0.41	0.50	1.10	---	---	---	24.3	---
Bw1------------3-17	0.33	0.47	1.21	1.35	0.037	35.4	23.8	0.14
Bw2-----------17-26	0.37	0.47	1.20	---	---	---	22.6	---
Bwg-----------26-42	0.48	0.51	1.27	1.37	0.026	33.0	19.3	0.17
BCg-----------42-70	0.48	0.52	1.43	1.51	0.018	29.0	18.0	0.16
C------------ 70-90	0.51	0.54	1.50	---	---	---	19.4	---

1 COLE (Coefficient of Linear Extensibility): A quantitative method of determining shrink-swell behavior of soil. It is an estimate of the vertical component of swelling of a natural solid clod. COLE is expressed as low (less than 0.03), moderate (0.03-0.06), and high (more than 0.06).

2 Based on soil material less than 2 millimeters in size.

3 Chastain silty clay: 0.62 mile north from the south tip of Red Lake, along private gravel road; 0.76 mile west along graded private road; 250 feet north of road.

4 Shellbluff clay loam: 0.6 mile north from the south tip of Red Lake on the Savannah River flood plain, on private gravel road; 30 feet west of the road. Taxadjunct to the Shellbluff series because mineralogy is oxidic, borderline to kaolinitic.

5 Tawcaw clay: 0.62 mile north of Red Lake on the Savannah River flood plain, on private gravel road; 0.76 mile west on graded private road; 75 feet south of road. Taxadjunct to the Tawcaw series because mineralogy is mixed, borderline to kaolinitic.

6 Tawcaw silty clay: 3.4 miles north from the south tip of Red Lake on the Savannah River flood plain, on private gravel road; 0.6 mile south on ungraded road. Taxadjunct to the Tawcaw series because mineralogy is mixed, borderline to kaolinitic.

TABLE 19.--PARTICLE-SIZE ANALYSES

[Tests performed on material less than 2 millimeters in size. TR means trace. Dashes indicate that test was not performed]

Soil name, report number, horizon, and depth in inches	Particle-size distribution (percent less than 2mm)									
	Total			Silt		Sand				
	Clay (<.002 mm)	Silt (.002-.05mm)	Sand (.05-2.0mm)	Fine (.002-.02mm)	Coarse (.02-.05 mm)	Very fine (.05-.10 mm)	Fine (.10-.25 mm)	Medium (.25-.50mm)	Coarse (.50-1.0mm)	Very coarse (1.0-2.0 mm)
	Pct									
Chastain:[1]										
S81GA-33-3										
Bwg1----------4-15	61.9	34.4	3.7	30.5	3.9	1.5	1.3	0.7	0.1	0.1
Bwg2---------15-40	46.4	42.3	11.3	34.0	8.3	4.5	4.3	1.8	0.6	0.1
Bwg3---------40-62	47.2	37.1	15.7	30.6	6.5	5.6	5.4	2.9	1.4	0.4
Shellbluff:[2]										
S81GA-33-1										
A-------------0-4	34.5	40.8	24.7	30.6	10.2	17.0	6.3	0.7	0.4	0.3
Bw1-----------4-15	39.1	46.5	14.4	35.7	10.8	12.0	2.1	0.2	0.1	TR
Bw2----------15-31	30.1	36.1	33.8	23.5	12.6	22.2	10.9	0.5	0.1	0.1
Bw3----------31-54	34.9	43.9	21.2	33.6	10.3	15.0	5.8	0.2	0.1	0.1
BC-----------54-65	42.9	52.4	4.7	40.0	12.4	---	3.8	0.8	0.1	TR
C------------65-93	51.4	39.3	9.3	29.3	10.0	4.2	3.6	0.3	0.9	0.3
Tawcaw:[3]										
S81GA-33-2										
A-------------0-3	55.8	35.1	9.1	31.9	3.2	2.6	4.7	1.3	0.1	0.4
Bw1-----------3-13	55.4	35.7	8.9	31.5	4.2	2.8	4.8	1.2	0.1	TR
Bw2----------13-24	46.0	35.1	18.9	26.8	8.3	5.8	8.7	3.8	0.6	TR
Bw3----------24-34	44.4	41.2	14.4	31.1	10.1	4.9	6.4	2.5	0.5	0.1
Bw4----------34-43	46.7	40.8	12.5	32.3	8.5	4.1	5.1	2.6	0.7	TR
Bw5----------43-63	32.6	25.0	42.4	16.7	8.3	8.9	21.8	11.0	0.5	0.2
Bw6----------63-80	26.6	29.9	43.5	16.4	13.5	15.2	25.9	2.0	0.2	0.2
BC-----------80-90	43.1	36.5	20.4	23.8	12.7	10.9	6.7	2.3	0.3	0.2
Tawcaw:[4]										
S81GA-33-4										
A-------------0-3	48.9	41.7	9.4	34.1	7.6	3.4	4.0	1.5	0.2	0.3
Bw1-----------3-17	50.4	42.4	7.2	36.7	5.7	3.4	3.2	0.5	0.1	TR
Bw2----------17-26	47.6	43.1	9.3	36.6	6.5	3.3	4.3	1.5	0.2	TR
Bwg----------26-42	37.6	52.1	10.3	36.3	15.8	4.3	2.0	1.8	1.9	0.3
BCg----------42-70	34.4	52.5	13.1	35.2	17.3	7.3	2.6	1.4	1.6	0.2
C------------70-90	35.9	48.9	15.2	35.0	13.9	6.4	4.7	1.8	1.6	0.7

1 Chastain silty clay: 0.62 mile north from the south tip of Red Lake, along private gravel road; 0.76 mile west along graded private road; 250 feet north of road.

2 Shellbluff clay loam: 0.6 mile north from the south tip of Red Lake on the Savannah River flood plain, on private gravel road; 30 feet west of the road. Taxadjunct to the Shellbluff series because mineralogy is oxidic, borderline to kaolinitic.

3 Tawcaw clay: 0.62 mile north of Red Lake on the Savannah River flood plain, on private gravel road; 0.76 mile west on graded private road; 75 feet south of road. Taxadjunct to the Tawcaw series because mineralogy is mixed, borderline to kaolinitic.

4 Tawcaw silty clay: 3.4 miles north from the south tip of Red Lake on the Savannah River flood plain, on private gravel road; 0.6 mile south on ungraded road. Taxadjunct to the Tawcaw series because mineralogy is mixed, borderline to kaolinitic.

TABLE 20.--CHEMICAL TEST DATA

[Tests performed on material less than 2 millimeters in size. TR means trace. Dashes indicate that the test was not performed]

Soil name, report number, horizon, and depth in inches	Organic carbon	Total nitrogen	Dithionate citrate extractable: Fe	Dithionate citrate extractable: Al	Ammonium acetate extractable bases: Ca	Mg	Na	K	Sum bases	Extractable acidity	Extractable aluminum	Cation-exchange capacity: Sum of cations	Cation-exchange capacity: Ammonium acetate	Cation-exchange capacity: Bases + aluminum	Aluminum saturation	Base saturation: Sum of cations	Base saturation: Ammonium acetate	pH: $CaCl_2$ (1:2)	pH: H_2O (1:1)
	Pct	Pct	Pct	Pct	Meq/100g	Meq/100g	Meq/100g	Meq/100g	Meq/100g	Meq/100g	Meq/100g	Meq/100g	Meq/100g	Meq/100g	Pct	Pct	Pct		
Chastain:1																			
S81GA-33-3																			
Bwg1---- 4 to 15	1.48	0.111	3.2	0.3	4.2	1.4	0.1	0.2	5.9	13.1	1.0	19.0	16.8	6.9	14	31	35	4.5	5.1
Bwg2----15 to 40	0.54	---	2.5	0.2	4.1	1.7	0.2	0.1	6.1	11.6	1.3	17.7	16.6	7.4	18	34	37	4.4	5.0
Bwg3----40 to 62	0.46	---	3.9	0.3	5.0	2.6	0.2	0.1	7.9	10.4	0.7	18.3	16.2	8.6	8	43	49	4.8	5.2
Shellbluff:2																			
S81GA-33-1																			
A--------0 to 4	2.90	0.207	2.9	0.3	6.3	1.8	0.1	0.3	8.5	14.1	0.1	22.6	15.0	8.6	1	38	57	4.9	5.2
Bw1------4 to 15	1.08	0.090	3.3	0.4	2.7	1.2	0.1	0.1	4.1	12.5	1.3	16.6	12.5	5.4	24	25	33	4.4	4.9
Bw2-----15 to 31	0.82	0.064	2.6	0.3	2.2	1.0	0.1	0.1	3.4	10.6	1.2	14.0	10.0	4.6	26	24	34	4.4	5.1
Bw3-----31 to 54	1.00	---	2.9	0.3	2.7	1.1	0.2	0.1	4.1	12.3	1.2	16.4	12.9	5.3	23	25	32	4.4	5.1
BC------54 to 65	1.00	---	3.4	0.4	3.6	1.7	0.2	0.1	5.6	14.6	1.3	20.2	15.5	6.9	19	28	36	4.4	5.2
C-------65 to 93	0.79	---	3.0	0.4	3.5	2.2	0.2	0.1	6.0	16.3	1.7	22.3	17.5	7.7	22	27	34	4.3	5.2
Tawcaw:3																			
S81GA-33-2																			
A--------0 to 3	3.74	0.322	3.6	0.5	6.3	2.2	0.2	0.4	9.1	20.5	0.9	29.6	25.0	10.0	9	31	36	4.5	4.5
Bw1------3 to 13	1.30	0.123	3.7	0.5	2.4	1.3	0.1	0.2	4.0	15.4	1.9	19.4	15.9	5.9	32	21	25	4.5	4.8
Bw2-----13 to 24	0.93	0.095	2.5	0.3	1.7	1.4	0.3	0.1	3.5	16.3	3.4	19.8	17.6	6.9	49	18	20	4.3	4.9
Bw3-----24 to 34	0.57	---	2.7	0.3	1.9	1.7	0.3	0.1	4.0	15.5	2.7	19.5	17.2	6.7	40	21	23	4.5	5.1
Bw4-----34 to 43	0.43	---	2.7	0.3	2.3	2.0	0.3	0.1	4.7	15.0	2.3	19.7	16.7	7.0	33	24	28	4.4	5.1
Bw5-----43 to 63	0.27	---	1.9	0.2	1.9	2.5	0.6	0.1	5.1	6.4	---	11.5	10.9	---	--	44	47	4.9	5.6
Bw6-----63 to 80	0.16	---	1.5	0.1	5.5	7.2	2.2	0.1	15.0	3.1	---	18.1	16.4	---	--	83	91	6.0	6.9
BC------80 to 90	0.12	---	3.0	0.3	4.7	7.1	3.1	0.1	15.0	4.3	---	19.3	17.4	---	--	78	86	6.7	7.0
Tawcaw:4																			
S81GA-33-4																			
A--------0 to 3	3.17	0.449	3.6	0.4	5.4	1.4	0.1	0.3	7.2	17.5	1.3	24.7	20.2	8.5	15	29	36	4.4	4.5
Bw1------3 to 17	1.21	0.324	3.9	0.5	2.4	1.1	0.2	0.1	3.8	13.5	2.1	17.3	16.4	5.9	36	22	23	4.1	4.8
Bw2-----17 to 26	1.18	---	3.3	0.4	2.8	1.4	0.2	0.1	4.5	15.0	2.0	19.5	17.4	6.5	31	23	26	4.4	4.8
Bwg-----26 to 42	0.69	---	2.3	0.3	1.3	1.0	0.6	TR	2.9	16.0	3.4	18.9	18.0	6.3	54	15	16	4.5	5.1
BCg-----42 to 70	0.44	---	2.2	0.2	0.5	1.1	0.9	TR	2.5	14.4	3.6	16.9	16.4	6.1	59	15	15	4.0	5.1
C-------70 to 90	0.26	---	2.2	0.2	3.7	4.3	5.6	0.1	13.7	7.1	TR	20.8	18.3	---	--	66	75	4.0	5.1

1 Chastain silty clay: 0.62 mile north from the south tip of Red Lake along private gravel road; 0.76 mile west along graded private road; 250 feet north of road.

2 Shellbluff clay loam: 0.6 mile north from the south tip of Red Lake on the Savannah River flood plain, on private gravel road; 30 feet west of the road. Taxadjunct to the Shellbluff series because mineralogy is oxidic, borderline to kaolinitic.

3 Tawcaw clay: 0.62 mile north of Red Lake on the Savannah River flood plain, on private gravel road; 0.76 mile west on graded private road; 75 feet south of road. Taxadjunct to the Tawcaw series because mineralogy is mixed, borderline to kaolinitic.

4 Tawcaw silty clay: 3.4 miles north from the south tip of Red Lake on the Savannah River flood plain, on private gravel road; 0.6 mile south on ungraded road. Taxadjunct to the Tawcaw series because mineralogy is mixed, borderline to kaolinitic.

TABLE 21.--MINERALOGY OF SELECTED SOILS

[Dashes indicate that the test was not performed]

Soil name, report number horizon, and depth in inches	Total analysis clay		Mineralogy					
			Clay (X-ray < 2 microns)				Very fine sand	
	K_2O	Fe	Kaolinite	Vermiculite	Gibbsite	Mica	Total resistant	Dominant weatherable
	------Pct------		-----------Relative amount[1]-----------				---------Pct---------	
Chastain:[2]								
S81GA-33-3								
Bwg1----------4-15	0.7	5.6	5	2	2	0	---	---
Bwg2---------15-40	0.8	5.6	5	2	1	1	---	---
Bwg3---------40-62	0.7	6.1	5	2	1	1	---	---
Shellbluff:[3]								
S81GA-33-1								
Bw1-----------4-15	0.6	7.2	4	1	1	0	46	Mica-31
Bw3----------13-54	0.6	7.2	4	1	1	1	58	Mica-23
C------------65-93	0.6	5.3	5	3	1	1	78	Mica-10
Tawcaw:[4]								
S81GA-33-2								
Bw1-----------3-13	0.7	6.8	4	2	2	1	---	---
Bw3----------24-34	0.6	6.1	5	3	1	0	---	---
Bw5----------43-63	0.6	6.6	5	3	1	1	---	---
Bw6----------63-80	0.5	6.5	5	3	2	0	---	---
Tawcaw:[5]								
S81GA-33-4								
Bw1-----------3-17	---	---	---	---	---	---	76	Mica-14
Bwg----------26-42	---	---	---	---	---	---	62	Mica-22
BCg----------42-70	---	---	---	---	---	---	42	Mica-41

1 Relative amounts: 5, dominant; 4, abundant; 3, moderate; 2, small; 1, trace.

2 Chastain silty clay: 0.62 mile north from the south tip of Red Lake, along private gravel road; 0.76 mile west along graded private road; 250 feet north of road.

3 Shellbluff clay loam: 0.6 mile north from the south tip of Red Lake on the Savannah River flood plain, on private gravel road; 30 feet west of the road. Taxadjunct to the Shellbluff series because mineralogy is oxidic, borderline to kaolinitic.

4 Tawcaw clay: 0.62 mile north of Red Lake on the Savannah River flood plain, on private gravel road; 0.76 mile west on graded private road; 75 feet south of road. Taxadjunct to the Tawcaw series because mineralogy is mixed, borderline to kaolinitic.

5 Tawcaw silty clay: 3.4 miles north from the south tip of Red Lake on the Savannah River flood plain, on private gravel road; 0.6 mile south on ungraded road. Taxadjunct to the Tawcaw series because mineralogy is mixed, borderline to kaolinitic.

TABLE 22.--ENGINEERING INDEX TEST DATA

[Dashes indicate data were not available. NP means nonplastic]

Soil name, report number, horizon, and depth in inches	Classification		Grain-size distribution										Liquid limit	Plasticity index	Moisture density		Percentage volume change		
			Percentage passing sieve--							Percentage smaller than--									
	AASHTO	Unified	2 inch	3/4 inch	3/8 inch	No. 4	No. 10	No. 40	No. 200	.02 mm	.005 mm	.002 mm			Max. dry density	Optimum moisture	Total	Swell	Shrink
													Pct		Lb/ft3	Pct	Pct	Pct	Pct
Dogue sandy loam:[1]																			
S68GA-17-1																			
Ap-------0 to 8	A-2-4(0)	SM	100	100	100	100	100	90	29	19	12	9	--	NP	113	11	4.1	3.4	0.7
Bt1-----14 to 28	A-6(13)	CL	100	100	100	100	100	99	74	61	53	47	40	19	101	20	19.8	9.1	10.7
B2------28 to 42	A-6(5)	CL	100	100	100	100	100	99	64	50	43	39	33	13	106	18	16.6	9.8	6.8
Dothan sand: [2]																			
S68GA-17-4																			
Ap-------0 to 5	A-2-4(0)	SM	100	100	100	99	98	77	19	8	4	2	--	NP	116	10	4.6	3.7	0.9
Btc-----16 to 34	A-2-6(0)	SC	100	100	100	89	83	69	35	29	25	23	30	13	116	14	7.0	2.8	4.2
Bt2-----45 to 65	A-4(0)	SM	100	100	100	97	96	77	41	35	29	27	--	NP	112	15	3.0	0.4	2.6
Faceville loamy sand: [3]																			
S68GA-17-5																			
Ap-------0 to 6	A-2-4(0)	SM	100	100	100	100	100	86	24	16	11	9	--	NP	120	9	3.1	2.3	0.8
Bt2-----11 to 36	A-6(4)	CL	100	100	100	100	100	91	57	53	48	46	34	12	106	18	7.8	1.0	6.8
Bt4-----58 to 68	A-6(5)	CL	100	100	100	100	100	92	59	55	51	49	35	13	102	21	15.5	6.6	8.9
Faceville sandy clay loam: [4]																			
S68GA-17-7																			
Ap-------0 to 5	A-4(0)	SM	100	100	100	99	99	82	40	37	29	25	--	NP	114	12	7.3	4.0	3.3
Bt2-----16 to 25	A-7-6(14)	CL	100	100	100	100	100	92	72	68	60	53	43	21	100	21	9.9	1.0	8.9
2Bt-----49 to 65	A-6(10)	CL	100	100	100	100	100	98	87	86	56	41	36	12	103	19	7.0	2.7	4.3
Orangeburg loamy sand: [5]																			
S68GA-17-18																			
Ap-------0 to 6	A-2-4(0)	SM	100	100	100	100	100	81	20	12	8	5	--	NP	122	8	4.9	4.1	0.8
Bt1-----11 to 36	A-4(0)	SC	100	100	100	100	99	82	38	31	25	23	22	10	118	13	11.4	4.4	7.0
Bt3-----41 to 50	A-6(7)	CL	100	100	100	100	99	87	59	53	49	47	38	16	102	20	12.1	2.8	9.3

[1] Dogue sandy loam: 2.0 miles southeast of Keysville on county road; 330 feet east of Timmons Pond; 25 feet east of county road.

[2] Dothan sand: On the Southeast Georgia Branch Experiment Station; 300 feet north of County road; 100 feet west of borrow pit. Taxadjunct to Dothan series. Percentage of nodules of ironstone in the upper part of the Bt horizon is more than is allowed for the series; the content of plinthite in the lower part of the Bt horizon is less than is defined for the series; and the surface layer is coarser than is allowed for series. This pedon was mapped as an inclusion in Dothan loamy sand, 0 to 2 percent slopes.

[3] Faceville loamy sand: 5.3 miles from railroad tracks northwest of Waynesboro on Boggs Academy road; 25 feet north of road, opposite vacant house.

[4] Faceville sandy clay loam: 4.0 miles east of Boggs Acadamy; 0.1 mile east of road junction on Waynesboro road; 25 feet south of road. Taxadjunct to the Faceville series. Twelve percent reduction in content of clay within a depth of 60 inches is more than is defined for the series. This pedon was mapped as an inclusion in Faceville loamy sand, 2 to 5 percent slopes.

[5] Orangeburg loamy sand: 4.7 miles from railroad tracks in Waynesboro on Boggs Academy road; 0.3 mile east of chimney; 25 feet south of road. Taxadjunct to the Orangeburg series. The lower part of the Bt horizon has a slightly higher content of clay than is defined for the series. This pedon was mapped as an inclusion in Orangeburg loamy sand, 2 to 5 percent slopes.

TABLE 23.--CLASSIFICATION OF THE SOILS

Soil name	Family or higher taxonomic class
Bibb	Coarse-loamy, siliceous, acid, thermic Typic Fluvaquents
Bonifay	Loamy, siliceous, thermic Grossarenic Plinthic Paleudults
Carnegie	Clayey, kaolinitic, thermic Plinthic Paleudults
Chastain	Fine, mixed, acid, thermic Typic Fluvaquents
Chipley	Thermic, coated Aquic Quartzipsamments
Clarendon	Fine-loamy, siliceous, thermic Plinthaquic Paleudults
Cowarts	Fine-loamy, siliceous, thermic Typic Hapludults
Dogue	Clayey, mixed, thermic Aquic Hapludults
Dothan	Fine-loamy, siliceous, thermic Plinthic Paleudults
Esto	Clayey, kaolinitic, thermic Typic Paleudults
Faceville	Clayey, kaolinitic, thermic Typic Paleudults
Fuquay	Loamy, siliceous, thermic Arenic Plinthic Paleudults
Grady	Clayey, kaolinitic, thermic Typic Paleaquults
Herod	Fine-loamy, siliceous, nonacid, thermic Typic Fluvaquents
Kureb	Thermic, uncoated Spodic Quartzipsamments
Lakeland	Thermic, coated Typic Quartzipsamments
Lucy	Loamy, siliceous, thermic Arenic Paleudults
Meggett	Fine, mixed, thermic typic Albaqualfs
Muckalee	Coarse-loamy, siliceous, nonacid, thermic Typic Fluvaquents
Nankin	Clayey, kaolinitic, thermic Typic Hapludults
Ocilla	Loamy, siliceous, thermic Aquic Arenic Paleudults
Orangeburg	Fine-loamy, siliceous, thermic Typic Paleudults
Osier	Siliceous, thermic Typic Psammaquents
Rains	Fine-loamy, siliceous, thermic Typic Paleaquults
Rembert	Clayey, kaolinitic, thermic Typic Ochraquults
*Shellbluff	Fine-silty, mixed, thermic Fluventic Dystrochrepts
*Tawcaw	Fine, kaolinitic, thermic Fluvaquentic Dystrochrepts
Tifton	Fine-loamy, siliceous, thermic Plinthic Paleudults
Troup	Loamy, siliceous, thermic Grossarenic Paleudults

*The soil is a taxadjunct to the series. See text for a description of those characteristics of the soil that are outside the range of the series.

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