United States Department of Agriculture

Natural Resources Conservation Service

In cooperation with University of Florida, Institute of Food and Agricultural Sciences, Agricultural Experiment Stations, and Soil Science Department; and Florida Department of Agriculture and Consumer Services

Soil Survey of Okaloosa County, Florida

How To Use This Soil Survey

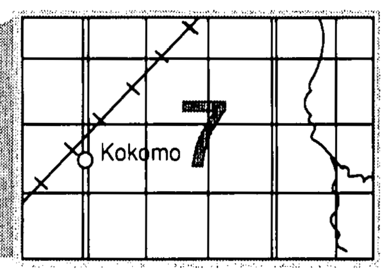
General Soil Map

The general soil map, which is the color map preceding the detailed soil maps, shows the survey area divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

To find information about your area of interest, locate that area on the map, identify the name of the map unit in the area on the color-coded map legend, then refer to the section **General Soil Map Units** for a general description of the soils in your area.

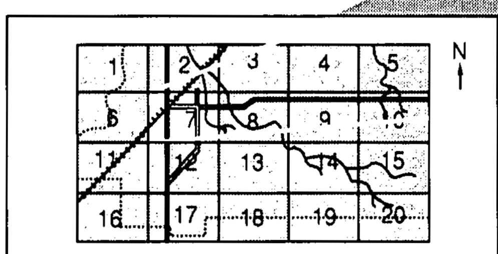
Detailed Soil Maps

The detailed soil maps follow the general soil map. These maps can be useful in planning the use and management of small areas.



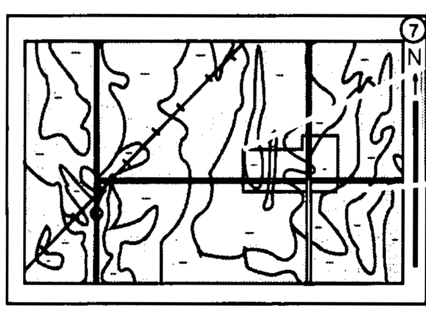
MAP SHEET

To find information about your area of interest, locate that area on the **Index to Map Sheets**, which precedes the soil maps. Note the number of the map sheet, and turn to that sheet.

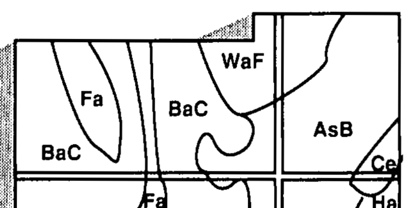


INDEX TO MAP SHEETS

Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Turn to the **Index to Map Units** (see Contents), which lists the map units by symbol and name and shows the page where each map unit is described.



MAP SHEET



AREA OF INTEREST

NOTE: Map unit symbols in a soil survey may consist only of numbers or letters, or they may be a combination of numbers and letters.

The **Summary of Tables** shows which table has data on a specific land use for each detailed soil map unit. See **Contents** for sections of this publication that may address your specific needs.

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 Natural Resources Conservation Service (formerly the Soil Conservation Service) has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 1988. Soil names and descriptions were approved in 1988. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1988. This soil survey was made cooperatively by the Natural Resources Conservation Service; the University of Florida, Institute of Food and Agricultural Sciences, Agricultural Experiment Stations, and Soil Science Department; the Florida Department of Agriculture and Consumer Services; and the Florida Department of Transportation. The Okaloosa County Board of Commissioners contributed office space for the soil survey party. The survey is part of the technical assistance furnished to the Yellow River Soil and Water Conservation District.

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.

All programs and services of the Natural Resources Conservation Service are offered on a nondiscriminatory basis, without regard to race, color, national origin, religion, sex, age, marital status, or handicap.

Cover: Sea oats in an area of the Newhan-Corolla general soil map unit. These plants help to protect the soils from erosion. (Photograph courtesy of David Shea's Studio, Ft. Walton Beach, Florida)

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Issued June 1995

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Foreword

This soil survey contains information that can be used in land-planning programs in Okaloosa 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 ensure 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 over 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 Natural Resources Conservation Service or the Cooperative Extension Service.

T. Niles Glasgow
State Conservationist
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Soil Survey of Okaloosa County, Florida

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United States Department of Agriculture, Natural Resources Conservation Service, in cooperation with
the University of Florida, Institute of Food and Agricultural Sciences, Agricultural Experiment Stations, and Soil Science Department; and the Florida Department of Agriculture and Consumer Services

OKALOOSA COUNTY is in the western part of the Florida Panhandle (fig. 1). It is bordered on the north by Alabama, on the west by Santa Rosa County, on the east by Walton County, and on the south by the Gulf of Mexico.

The total area of Okaloosa County is 637,043 acres, or about 995 square miles. This acreage includes about 38,125 acres of water. The land area covers 598,918 acres, or about 935 square miles. The county is about 42 miles long and 24 miles wide. Crestview, the county seat, is in the central part of the county.

The economy of Okaloosa County is diversified. It is supported primarily by tourism, agriculture, light industry, and the military.

General Nature of the County

This section provides general information about environmental and cultural factors that affect the use and management of soils in Okaloosa County. It describes climate, history and development, transportation facilities, recreation, and geology.

Climate

The climate of Okaloosa County is characterized by long, warm, humid summers and mild winters. The Gulf of Mexico moderates temperatures in summer and winter. This moderating effect is strong along the coast but diminishes quickly a few miles inland. The northern part of the county is influenced by the North American landmass, which creates extremes in temperature that are greater than those in the southern part of the county. Thus, the influence of the Gulf of Mexico gives the southern portion of the county a humid, subtropical climate, and the influence of the North American continent gives the northern portion of the county a humid, continental climate. The average year-round temperature is 76 degrees F.

Rainfall varies a great deal throughout the year. According to the Air Weather Service at Eglin Air Force Base, the monthly average is 5.1 inches and the yearly average is approximately 62 inches. July generally has the most rainfall, followed by September, August, and June. The period of least rainfall usually occurs from October through February *(7)*.

More than 44 percent of the annual precipitation occurs from June through September in the form of thundershowers. Most of this rainfall occurs during the afternoon and evening hours. These showers are widely scattered, are of short duration, and are often heavy. Winter and spring rains generally are less intense than summer thunderstorms. The winter rains are generally associated with winter frontal systems passing from the west to the east. Summarized climatic data based on records from the Air Weather Service at Eglin Air

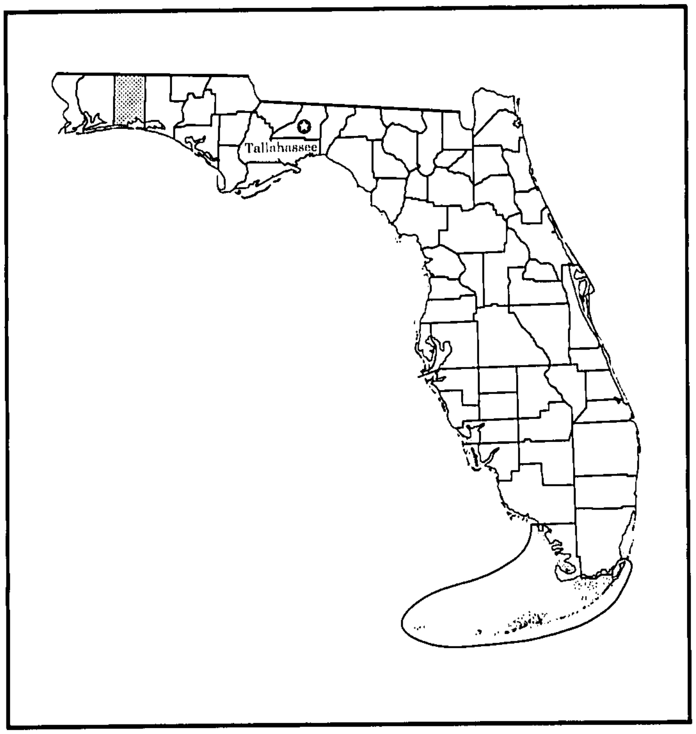

Figure 1.—Location of Okaloosa County in Florida.

Force Base is shown in table 1.

Daylong rains are rare and are almost always associated with tropical storms or hurricanes, which can affect the area any time from early June through late November.

Extended periods of dry weather can occur in any season, but such periods are most common in the spring and fall. Dry periods in the spring generally are of shorter duration than those in the fall, but they tend to be more serious because temperatures are higher and the need for moisture is greater.

Hail occasionally accompanies thunderstorms. The hailstorms are small, however, and damage is usually minimal. Snowfall is rare, and measurable snow occurs only about once in 10 years. The snow very rarely remains on the ground for more than 24 hours.

Ground fog generally occurs in the early morning or at night in the winter, late fall, and early spring. The sun dissipates the fog very quickly.

The average temperature in June, July, and August is 80 degrees F. Temperatures of 90 degrees or higher may occur from May to September, but temperatures of 100 degrees or more occur on only a few days each year. Warm and humid days are moderated by clouds and the associated thunderstorms or showers. Because the Gulf of Mexico moderates most of the air masses, hot, desiccating winds and very high temperatures are rare. Warm, summery weather lasts until early October.

During the winter, Okaloosa County is occasionally affected by cold air masses from the north. The coldest temperatures occur on the second or third night after the arrival of the cold air because the heat is lost through radiation. The average temperature in December, January, and February is 64 degrees F.

Prevailing winds generally are southerly during the summer. Windspeed is generally between 10 and 15 miles per hour in the afternoon and from 5 to 10 miles per hour at night. Average windspeed during June, July, and August is 4 miles per hour.

History and Development

Pearl Tyner, member of the Board of Supervisors of the Yellow River Soil and Water Conservation District, helped prepare this section.

The area that is now Okaloosa County was originally settled by a variety of people. By 1824, pioneers of Scottish descent had settled along the Yellow River, which they used as a means of transportation. They established a grist mill and raised corn, cotton, potatoes, peas, and rice. They raised cattle and hogs, which were allowed to roam the woods. By 1828, there were post offices in Almerante and Oak Grove. Some settlers were in the coastal areas, but most inhabitants lived in the isolated back country of northern Okaloosa. The settlers were dependent on the three main rivers and the stagecoach routes for transportation and contact with surrounding areas.

The southern half of the county was visited by legendary pirates, such as Captain Billy Bowlegs, whose lost gold still draws hopeful treasure hunters today. In 1871, John Newton, a schoolteacher, moved to the area and settled on Santa Rosa Sound. He named the resulting community Mary Esther, in honor of his wife and daughter. Although sparsely settled in early times, the coast is heavily developed today.

During the late 1800's, the timber industry discovered the rich timber resources of the county. Thriving timber businesses were started, and railroads were established to transport timber products to market. Eventually the timber industry waned, and farming again became the mainstay of life in the area. Farming is still the livelihood of many inhabitants of northern Okaloosa County today.

As the development of the area continued, it became increasingly difficult for settlers to travel to the towns of DeFuniak Springs, to the east, and Milton, to the west. To overcome this problem, W.H. Mapoles (Walton County's representative to the State legislature) proposed a bill to create a new county, which would consist of part of Walton County and part of Santa Rosa County. In 1915, Okaloosa County was created and Milligan was designated the county seat. Flooding along the Yellow River made it necessary to move the county seat to Crestview in 1917.

Times were hard in Okaloosa County during the Great Depression, but in 1935 the county received an economic boon when Eglin Air Force Base was established in the southern part of the county. Today the base is the world's largest military installation, employing over 20,000 military and civilian personnel.

Okaloosa County is much changed from its origins. It now has a diverse economy, including agriculture, forestry, construction, manufacturing, transportation, wholesale and retail businesses, real estate, and State and Federal reservations. In 1986, the population of Okaloosa County was 142,714. The major concentration was in the southern half of the county.

Transportation Facilities

Okaloosa County is served by several major highways. U.S. Highway 98 is in the southern part of the county, parallel to the coast. It is on the mainland in the western part of the county and on the barrier island in the eastern part of the county. U.S. Highway 90 crosses the central portion of the county in an east-to-west direction, passing through Deerland, Crestview, Milligan, Galiver, and Holt. Interstate 10 runs somewhat parallel to U.S. Highway 90. There is restricted access to Interstate 10 at Crestview and Holt. Florida Highway 4 begins at Milligan and runs northwest through Baker into Santa Rosa County. Florida Highway 85 begins at Fort Walton Beach and runs northward through Crestview and Laurel Hill into Walton County. Several county roads connect outlying towns or outlying areas, such as Escambia Farms, with the major roads in the county.

A major railroad line runs east and west, parallel to U.S. Highway 90. East Pass at Destin provides access from the Choctawhatchee Bay and the Intracoastal Waterway out to the Gulf of Mexico. Barge traffic is common on the Intracoastal Waterway.

The three commercial airports in the area are in Crestview, Destin, and Fort Walton Beach. Also, there are a few private landing fields in the county. Bus service is available in Crestview, Destin, and Fort Walton Beach. A few trucking firms also serve the area.

Recreation

A wide variety of recreational areas are available in Okaloosa County. These areas include more than 24 miles of coastline; the Choctawhatchee Bay; three major river systems; various farm ponds, public ponds, and lakes; Blackwater River State Forest; Eglin Air Force Base; public parks; wayside areas; and golf courses.

The Yellow River, the Shoal River, and the Blackwater River are in the northern part of the county. They provide excellent opportunities for fishing, canoeing, swimming, and sunbathing. Also, the Blackwater River runs through portions of Blackwater River State Forest, which contains state-run facilities at Hurricane Lake, Karrick Lake, and Bone Creek. Visitors can enjoy swimming, fishing, camping, hiking, and picnicking at these facilities.

In the southern part of Okaloosa County, Eglin Air Force Base provides many recreational opportunities, including camping, fishing, hunting, boating, and sunbathing. The Choctawhatchee Bay and its adjoining bayous also are popular recreational areas in the southern part of the county. They provide opportunities for swimming, sunbathing, boating, skiing, parasailing, jet skiing, wind surfing, and fishing. Also, many boats can be chartered in Destin for deep-sea fishing in the Gulf of Mexico (fig. 2).

The county has several museums, including the Indian Burial Mound (or Temple Mound) in Fort Walton Beach and the Historical Museum in Valparaiso.

There are many playgrounds and parks throughout Okaloosa County. Also, there are many golf courses and tennis courts in the Crestview and Fort Walton Beach areas.

Geology

Walter Schmidt, Florida Geological Survey, Bureau of Geology, prepared this section.

Geology and Geomorphology

Okaloosa County is divided into two physiographic provinces *(11)*. The northern portion is the Western Highlands subdivision of the Northern Highlands, and the southern portion is the Gulf Coastal Lowlands, a subdivision of the Coastal Lowlands.

The Western Highlands is characterized by gently sloping plateaus at the relatively higher elevations separated by lower, large stream valleys. Dendritic streams drain the margins of the Highlands. The northern two-thirds of Okaloosa County is in this subdivision. At the southern edge of the Western Highlands, and separating it from the Gulf Coastal Lowlands, is a south-facing scarp called the Cody Scarp. This scarp represents the most persistent topographic break in Florida.

The Gulf Coastal Lowlands are that portion of the Coastal Lowlands physiographic province that is

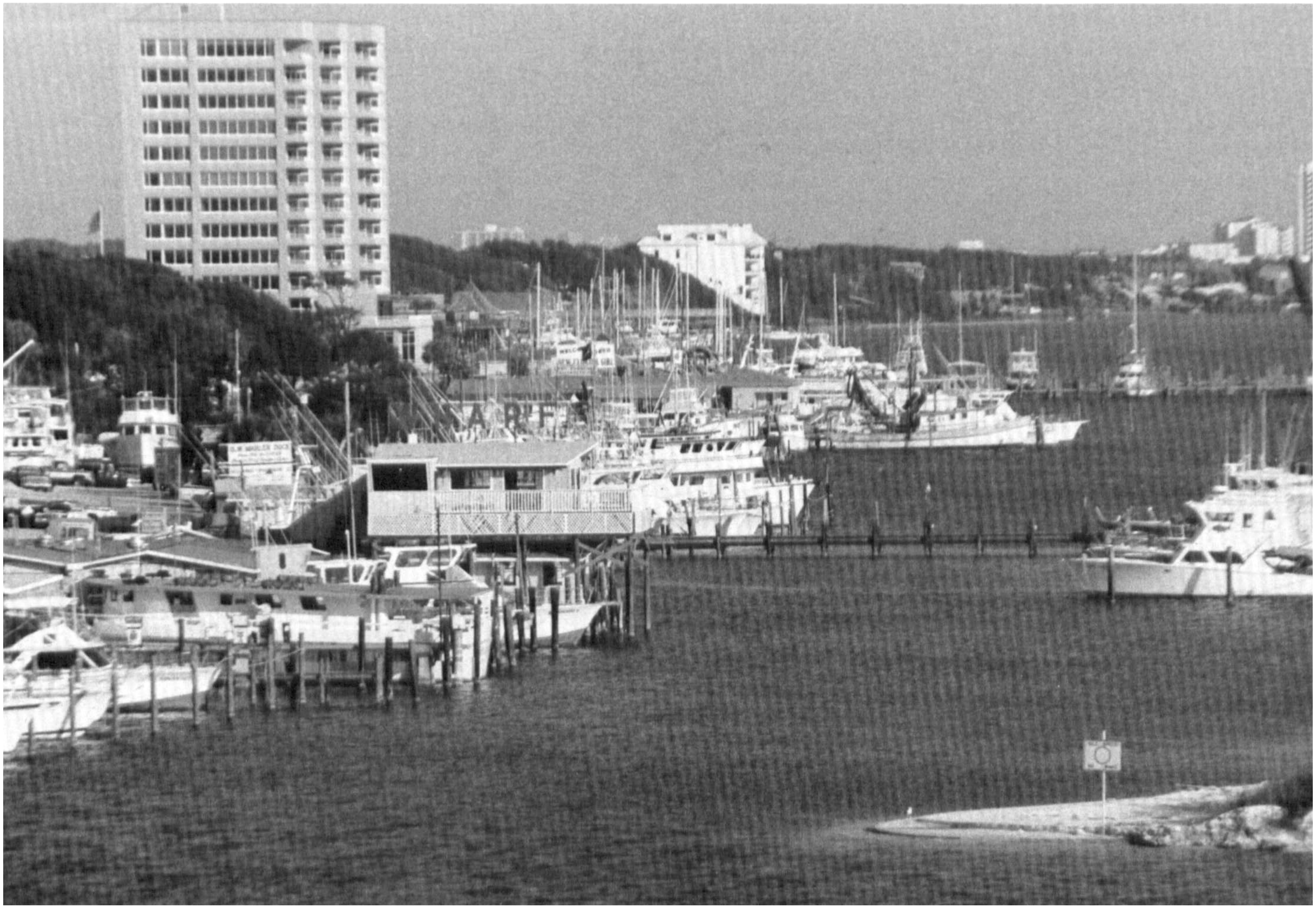

Figure 2.—Destin Harbor is an important fishing resort on the Gulf of Mexico.

adjacent to the Gulf of Mexico. This area is much lower in average elevation than the Highlands to the north. Marine terraces, formed when the sea level was higher than at present, are characteristic, and most features are parallel to the coast. Landforms typical of this subdivision include barrier islands, such as Santa Rosa Island; lagoons, such as Santa Rosa Sound; estuaries, such as the Choctawhatchee Bay; coastal ridges; sand dune ridges; relict spits and bars; and valleys.

Stratigraphy

Okaloosa County represents a transitional zone between the shallow stratigraphy of the central panhandle and that of the western panhandle. A Mississippi rock unit, the Chickasawhay Limestone, extends into the area, and two other units, the Pensacola clay and the Miocene coarse clastics, are in the western panhandle *(4)*. The Pensacola clay does not extend very far into Okaloosa County.

Oligocene Series

Chickasawhay Limestone.—This unit extends from its type area in Mississippi into the Florida Panhandle *(4)*. The top of the unit ranges between 50 feet above mean sea level (MSL) in the northeast corner of Okaloosa County to 950 feet below MSL in the southwest corner of the county. The Chickasawhay Limestone (Late Oligocene in age) and the Tampa Stage Limestone (Chattahoochee Formation of the central panhandle) consist of the same lithology; that is, tan sucrosic dolostone to light tan fossiliferous limestone. The Ocala Group limestone underlies the Chickasawhay Limestone. Depending upon location within the county, the Bruce Creek Limestone, Alum Bluff Group sediments, or Miocene coarse clastics overlie the Chickasawhay Limestone *(3)*.

Miocene Series

Bruce Creek Limestone.—The Bruce Creek Limestone (early to Middle Miocene in age) consists of light-colored, somewhat sandy, moderately hard, granular, fossiliferous and dolomitic limestone. The type area of the Bruce Creek Limestone, which is the only outcrop of this formation, is in Walton County at the base of Bruce Creek. The top of the Bruce Creek Formation varies in elevation from more than 55 feet above MSL in east-central Okaloosa County to more than 660 feet below MSL in southwestern Okaloosa County. The Bruce Creek Limestone underlies the Intracoastal Formation and overlies the Chickasawhay Limestone. It is absent in the northern third of the county. It is predominantly in the coastal area and pinches out to the north (inland) *(3)*.

Miocene to Pliocene Series

Intracoastal Formation.—In Okaloosa County, the Intracoastal Formation (Middle Miocene to Pliocene in age) consists of sandy, clayey, phosphatic, crumbly and soft, fossiliferous limestone and a middle bed of sparsely fossiliferous phosphatic sand. The Intracoastal Formation exists only in the extreme southern coastal area. The formation grades into the Miocene coarse clastics to the west and into the Alum Bluff Group sediments to the north. The Intracoastal Formation underlies the undifferentiated surficial sediments and overlies the Bruce Creek Limestone *(3)*.

Miocene Coarse Clastics

The Miocene coarse clastics unit (Miocene to Late Pliocene in age) consists of gray to brown sand and gravel with some clay and shell material intermixed throughout. The unit interfingers with the Intracoastal Formation in southern Okaloosa County and with the Alum Bluff Group sediments in the west-central portion of the county. The formation is as much as 500 feet thick. The top portion of the Miocene coarse clastics is Pliocene in age. The Citronelle Formation or undifferentiated surficial sediments overlie the Miocene coarse clastics, and the Alum Bluff Group sediments or the Chickasawhay Limestone underlies it *(3)*.

Pleistocene Series

Citronelle Formation.—The Citronelle Formation (Early Pleistocene in age) consists of unfossiliferous sand, clay, and gravel and has scattered limonite beds, lenses, and pavements. It is typically red, orange, or yellow and caps most of the hills in Okaloosa County *(11)*. It overlies the Miocene coarse clastics or the Alum Bluff Group sediments and underlies undifferentiated surficial sediments. It is as much as 250 feet thick *(3)*.

Pliocene to Holocene Series

Undifferentiated Surficial Sediments.—The undifferentiated surficial sediments are composed of unconsolidated quartz sand and are widespread in the area. Clay and shell beds are in some areas of this unit. The unit is thickest in the southern coastal areas. It is thinnest in the northern part of the county. It overlies the Intracoastal Formation, the Alum Bluff Group sediments, or the Citronelle Formation. It is at the surface in much of the county *(3)*.

Ground Water

An aquifer is a unit that can yield a usable amount of water to wells and through which water easily passes. There are two aquifer systems in Okaloosa County: the surficial aquifer system and the Floridan aquifer system.

The surficial aquifer system (locally known as the sand and gravel aquifer) consists of unconsolidated quartz sand and gravel. Because the quartz grains are unconsolidated (uncemented) and are variable in size, the unit has high intergranular porosity. This void space is filled with water (below the water table) from the high local rainfall. The unit is composed of the undifferentiated surficial sediments, the Citronelle Formation, and a variable (upper) portion of the Miocene coarse clastics *(6)*. Although this aquifer is an important water source in the counties to the west, the Floridan aquifer system is the primary source of ground water in Okaloosa County *(5)*.

The Floridan aquifer system in Okaloosa County consists of the permeable carbonate rocks of the Bruce Creek Limestone and Chickasawhay Limestone and rocks from deeper formations. Water from the deeper rocks is generally salty. The water in the aquifer is derived from cavities and fractures, from interstitial pore space, and from moldic porosity. Interconnected cavities and fractures typically range from a few inches to tens of feet in size and can produce great quantities of water. Pore space consists of open space between grains, such as between fossil grains. Pore space is generally very small in individual pore volume. If the pores are sufficiently interconnected, moderate quantities of water can be obtained. Moldic porosity is the open volume that results when fossils are removed by dissolution, leaving a void in the rock. The Bruce

Creek Formation typically has low to high moldic porosity.

Mineral Resources

No mineral commodities are commercially mined in Okaloosa County. Clayey sand, clay, and gravel, primarily from the Citronelle Formation, are mined on a small scale for local use from relatively small pits. Unconsolidated sand from the undifferentiated surficial sediments also is mined locally from small, shallow pits.

The suitability of the soil for various uses is normally determined by evaluating properties within the soil. Interpretations of the effects these properties could have on soil use are included in this soil survey. There are many geologic features that are not expressed within the soil that may significantly affect the suitability of a site for a particular use. Individual sites should be evaluated by onsite examination and testing. In many cases special planning, design, and construction techniques can be used to overcome geologic problems.

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; and the kinds of crops and native plants growing on the soils. 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 from which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

The soils in the survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and 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 a considerable degree of 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, distribution of plant roots, reaction, 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 are generally collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are 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 are 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 predict with a fairly high degree of accuracy 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 two or three 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. In the detailed soil map units, these latter soils are called inclusions or included soils. In the general soil map units, they are called soils of minor extent.

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, it 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 another 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 a 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.

Soils of the Barrier Islands and the Coastal Plain

These soils are excessively drained, well drained, and somewhat poorly drained and are nearly level to steep. They are on high dune ridges and in high upland areas. The soils are sandy throughout. They are in the southern part of the county.

1. Lakeland

Nearly level to steep, excessively drained soils that are sandy throughout

This map unit consists of deep soils in the uplands. These soils are on the Coastal Plain and extend north from the Intracoastal Waterway to about the middle of the county. Most areas of this map unit are on Eglin Air Force Base.

The natural vegetation consists of longleaf pine, turkey oak, sand live oak, saw palmetto, pricklypear, pineland threeawn (wiregrass), lichens, and reindeer moss.

This map unit makes up about 244,975 acres, or about 40.9 percent of the survey area. It is about 80 percent Lakeland soils and 20 percent soils of minor extent.

Lakeland soils are excessively drained. Typically, the surface layer is dark grayish brown sand about 6 inches thick. Below this to a depth of 80 inches or more is sand. The upper 43 inches is brownish yellow, the next 24 inches is yellowish brown, and the lower 7 inches or more is yellow.

Of minor extent in this map unit are Foxworth, Troup, and Kureb soils.

Some areas of this map unit, including areas in the cities of Fort Walton Beach, Niceville, and Valparaiso, are used for urban development. Also, commercial buildings and many houses have been built in some of the privately owned areas.

2. Kureb-Lakeland-Resota

Nearly level to strongly sloping, excessively drained and moderately well drained soils that are sandy throughout

This map unit consists of deep soils in the uplands. These soils are in the inland part of Moreno Point and in the southernmost part of the mainland.

The natural vegetation consists of sand pine, live oak, scrub oak, rosemary, saw palmetto, pineland threeawn (wiregrass), and reindeer moss.

This map unit makes up about 6,516 acres, or about 1.1 percent of the survey area. It is about 48 percent Kureb soils, 14 percent Lakeland soils, 10 percent Resota soils, and 28 percent soils of minor extent.

Kureb soils are excessively drained. Typically, the surface layer is dark gray sand about 5 inches thick. Below this to a depth of 80 inches or more is sand. The upper 28 inches is light gray or yellowish brown, the next 31 inches is brownish yellow or yellow, and the lower 16 inches or more is very pale brown.

Lakeland soils are excessively drained. Typically, the surface layer is dark grayish brown sand about 6 inches thick. Below this to a depth of 80 inches or more is sand. The upper 43 inches is brownish yellow, the next 24 inches is yellowish brown, and the lower 7 inches or more is yellow.

Resota soils are moderately well drained. Typically, the surface layer is dark grayish brown sand about 3 inches thick. Below this to a depth of 80 inches or more is sand. The upper 15 inches is white; the next 29 inches is dark brown, yellowish brown, or brownish yellow; and the lower 33 inches or more is white.

Of minor extent in this map unit are Chipley, Newhan, and Foxworth soils.

Some areas of this map unit, including areas in the cities of Destin, Fort Walton Beach, Mary Esther, and Wynn Haven Beach, are used for urban development. Also, commercial buildings and many houses have been built in some areas.

3. Newhan-Corolla

Nearly level to strongly sloping, excessively drained, moderately well drained, and somewhat poorly drained soils that are sandy throughout

This map unit consists of deep soils on high dune ridges of the barrier islands. These soils parallel the Gulf of Mexico and extend across the county in an east-west direction.

The natural vegetation consists of sea oats, stunted sand pine, and sand live oak.

This map unit makes up about 5,934 acres, or about 0.9 percent of the survey area. It is about 54 percent Newhan soils, 26 percent Corolla soils, and 20 percent soils of minor extent.

Newhan soils are excessively drained. Typically, they are sand to a depth of 80 inches or more. The upper 45 inches is white, and the lower 35 inches or more is light gray.

Corolla soils are moderately well drained and somewhat poorly drained. Typically, they are light gray sand to a depth of 80 inches or more.

Of minor extent in this map unit are Duckston and Kureb soils and areas of beaches.

Most areas of this map unit have not been developed. They protect the mainland from storms in the gulf. Special crossovers to the beach have been constructed to protect the dunes from erosion and to protect the delicate vegetation.

Soils of the Flatwoods, Low Knolls, and Ridges

These soils are nearly level and gently sloping and are moderately well drained and very poorly drained. They are in broad areas of flatwoods, in the slightly higher areas of flatwoods that are surrounded and intersected by poorly defined drainageways and depressions, and on low knolls and ridges in the flatwoods. Some of the soils are sandy throughout, and some have a dark, sandy subsoil. The soils are in the southern part of the county.

4. Chipley-Foxworth

Nearly level and gently sloping, somewhat poorly drained and moderately well drained soils that are sandy throughout

This map unit consists of deep soils on low knolls and ridges in the flatwoods. These soils are in the southern part of the survey area. Some areas of this unit are in the cities of Fort Walton Beach, Niceville, and Valparaiso.

The natural vegetation in most areas on knolls and ridges consists of longleaf pine, turkey oak, saw palmetto, and pineland threeawn.

This map unit makes up about 8,791 acres, or about 1.4 percent of the survey area. It is about 60 percent Chipley soils, 20 percent Foxworth soils, and 20 percent soils of minor extent.

Chipley soils are somewhat poorly drained. They are on broad flatwoods. Typically, the surface layer is very dark gray sand about 6 inches thick. The underlying material to a depth of 80 inches or more is light yellowish brown, yellowish brown, brownish yellow, very pale brown, and white sand.

Foxworth soils are moderately well drained. They are on long, narrow ridges and low knolls in the flatwoods. Typically, the surface layer is very dark gray sand about 4 inches thick. The underlying material to a depth of 80 inches or more is brown, brownish yellow, light yellowish brown, and white sand.

Of minor extent in this map unit are Rutlege, Leon, and Hurricane soils.

Some areas of this map unit, including areas in the cities of Fort Walton Beach, Shalimar, and Niceville, are used for urban development. Also, commercial buildings and many houses have been built in some areas.

5. Rutlege-Leon-Chipley

Nearly level and gently sloping, very poorly drained to somewhat poorly drained soils that have a dark surface layer, have a sandy subsoil coated with organic matter, or are sandy throughout

This map unit consists of soils in broad areas of flatwoods and in scattered wet depressions. These soils are in the southern part of the survey area. Some areas of this map unit are in the cities of Wynn Haven Beach, Destin, and Wright.

The natural vegetation consists of longleaf pine, blackgum, red maple, and gallberry.

This map unit makes up about 7,597 acres, or 1.3 percent of the survey area. It is about 56 percent Rutlege soils, 23 percent Leon soils, 7 percent Chipley soils, and 14 percent soils of minor extent.

Rutlege soils are very poorly drained. Typically, the surface layer is black sand about 8 inches thick. The underlying material to a depth of 80 inches or more is very dark gray, dark gray, gray, and light brownish gray sand.

Leon soils are poorly drained. Typically, the surface layer is dark gray sand about 6 inches thick. The subsurface layer, to a depth of about 16 inches, is light gray sand. The subsoil, to a depth of about 34 inches, is dark reddish brown and dark yellowish brown sand. The substratum to a depth of 80 inches or more is light yellowish brown and light gray sand.

Chipley soils are somewhat poorly drained. They are on broad flatwoods. Typically, the surface layer is very dark gray sand about 6 inches thick. The underlying material to a depth of 80 inches or more is light yellowish brown, yellowish brown, brownish yellow, very pale brown, and white sand.

Of minor extent in this map unit are Dorovan, Foxworth, Hurricane, and Pickney soils.

Some areas of this map unit are used for urban development.

Soils of the Freshwater Swamps, Drainageways, and Flood Plains

These soils are nearly level and are very poorly drained, poorly drained, somewhat poorly drained, and excessively drained. They are in freshwater swamps and marshes; on broad, low flats; and in depressions that are adjacent to major drainageways throughout the county. The soils are organic throughout, have a moderately thick surface layer and are sandy throughout, have a thin surface layer and a loamy subsoil, or are sandy throughout.

6. Dorovan

Nearly level, very poorly drained soils that are organic throughout

This map unit consists of soils in freshwater swamps and drainageways. These soils are primarily in the southern half of the county.

The natural vegetation consists of baldcypress, blackgum, red maple, and water tupelo.

This map unit makes up about 28,088 acres, or 4.7 percent of the survey area. It is about 53 percent Dorovan soils and 47 percent soils of minor extent.

Typically, the Dorovan soils have a surface layer of very dark grayish brown muck about 4 inches thick. The next layer, to a depth of about 60 inches, is black muck. Below this to a depth of 80 inches or more is very dark brown muck.

Of minor extent in this map unit are Pickney, Rutlege, and Leon soils and soils that have less than 51 inches of muck.

Most areas of this map unit support natural vegetation.

7. Pickney

Nearly level, very poorly drained soils that have a moderately thick surface layer and are sandy throughout

This map unit consists of soils in freshwater swamps and drainageways. These soils are in the western part of East Bay Swamp, in the extreme southwestern part of the county.

The natural vegetation consists of blackgum, buckwheattree, pond pine, redbay, slash pine, and sweetbay.

This map unit makes up about 1,598 acres, or 0.3 percent of the survey area. It is about 83 percent Pickney soils and 17 percent soils of minor extent.

Typically, the Pickney soils have a surface layer of black sand about 27 inches thick. Below this to a depth of 80 inches or more is sand. The upper part is black, the next part is dark gray, and the lower part is gray.

Of minor extent in this map unit are Dorovan, Leon, and Rutlege soils.

Most areas of this map unit support natural vegetation.

8. Kinston-Johnston-Bibb

Nearly level, poorly drained and very poorly drained soils that have a dark, loamy or sandy surface layer and loamy or sandy underlying material

This map unit consists of soils on the flood plains along narrow creeks and streams and major streams and rivers. These soils are in the northern half of the survey area.

The natural vegetation consists of American elm, black willow, green ash, river birch, sweetgum, water oak, and willow oak.

This map unit makes up about 29,946 acres, or 5.0 percent of the survey area. It is about 42 percent Kinston soils, 33 percent Johnston soils, 18 percent Bibb soils, and 7 percent soils of minor extent.

Kinston soils are poorly drained. Typically, the surface layer is very dark gray and dark gray silt loam about 17 inches thick. Below this to a depth of 80 inches or more is sandy clay loam. It is grayish brown in the upper part, light brownish gray in the next part, and light gray in the lower part.

Johnston soils are very poorly drained. Typically, the surface layer is black very fine sandy loam about 24 inches thick. The underlying material extends to a depth of 80 inches or more. The upper part is dark grayish brown very fine sandy loam. The lower part is dark gray, dark grayish brown, and light brownish gray sand.

Bibb soils are poorly drained. Typically, the surface layer is very dark gray loam about 6 inches thick. The underlying material extends to a depth of 80 inches or more. The upper part is dark grayish brown silt loam, and the lower part is light gray sand.

Of minor extent in this map unit are Dorovan, Yemassee, Garcon, Bigbee, Pickney, and Rutlege soils.

Most areas of this map unit support natural vegetation.

9. Yemassee-Garcon-Bigbee

Nearly level, somewhat poorly drained or excessively drained soils that have a loamy or sandy surface layer and subsoil and sandy underlying material

This map unit consists of soils on flood plains along the major streams and rivers. These soils are occasionally flooded. They are in the northern half of the survey area.

The natural vegetation consists of American holly, flowering dogwood, hawthorn, loblolly pine, slash pine, southern magnolia, water oak, live oak, laurel oak, and sweetgum.

This map unit makes up about 8,708 acres, or 1.5 percent of the survey area. It is about 45 percent Yemassee soils, 25 percent Garcon soils, 13 percent Bigbee soils, and 17 percent soils of minor extent.

Yemassee soils are somewhat poorly drained. Typically, the surface layer is fine sandy loam about 8 inches thick. The upper part is very dark gray, and the lower part is yellowish brown. The subsoil, to a depth of about 50 inches, is sandy clay loam. The upper part is yellowish brown, and the lower part is gray. The underlying material extends to a depth of 80 inches or more. The upper part is gray fine sandy loam, and the lower part is light gray sand.

Garcon soils are somewhat poorly drained. Typically, the surface layer is very dark gray loamy fine sand about 7 inches thick. The subsurface layer, to a depth of about 35 inches, is pale brown loamy fine sand. The subsoil, to a depth of about 70 inches, is fine sandy loam. The upper part is light brownish yellow, and the lower part is brownish gray. The underlying material to a depth of 80 inches or more is white fine sand.

Bigbee soils are excessively drained. Typically, the surface layer is very dark grayish brown loamy fine sand about 6 inches thick. The subsoil, to a depth of about 9 inches, is brown loamy fine sand. The underlying material extends to a depth of 80 inches or more. The upper part is light yellowish brown loamy fine sand, the next part is very pale brown sand, and the lower part is white sand.

Of minor extent in this map unit are Bibb, Chipley, Dorovan, Johnston, Kinston, and Rutlege soils.

Most areas of this map unit support natural vegetation. Some areas have been cleared for agricultural uses and timber production.

Soils of the Upper Coastal Plain

These soils are nearly level to strongly sloping and are excessively drained and well drained. They are in broad flat areas and on side slopes in the uplands. The soils have a loamy subsoil within a depth of 20 inches, have a loamy subsoil at a depth of 20 to 40 inches, have a loamy subsoil at a depth of more than 40 inches, or are sandy throughout.

10. Dothan-Fuquay

Nearly level to strongly sloping, well drained soils that have a loamy subsoil

This map unit consists of deep soils in the uplands. These soils are in the northern part of the survey area. Some areas of this unit are in the cities of Dorcas, Laurel Hill, and Blackman.

The natural vegetation consists of loblolly pine, American holly, hickory, southern magnolia, and white oak.

This map unit makes up about 75,974 acres, or 12.7 percent of the survey area. It is about 53 percent Dothan soils, 23 percent Fuquay soils, and 24 percent soils of minor extent.

Typically, the Dothan soils have a surface layer of very dark grayish brown loamy sand about 5 inches thick. The subsurface layer, to a depth of about 12 inches, is yellowish brown loamy sand. The subsoil to a depth of 80 inches or more is sandy clay loam. The upper part is yellowish brown, and the lower part is brownish yellow.

Typically, the Fuquay soils have a surface layer of brown loamy fine sand about 5 inches thick. The subsurface layer extends to a depth of about 28 inches. The upper part is brownish yellow loamy fine sand, and the lower part is light yellowish brown fine sandy loam. The subsoil extends to a depth of about 67 inches. The upper part is yellowish brown fine sandy loam, the next part is yellowish brown sandy clay loam, and the lower part is yellow sandy clay loam. The underlying material to a depth of 80 inches or more is yellow fine sandy loam.

Of minor extent in this map unit are Angie, Bonifay, Escambia, Lucy, Orangeburg, and Troup soils.

Most areas of this map unit are used for the production of timber or for crops, pasture, or forage. Some small areas are used for urban development.

11. Dothan-Troup-Fuquay

Nearly level to strongly sloping, well drained soils that have a loamy or sandy subsoil

This map unit consists of deep, sandy or loamy soils in the uplands. These soils are in the north-central, northwestern, and northern parts of the survey area.

The natural vegetation consists of loblolly pine, longleaf pine, American holly, hickory, southern magnolia, white oak, turkey oak, and laurel oak.

This map unit makes up about 39,995 acres, or about 6.7 percent of the survey area. It is about 40 percent Dothan soils, 21 percent Troup soils, 8 percent Fuquay soils, and 31 percent soils of minor extent.

Typically, the Dothan soils have a surface layer of very dark grayish brown loamy sand about 5 inches thick. The subsurface layer, to a depth of about 12 inches, is yellowish brown loamy sand. The subsoil to a depth of 80 inches or more is sandy clay loam. The upper part is yellowish brown, and the lower part is brownish yellow.

Typically, the Troup soils have a surface layer of dark brown sand about 5 inches thick. The subsoil, to a depth of about 48 inches, is loamy sand. The upper part is dark yellowish brown, the next part is strong brown, and the lower part is yellowish red. The subsoil to a depth of 80 inches or more is red sandy clay loam.

Typically, the Fuquay soils have a surface layer of brown loamy fine sand about 5 inches thick. The subsurface layer extends to a depth of about 28 inches. The upper part is brownish yellow loamy fine sand, and the lower part is light yellowish brown fine sandy loam. The subsoil extends to a depth of about 67 inches. The upper part is yellowish brown fine sandy loam, the next part is yellowish brown sandy clay loam, and the lower part is yellow sandy clay loam. The underlying material to a depth of 80 inches or more is yellow fine sandy loam.

Of minor extent in this map unit are Bonifay, Escambia, Lucy, and Orangeburg soils.

Most areas of this map unit are used for the production of timber or for crops, pasture, or forage. Some small areas are used for residential development.

12. Orangeburg-Lucy

Nearly level and gently sloping, well drained soils that have a loamy subsoil

This map unit consists of deep, loamy soils in the uplands. These soils are on small plateaus throughout the county. Most areas are in the central-northwestern part of the survey area. Some areas are in the cities of Auburn and Baker.

The natural vegetation consists of loblolly pine, American holly, hickory, and southern magnolia.

This map unit makes up about 16,220 acres, or 2.7 percent of the survey area. It is about 69 percent Orangeburg soils, 21 percent Lucy soils, and 10 percent soils of minor extent.

Typically, the Orangeburg soils have a surface layer of dark brown sandy loam about 5 inches thick. The subsurface layer, to a depth of about 9 inches, is reddish brown sandy loam. The subsoil to a depth of 80 inches or more is red sandy clay loam.

Typically, the Lucy soils have a surface layer of very dark grayish brown loamy sand about 6 inches thick. The subsurface layer, to a depth of about 28 inches, is loamy sand. The upper part is yellowish brown, and the lower part is strong brown. The subsoil to a depth of 80 inches or more is red sandy clay loam.

Of minor extent in this map unit are Bonifay, Dothan, Fuquay, Pansey, and Troup soils.

Most areas of this map unit are used for the production of timber or for crops, pasture, or forage. Some small areas are used for urban development.

13. Troup-Lakeland-Bonifay

Nearly level to steep, well drained and excessively drained soils that have a loamy subsoil or are sandy throughout

This map unit consists of deep, loamy and sandy soils in the uplands. These soils are in the north-central part of the survey area. Some areas of this map unit are in the cities of Crestview, Dorcas, Holt, Laurel Hill, and Deerland.

The natural vegetation consists of loblolly pine, longleaf pine, American holly, hawthorn, turkey oak, live oak, and laurel oak.

This map unit makes up about 124,616 acres, or about 20.8 percent of the survey area. It is about 35 percent Troup soils, 10 percent Lakeland soils, 8 percent Bonifay soils, and 47 percent soils of minor extent.

Troup soils are well drained. Typically, the surface layer is dark brown sand about 5 inches thick. The subsoil, to a depth of about 48 inches, is loamy sand. The upper part is dark yellowish brown, the next part is strong brown, and the lower part is yellowish red. The subsoil to a depth of 80 inches or more is red sandy clay loam.

Lakeland soils are excessively drained. Typically, the surface layer is dark grayish brown sand about 6 inches thick. Below this to a depth of 80 inches or more is sand. The upper 43 inches is brownish yellow, the next 24 inches is yellowish brown, and the lower 7 inches or more is yellow.

Bonifay soils are well drained. Typically, the surface layer is very dark grayish brown sand about 7 inches thick. The subsurface layer, to a depth of about 44 inches, is yellowish brown loamy sand. The subsoil extends to a depth of 80 inches or more. The upper part is brownish yellow sandy loam, and the lower part is brownish yellow sandy clay loam.

Of minor extent in this map unit are Dothan, Fuquay, Lucy, and Orangeburg soils.

Most areas of this map unit are used for the production of timber or for pasture or forage. Some areas are used for urban development. Also, commercial buildings and manufacturing facilities are in some areas.

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 and potential of a soil for specific uses. They also can be used to plan the management needed for those uses. More information on each map unit, or soil, is given under the heading "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, stoniness, salinity, 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, Lakeland sand, 0 to 5 percent slopes, is a phase of the Lakeland series.

Some map units are made up of two or more major soils. These map units are called soil complexes or undifferentiated groups.

A *soil complex* consists of two or more soils 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 are somewhat similar in all areas. Troup-Orangeburg-Cowarts complex, 5 to 12 percent slopes, 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. Chipley and Hurricane soils, 0 to 5 percent slopes, 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.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Urban land is an example. Miscellaneous areas are shown on the soil maps. Some that are too small to be shown are identified by a special symbol on the soil maps.

Table 2 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 potentials for many uses. The "Glossary" defines many of the terms used in describing the soils.

2—Arents, 2 to 8 percent slopes. These excessively drained, gently sloping or sloping soils consist of sandy soil material, which has been excavated from the Intracoastal Waterway and deposited along the banks and within the sound. This material is a mixture of fine sand, sand, and fragments of subsoil material from the associated Hurricane and Leon soils and sand from the Foxworth and Rutlege soils. Most areas are long and are as much as one-fourth mile wide. Some of these soils are in the northern portion of the survey area in places where the soils have been disturbed and specific soil types cannot be consistently recognized. The soil material in these areas is a mixture of sand and clay from the associated Orangeburg, Dothan, Fuquay, and Lucy soils. Areas of Arents generally are rectangular or polygonal and range from 5 to 200 acres in size.

In most places the soils are variable and have discontinuous lenses, pockets, and streaks of light gray, grayish brown, very pale brown, yellowish brown, yellow, black, dark reddish brown, strong brown, yellowish red, and red fine sand or sand. They contain few or common black and dark reddish brown fragments of sandy material from the subsoil of the soils in the borrow area. Thickness of the material ranges from 2 to 20 feet. These soils do not have an orderly sequence of horizons.

Included with these soils in mapping are areas where the overburden is less than 2 feet thick. Also included are small areas containing fragments of organic material or muck. Included areas make up less than 15 percent of the map unit.

Permeability is rapid in the Arents. The available water capacity is low or very low. Natural fertility and the content of organic matter are very low. Depth to the water table is more than 6 feet.

These soils support little vegetation, primarily rosemary, sand pine, and reindeer lichens.

These soils are not suitable for cultivated crops, pasture, or woodland.

Limitations affecting septic tank absorption fields are slight. Because the soils have a poor filtering capacity, however, ground-water contamination is a hazard in areas where there are many septic tanks. Alternative systems should be used. Limitations are slight in areas used for homesite development and for local roads and streets. Limitations affecting small commercial buildings are moderate because of the slope. Limitations affecting trench and area sanitary landfills are severe because of seepage. In areas used for sewage lagoons and landfills, the sandy sidewalls should be sealed. Limitations affecting camp areas, picnic areas, and paths and trails are severe because the soils are too sandy. Limitations are severe in areas used for playgrounds because of the slope and because of the sandy surface layer, which causes poor trafficability. The addition of suitable topsoil or some other material can compensate for the sandy textures.

No capability subclass or woodland ordination symbol is assigned.

3—Beaches. Beaches consist of narrow strips of very rapidly permeable white sand on the coastline along the Gulf of Mexico. Individual areas range from 200 to 500 feet in width. As much as half of the beach can be flooded daily by high tides, and all of the beach can be flooded by storm tides. The shape and slope of the beaches commonly change with every storm. Most areas have a uniform, gentle slope and a short, stronger slope at the edge of the water.

Natural vegetation grows only on some of the low dunes. It is sparse and consists primarily of sea oats and a few other salt-tolerant plants.

The water table is at the surface to a depth of more than 4 feet, depending on distance from the edge of the water, the height of the beaches, the effect of storms, and the time of year.

Sand dunes border the beaches on the north side. They consist mainly of Newhan and Corolla soils. The dunes are not subject to wave action, except during storms, but they commonly receive salt spray.

Beaches are not suited to cultivated crops, improved pasture, or pine trees because of periodic flooding, excessive salt content, low natural fertility, and droughtiness. Because beaches have great esthetic value, they are an important part of the waterfront.

Beaches are suitable for use as recreational areas and wildlife habitat. They are used intensively for recreation. In most places they are smooth and wide enough at low tide for automobile traffic. Because of the proximity to the gulf, other uses are not practical.

No capability subclass or woodland ordination symbol is assigned.

4—Chipley and Hurricane soils, 0 to 5 percent slopes. These nearly level or gently sloping, somewhat poorly drained soils are in areas bordering drainageways in the uplands or on low ridges in the flatwoods. The soils do not occur in a regularly repeating pattern on the landscape. Some areas consist of Chipley and similar soils, some consist of Hurricane and similar soils, and some consist of both soils. Slopes are dominantly less than 5 percent. Individual areas are irregular in shape and range from 3 to 200 acres in size.

On 86 percent of the acreage mapped as Chipley and Hurricane soils, 0 to 5 percent slopes, Chipley, Hurricane, and similar soils make up 78 to 93 percent of the mapped areas. Dissimilar soils make up about 7 to 22 percent.

Typically, the surface layer of the Chipley soil is very dark gray sand about 6 inches thick. The underlying material to a depth of 80 inches or more is sand. The upper part is dark grayish brown, the next part is light yellowish brown and brownish yellow, and the lower part is very pale brown and white.

Permeability is rapid in the Chipley soil. The available water capacity is low. A seasonal high water table is at a depth of 24 to 36 inches for 2 to 4 months in most years. Runoff is slow. Natural fertility is low.

Typically, the surface layer of the Hurricane soil is very dark grayish brown sand about 6 inches thick. The subsurface layer is sand about 59 inches thick. The upper part is brownish yellow, and the lower part is light gray. The subsoil to a depth of 80 inches or more is very dark gray and black sand.

Permeability is rapid or very rapid in the upper part of the Hurricane soil and moderately rapid to very rapid in the lower part. The available water capacity is low. The effective rooting depth is limited by a seasonal high water table, which is at a depth of about 24 to 42 inches from November through April. Runoff is slow. Natural fertility is low.

Dissimilar soils included with the Chipley and Hurricane soils in mapping are Leon and Rutlege soils. Leon soils are in the slightly lower landscape positions and have a well developed subsoil. Rutlege soils have a dark surface layer that is more than 10 inches thick. Also included are small areas of poorly drained soils that have a light-colored surface layer and have gray mottles within a depth of 20 inches.

The natural vegetation on this map unit consists of slash pine and longleaf pine and a few scattered blackjack oak, turkey oak, and post oak. The understory includes gallberry, greenbrier, saw palmetto, and yaupon. The most common native grass is pineland threeawn (wiregrass). Other native grasses include bluestem species, panicum, hairy panicum, and indiangrass.

The Chipley and Hurricane soils are well suited to cultivated crops. Suitable crops are corn, soybeans, peanuts, and cotton. A perched water table that develops during rainy periods in spring generally limits the suitability of the soils for deep-rooted crops. Returning all crop residue to the soil and using a cropping system that includes grasses, legumes, or grass-legume mixtures conserve moisture, maintain fertility, and help to control erosion. Frequent applications of fertilizer and lime are generally needed. Runoff and erosion can be controlled by plowing in the fall, applying fertilizer, and seeding a cover crop. Tillage should be on the contour or across the slope.

These soils are moderately suited to pasture. Management measures that maintain optimum vigor and quality of forage plants are generally needed. Wetness limits the choice of plants and the period of grazing. The low available water capacity limits the production of plants during extended dry periods. Applications of fertilizer and lime help deep-rooted plants, such as coastal bermudagrass and bahiagrass, to tolerate drought. Proper stocking rates, pasture rotation, and timely deferment of grazing help to keep the pasture in good condition. Applications of fertilizer and lime are needed for the optimum growth of grasses and legumes.

These soils are well suited to the production of slash pine and loblolly pine. The seasonal high water table is the main limitation. The use of equipment is limited unless a drainage system is provided. A good ground cover of close-growing plants between tree rows reduces the hazard of erosion. If site preparation is not adequate, competition from undesirable plants can prevent or delay the natural or artificial reestablishment of trees. Appropriate species should be selected. Leaving debris on the surface helps to maintain the content of organic matter.

These soils are poorly suited to recreational development. The sandy surface layer results in poor trafficability. The plant cover can be maintained by controlling traffic.

These soils are moderately suited to use as sites for homes, small commercial buildings, and local roads and streets. Wetness and the caving of cutbanks are the main limitations. Installing a drainage system and installing drain tile around footings can reduce the wetness. In undrained and nonirrigated areas, plants that can tolerate wetness and droughtiness should be selected for planting. Onsite sewage disposal systems may not function properly during periods of high rainfall because of a restrictive layer in the Hurricane soil. Septic tank absorption fields are mounded in most areas.

The capability subclass is IIIs. The woodland ordination symbol is 11S for the Chipley soil and 11W for the Hurricane soil.

6—Dorovan muck, frequently flooded. This nearly level, very poorly drained soil is in large hardwood swamps and on flood plains along drainageways in the southern part of the survey area. Slopes are dominantly less than 2 percent. Individual areas range from about 10 to more than 750 acres in size.

On 94 percent of the acreage mapped as Dorovan muck, frequently flooded, Dorovan and similar soils make up 88 to 100 percent of the mapped areas. Dissimilar soils make up 0 to 12 percent.

Typically, the surface layer of the Dorovan soil is very dark grayish brown mucky peat about 4 inches thick. Below this to a depth of 80 inches or more is black and very dark brown muck.

Dissimilar soils included with this soil in mapping are Rutlege, Bibb, Kinston, and Leon soils. Rutlege soils are mineral soils and are around the perimeter of the unit. Bibb and Kinston soils are stratified mineral soils. Leon soils have a firm, sandy subsoil.

Permeability is moderate in the Dorovan soil. The available water capacity is high. The water table is near or above the surface for most of the year. The soil is flooded more than once every 2 years for periods of more than 1 month. Natural fertility is medium. The content of organic matter is high. The internal drainage rate is slow because of the high water table. The soil responds well to artificial drainage.

The natural vegetation consists mostly of baldcypress, blackgum, red maple, and water tupelo and an understory of buttonbush and dahoon holly.

The wetness is a very severe limitation affecting cultivated crops. In undrained areas, the soil is not suitable for cultivation. If drained and protected from flooding, the soil is suited to most vegetable crops. A well designed and maintained water-control system is needed. Excess water should be drained from areas used for crops, but uncultivated areas should be kept saturated with water. Applications of lime and fertilizer, including phosphates, potash, and minor elements, are needed. Water-tolerant cover crops should be used in areas that are not used for row crops. Leaving crop residue on the surface and planting cover crops help to protect the soil from wind erosion.

Most improved grasses and clovers that are adapted to the area grow well on this soil if water is properly controlled. Water-control measures that maintain the water table near the surface help to prevent excessive oxidation of the organic material in the surface layer.

The potential productivity of pine trees is moderate. The use of equipment is limited. Seedling mortality, windthrow, and plant competition are severe management concerns.

This soil is not suited to use as a site for urban or recreational development because of the flooding and the wetness.

The capability subclass is VIIw. The woodland ordination symbol is 7W.

7—Duckston sand, frequently flooded. This poorly drained soil is in broad, level tidal marshes that border the Choctawhatchee Bay and Santa Rosa Sound. It is frequently flooded by heavy rains or high storm tides. Slopes are less than 1 percent. Individual areas range from 10 to 400 acres in size.

On 80 to 90 percent of the acreage mapped as Duckston sand, frequently flooded, Duckston and similar soils make up 80 to 90 percent of the mapped areas. Dissimilar soils make up 10 to 20 percent.

Typically, the surface layer of the Duckston soil is light brownish gray sand about 12 inches thick. The substratum to a depth of 80 inches or more is gray sand.

Dissimilar soils included with this soil in mapping are Leon and Rutlege soils and soils that have a surface layer of muck about 4 inches thick.

The Duckston soil has a water table within a depth of 20 inches during most of the year. The chance of flooding for brief periods in any one year is 50 percent. The available water capacity is very low. Permeability is very rapid. Natural fertility and the content of organic matter are very low.

The natural vegetation consists of sand cordgrass, marshhay cordgrass, smooth cordgrass, and scattered waxmyrtle.

This soil is not suited to cultivated crops, pasture, or woodland because of salinity and the hazard of flooding.

This soil is not suited to use as a site for urban or recreational development because of the flooding and the wetness.

The capability subclass is VIIw. No woodland ordination symbol is assigned.

8—Foxworth sand, 0 to 5 percent slopes. This nearly level or gently sloping, moderately well drained soil is in the uplands and in elevated areas in the flatwoods. Slopes are dominantly less than 5 percent. Individual areas range from about 5 to 200 acres in size.

On 95 percent of the acreage mapped as Foxworth sand, 0 to 5 percent slopes, Foxworth and similar soils make up 90 to 100 percent of the mapped areas. Dissimilar soils make up 0 to 10 percent.

Typically, the surface layer of the Foxworth soil is very dark gray sand about 4 inches thick. The underlying material to a depth of 80 inches or more is sand. The upper part is brown, the next part is brownish yellow, and the lower part is light yellowish brown and white.

Dissimilar soils included with this soil in mapping are Albany and Troup soils. Albany soils have a slightly higher water table than the Foxworth soil and have a loamy subsoil. Troup soils are better drained than the Foxworth soil and have a loamy subsoil at a depth of more than 40 inches.

Permeability is very rapid in the Foxworth soil. The available water capacity is low. Runoff is very slow. In most years, a seasonal high water table is at a depth of 42 to 72 inches for more than 3 months. The water table recedes to a depth of more than 72 inches during prolonged dry periods. Natural fertility is low.

The natural vegetation consists of longleaf pine and turkey oak. The understory includes aster, brackenfern, partridge pea, pineland beggarweed, and wild indigo. The most common native grass is pineland threeawn (wiregrass). Other native grasses include hairy panicum, yellow indiangrass, low panicum, and pineywoods dropseed.

This soil is generally unsuited to most cultivated crops because of droughtiness and the rapid leaching of plant nutrients. Irrigation is generally feasible in areas used for high-value crops if irrigation water is readily available. Returning all crop residue to the soil and using a cropping system that includes grasses, legumes, or grass-legume mixtures conserve moisture, maintain fertility, and help to control erosion. Frequent applications of fertilizer and lime are generally needed.

This soil is moderately suited to pasture. The low available water capacity limits the production of plants during extended dry periods. Applications of fertilizer and lime help deep-rooted plants, such as coastal bermudagrass and bahiagrass, to tolerate drought. Proper stocking rates, pasture rotation, and timely deferment of grazing help to keep the pasture in good condition. Applications of fertilizer and lime are needed for the optimum growth of grasses and legumes.

This soil is well suited to the production of slash pine. If site preparation is not adequate, competition from undesirable plants can prevent or delay the natural or artificial reestablishment of trees. The major management concern is the low available water capacity, which results in a moderate seedling mortality rate and hinders growth. Appropriate species should be selected for planting. Leaving debris on the surface helps to maintain the content of organic matter.

This soil is poorly suited to recreational development. The sandy surface limits trafficability. The plant cover can be maintained by controlling traffic.

This soil is well suited to use as a site for homes, small commercial buildings, and local roads and streets. Revegetating disturbed areas around construction sites helps to control erosion. Mulching, applying fertilizer, and irrigating help to establish lawn grasses and other small-seeded plants. If the density of housing is moderate or high, community sewage systems are needed to prevent the contamination of water supplies. This soil is poorly suited to trench sanitary landfills because of seepage and the seasonal high water table.

The capability subclass is IIIs. The woodland ordination symbol is 10S.

10—Kureb sand, 0 to 8 percent slopes. This excessively drained soil is on nearly undulating ridges and short side slopes on upland sandhills and dunelike ridges. Individual areas range from 50 to 800 acres in size. Slopes are smooth, convex, or concave.

On 97 percent of the acreage mapped as Kureb sand, 0 to 8 percent slopes, Kureb and similar soils make up 87 to 100 percent of the mapped areas. Dissimilar soils make up 0 to 13 percent.

Typically, the surface layer of the Kureb soil is dark gray sand about 5 inches thick. The subsurface layer is light gray sand about 12 inches thick. The subsoil is yellowish brown sand about 16 inches thick. The underlying material to a depth of 80 inches or more is sand. The upper part is brownish yellow, the next part is yellow, and the lower part is very pale brown.

Dissimilar soils included with this soil in mapping are Corolla and Mandarin soils. Corolla soils are somewhat poorly drained and are in the slightly lower landscape positions. Mandarin soils have a well developed subsoil and are somewhat poorly drained.

The Kureb soil has a loose, well aerated root zone to a depth of more than 72 inches. The available water capacity is very low. Permeability is rapid. Natural fertility and the content of organic matter are very low. Fertilizer is rapidly leached through the soil. Rainfall is rapidly absorbed in protected areas, and there is little runoff. The seasonal high water table is at a depth of more than 6 feet during most of the year.

The natural vegetation consists mostly of bluejack oak, myrtle oak, sand live oak, and sand pine. In some areas sand pine is dominant. The understory includes dwarf huckleberry, gopher apple, pricklypear, and saw palmetto. The most common native grass is pineland threeawn (wiregrass). Other vegetation includes grassleaf goldaster, reindeer moss, and cat greenbrier. The vegetation nearest the Gulf of Mexico is stunted because of salt spray.

This soil is not suitable for cultivated crops.

This soil is poorly suited to pasture. If fertilizer is applied, the growth of grasses, such as coastal bermudagrass and bahiagrass, is only fair. Clovers are not adapted.

The potential productivity for pine trees is low. The use of equipment is limited. Seedling mortality is a severe management concern. Plant competition is a slight management concern. Sand pine is the best tree for planting.

Limitations are slight on sites used for homes, small commercial buildings, and local roads and streets. Limitations affecting septic tank absorption fields are slight, but ground-water contamination is a hazard in areas where there are many septic tanks because of the poor filtering capacity of the soil. Alternative systems should be used. Limitations affecting sewage lagoons and sanitary landfills are severe because of the sandy texture and seepage. In areas used for these purposes, the sandy sidewalls and the bottoms should be sealed.

Limitations affecting recreational development are severe because of the sandy surface layer. The addition of suitable topsoil or some other material can compensate for the sandy texture.

The capability subclass is VIIs. The woodland ordination symbol is 6S.

12—Lakeland sand, 0 to 5 percent slopes. This nearly level or gently sloping, excessively drained soil is on broad ridgetops in the uplands. Slopes are dominantly less than 5 percent. Individual areas range from about 5 to 1,000 acres in size.

On 95 percent of the acreage mapped as Lakeland sand, 0 to 5 percent slopes, Lakeland and similar soils make up 90 to 99 percent of the mapped areas. Dissimilar soils make up 1 to 10 percent.

Typically, the surface layer of the Lakeland soil is dark grayish brown sand about 6 inches thick. The underlying material to a depth of 80 inches or more is sand. The upper part is brownish yellow, the next part is yellowish brown, and the lower part is yellow.

Dissimilar soils included with this soil in mapping are Chipley and Foxworth soils. Chipley and Foxworth soils are in the lower landscape positions and are somewhat poorly drained and moderately well drained.

Permeability is rapid in the Lakeland soil. The available water capacity is very low. Runoff is slow. The seasonal high water table is at a depth of more than 80 inches. The soil dries quickly after rains. Natural fertility is low.

The natural vegetation consists of longleaf pine and turkey oak. The understory includes aster, brackenfern, partridge pea, pineland beggarweed, and wild indigo. In the southern part of the county, the natural vegetation includes sand pine, live oak, saw palmetto, and reindeer moss. The most common native grass is pineland threeawn (wiregrass). Other native grasses include hairy panicum, yellow indiangrass, low panicum, and pineywoods dropseed.

This soil is generally unsuited to most cultivated crops because of droughtiness and the rapid leaching of plant nutrients. Irrigation is generally feasible if irrigation water is readily available. Returning all crop residue to the soil and using a cropping system that includes grasses, legumes, or grass-legume mixtures conserve moisture, maintain fertility, and help to control erosion. Frequent applications of fertilizer and lime are generally needed. A crop rotation that includes close-growing cover crops, contour cultivation of row crops, and minimum tillage help to control erosion. Soil blowing is a hazard in cultivated areas, but it can be controlled by establishing a good ground cover of close-growing plants.

This soil is moderately suited to pasture. The very low available water capacity limits the production of plants during extended dry periods. Applications of fertilizer and lime help deep-rooted plants, such as coastal bermudagrass and bahiagrass, to tolerate drought. Proper stocking rates, pasture rotation, and timely deferment of grazing help to keep the pasture in good condition. Applications of fertilizer and lime are needed for the optimum growth of grasses and legumes.

This soil is moderately suited to the production of slash pine and longleaf pine. If site preparation is not adequate, competition from undesirable plants can prevent or delay the natural or artificial reestablishment of trees. Appropriate species should be selected for planting. Firelines and access roads should slope gently to streams and cross at a right angle. Water turnouts or broad-based dips are needed on roads to direct water and sediments away from the roads and streams and into the surrounding woods. Water bars are needed on skid trails and firelines. The use of equipment is limited. Leaving debris on the surface helps to maintain the content of organic matter.

This soil is poorly suited to recreational development. The sandy surface limits trafficability. The plant cover can be maintained by controlling traffic.

This soil is well suited to use as a site for homes, small commercial buildings, and local roads and streets. The caving of cutbanks in areas used for shallow excavations is the main limitation. Preserving the existing plant cover during construction and revegetating disturbed areas around construction sites help to control erosion. Plans for homesite development should provide for the preservation of as many trees as possible. Mulching, applying fertilizer, and irrigating help to establish lawn grasses and other small-seeded plants. The soil is poorly suited to use as a site for sewage lagoons and sanitary landfills because of seepage. It is well suited to use as a site for septic tank absorption fields.

The capability subclass is IVs. The woodland ordination symbol is 10S.

13—Lakeland sand, 5 to 12 percent slopes. This sloping or strongly sloping, excessively drained soil is on upland side slopes leading to drainageways and around depressions. Individual areas range from about 30 to 100 acres in size.

On 95 percent of the acreage mapped as Lakeland sand, 5 to 12 percent slopes, Lakeland and similar soils make up 86 to 100 percent of the mapped areas. Dissimilar soils make up 0 to 14 percent.

Typically, the surface layer of the Lakeland soil is dark grayish brown sand about 6 inches thick. The underlying material to a depth of 80 inches or more is sand. The upper part is brownish yellow, the next part is yellowish brown, and the lower part is yellow.

Dissimilar soils included with this soil in mapping are Chipley and Foxworth soils. They are in the lower landscape positions. Chipley soils are somewhat poorly drained, and Foxworth soils are moderately well drained.

Permeability is rapid in the Lakeland soil. The available water capacity is very low. Runoff is slow. The seasonal high water table is at a depth of more than 80 inches. The soil dries quickly after rains. Natural fertility is low.

The natural vegetation generally consists of longleaf pine and turkey oak. In the southern part of the county, the natural vegetation includes sand pine, live oak, saw palmetto, and reindeer moss. The understory includes aster, brackenfern, partridge pea, pineland beggarweed, and wild indigo. The most common native grass is pineland threeawn (wiregrass). Other native grasses include hairy panicum, yellow indiangrass, low panicum, and pineywoods dropseed.

This soil is generally unsuited to most cultivated crops because of the slope and the hazard of erosion.

This soil is moderately suited to pasture. The very low available water capacity limits the production of plants during extended dry periods. Applications of fertilizer and lime help deep-rooted plants, such as coastal bermudagrass and bahiagrass, to tolerate drought. Proper stocking rates, pasture rotation, and timely deferment of grazing help to keep the pasture in good condition. Applications of fertilizer and lime are needed for the optimum growth of grasses and legumes.

This soil is moderately suited to the production of slash pine and longleaf pine. A properly designed drainage system and carefully placed culverts can help to control erosion. Spoil from excavations is subject to rill and gully erosion and to sloughing. If site preparation is not adequate, competition from undesirable plants can prevent or delay the natural or artificial reestablishment of trees. Appropriate species should be selected for planting. Firelines and access roads should slope gently to streams and cross at a right angle. Water turnouts or broad-based dips are needed on roads to direct water and sediments away from the roads and streams and into the surrounding woods. Water bars are needed on skid trails and firelines. The use of equipment is limited. Leaving debris on the surface helps to maintain the content of organic matter.

This soil is poorly suited to recreational development because of the slope. Paths and trails should extend across the slope. Maintaining an adequate plant cover helps to control erosion and sedimentation and enhances the beauty of the area.

This soil is moderately suited to use as a site for homes, small commercial buildings, and local roads and streets. The slope and the caving of cutbanks in areas used for shallow excavations are the main management concerns. Erosion is a hazard in the steeper areas. Preserving the existing plant cover during construction and revegetating disturbed areas around the construction site help to control erosion. Only the part of the site that is used for construction should be disturbed. Plans for homesite development should provide for the preservation of as many trees as possible. Mulching, applying fertilizer, and irrigating help to establish lawn grasses and other small-seeded plants. The soil is poorly suited to use as a site for sewage lagoons and sanitary landfills because of seepage and the slope. It is only moderately suited to use as a site for septic tank absorption fields because of the slope.

The capability subclass is VIs. The woodland ordination symbol is 10S.

14—Lakeland sand, 12 to 30 percent slopes. This moderately steep or steep, excessively drained soil is on upland side slopes leading to drainageways and depressional areas. Individual areas range from about 20 to 80 acres in size.

On 96 percent of the acreage mapped as Lakeland sand, 12 to 30 percent slopes, Lakeland and similar soils make up 88 to 100 percent of the mapped areas. Dissimilar soils make up 0 to 12 percent.

Typically, the surface layer of the Lakeland soil is dark grayish brown and grayish brown sand about 6 inches thick. The underlying material to a depth of 80 inches or more is sand. The upper part is brownish yellow, the next part is yellowish brown, and the lower part is yellow.

Dissimilar soils included with this soil in mapping are Bonifay and Foxworth soils. Bonifay soils have a loamy subsoil and have a water table within a depth of 60 inches. Foxworth soils are in swales and are somewhat poorly drained.

Permeability is rapid in the Lakeland soil. The available water capacity is very low. Runoff is slow. The seasonal high water table is at a depth of more than 80 inches. The soil dries quickly after rains. Natural fertility is low.

The natural vegetation generally consists of longleaf pine and turkey oak. In the southern part of the county, the natural vegetation includes live oak and saw palmetto. The understory includes aster, brackenfern, partridge pea, pineland beggarweed, and wild indigo. The most common native grass is pineland threeawn (wiregrass). Other native grasses include hairy panicum and pineywoods dropseed.

This soil is not suited to cultivated crops or to pasture.

This soil is moderately suited to the production of slash pine and longleaf pine. Gullies limit the use of equipment. A properly designed drainage system and carefully placed culverts help to control erosion. Spoil from excavations is subject to rill and gully erosion and to sloughing. If site preparation is not adequate, competition from undesirable plants can prevent or delay the natural or artificial reestablishment of trees.

Conventional harvesting methods are difficult to use because of the slope. Planting a protective cover crop helps to control erosion. Firelines and access roads should slope gently to streams and cross at a right angle. Water turnouts or broad-based dips are needed on roads to direct water and sediments away from the roads and streams and into the surrounding woods. Water bars are needed on skid trails and firelines. Roads that are no longer used should be closed and seeded to prevent excessive erosion.

This soil is poorly suited to use as a site for sewage lagoons and sanitary landfills because of seepage and the slope. It is poorly suited to use as a site for septic tank absorption fields because of the slope.

This soil is poorly suited to recreational development because of the slope and the sandy texture. The slope limits the use of the soil mainly to a few paths and trails, which should extend across the slope. Maintaining an adequate plant cover helps to control erosion and sedimentation and enhances the beauty of the area.

This soil is poorly suited to use as a site for homes. It is limited mainly by the slope.

The capability subclass is VIIs. The woodland ordination symbol is 10S.

15—Leon sand. This poorly drained, nearly level soil is on the Coastal Plain. Individual areas range from 5 to 90 acres in size. Slopes are smooth, convex, or concave and range from 0 to 2 percent.

On 94 percent of the acreage mapped as Leon sand, Leon and similar soils make up 88 to 100 percent of the mapped areas. Dissimilar soils make up 0 to 12 percent.

Typically, the surface layer of the Leon soil is dark gray sand about 6 inches thick. The subsurface layer is light gray sand about 10 inches thick. The subsoil is dark reddish brown sand about 8 inches thick. The underlying material to a depth of 80 inches or more is sand. The upper part is dark yellowish brown, the next part is light yellowish brown, and the lower part is light gray.

Dissimilar soils included with this soil in mapping are Chipley, Hurricane, Mandarin, and Rutlege soils. Chipley soils are better drained than the Leon soil and do not have a subsoil. Hurricane and Mandarin soils are better drained than the Leon soil and are in the slightly higher landscape positions. Rutlege soils are in the lower landscape positions. They have a dark surface layer more than 10 inches thick.

The Leon soil has a water table at a depth of 10 to 40 inches for periods of more than 9 months during most years. The water table is at a depth of less than 10 inches for 1 to 4 months during periods of high rainfall. It recedes to a depth of more than 40 inches during very dry periods. The available water capacity is very low in the surface layer and subsurface layer and low in the subsoil and substratum. Permeability is rapid in the surface layer and subsurface layer and moderate or moderately rapid in the subsoil.

The natural vegetation consists mostly of slash pine, live oak, dwarf huckleberry, gallberry, saw palmetto, shining sumac, and waxmyrtle. The most common native grass is pineland threeawn (wiregrass). Other grasses are chalky bluestem, broomsedge bluestem, yellow indiangrass, lopsided indiangrass, low panicum, and sedges.

This soil has very severe limitations affecting cultivated crops because of the wetness. The number of adapted crops is limited unless very intensive management practices are followed. If water-control and soil-improving measures are applied, the soil is suited to a limited number of crops. Vegetables are the most suitable crops. A complete water-control system that removes excess water quickly after heavy rains and provides subsurface irrigation during dry periods is needed. Row crops should be alternated with soil-improving crops in a rotation that keeps the cover crops on the land at least three-fourths of the time. Leaving crop residue on the surface and using soil-improving crops help to protect the soil from erosion. Seedbed preparation should include the bedding of rows. Applications of fertilizer and lime are needed.

This soil is well suited to pasture and hay. Coastal bermudagrass, improved bahiagrass, and several legumes are adapted. Water-control measures are needed to remove excess water during heavy rains. Regular applications of fertilizer and lime are needed. Grazing should be controlled to maintain vigorous plants and maximize yields.

The potential productivity for pine trees is moderate. The use of equipment is limited. Plant competition, the hazard of windthrow, and the seedling mortality rate are moderate management concerns. Slash pine is preferred for planting.

The seasonal high water table is a severe limitation affecting sites for homes, small commercial buildings, and local roads and streets. The wetness and the poor filtering capacity are severe limitations on sites for septic tank absorption fields. Using alternative systems or adding fill can help to overcome the wetness. Limitations affecting sewage lagoons and sanitary landfills are severe because of seepage and the seasonal high water table. Limitations affecting recreational development are severe because of the seasonal high water table and the sandy surface layer. The addition of suitable topsoil or some other material can compensate for the sandy texture of the surface layer.

The capability subclass is IVw. The woodland ordination symbol is 8W.

16—Lucy loamy sand, 0 to 5 percent slopes. This well drained soil is in the uplands. Individual areas range from 5 to 300 acres in size.

On 95 percent of the acreage mapped as Lucy loamy sand, 0 to 5 percent slopes, Lucy and similar soils make up 83 to 100 percent of the mapped areas. Dissimilar soils make up 0 to 13 percent.

Typically, the surface layer of the Lucy soil is very dark grayish brown loamy sand about 6 inches thick. The subsurface layer is loamy sand about 22 inches thick. The upper part is yellowish brown, and the lower part is strong brown. The subsoil extends to a depth of 80 inches or more. The upper part is yellowish red sandy loam, and the lower part is red sandy clay loam.

Dissimilar soils included with this soil in mapping are Bonifay, Dothan, and Fuquay soils. These soils have a perched water table within a depth of 48 inches.

Permeability is rapid in the upper part of the Lucy soil and moderate in the lower part. The available water capacity is low. Runoff is slow. The seasonal high water table is at a depth of more than 80 inches. The soil dries quickly after rains. The shrink-swell potential and natural fertility are low.

The natural vegetation consists of loblolly pine, American holly, hickory, southern magnolia, white oak, and water oak. The understory includes shining sumac and sparkleberry. The most common native grass is pineland threeawn (wiregrass). Other native grasses include broomsedge bluestem, longleaf uniola, low panicum, and spike uniola.

This soil is moderately suited to cultivated crops. Droughtiness and the rapid leaching of plant nutrients are the main limitations. Suitable crops are corn, soybeans, peanuts, and cotton. Irrigation is generally feasible in most areas where irrigation water is readily available. Minimizing tillage and returning all crop residue to the soil or regularly adding other organic material improve fertility and help to maintain tilth and the content of organic matter. Frequent applications of fertilizer and lime are generally needed. A crop rotation that includes close-growing cover crops, contour cultivation of row crops, and minimum tillage help to control erosion.

This soil is well suited to pasture. The low available water capacity limits the production of plants during extended dry periods. Applications of fertilizer and lime help deep-rooted plants, such as coastal bermudagrass and bahiagrass, to tolerate drought. Proper stocking rates, pasture rotation, and timely deferment of grazing help to keep the pasture in good condition. Applications of fertilizer and lime are needed for the optimum growth of grasses and legumes.

This soil is moderately well suited to the production of slash pine. If site preparation is not adequate, competition from undesirable plants can prevent or delay the natural or artificial reestablishment of trees. Water turnouts or broad-based dips are needed on roads to direct water and sediments away from the roads and streams and into the surrounding woods. Water bars are needed on skid trails and firelines. The major management concern is the low available water capacity, which results in severe seedling mortality and hinders growth. Appropriate species should be selected for planting. Leaving debris on the surface helps to maintain the content of organic matter.

This soil is well suited to recreational development. Maintaining an adequate plant cover helps to control erosion and sedimentation and enhances the beauty of the area.

This soil is well suited to urban development. The main limitation is seepage from sewage lagoons. In areas used for this purpose, the sidewalls should be sealed. Preserving the existing plant cover during construction helps to control erosion. Mulching, applying fertilizer, and irrigating help to establish lawn grasses and other small-seeded plants. Limitations affecting septic tank absorption fields are slight.

The capability subclass is IIs. The woodland ordination symbol is 8S.

17—Mandarin sand, 0 to 3 percent slopes. This somewhat poorly drained, nearly level soil is in slightly elevated areas on the Coastal Plain. Individual areas range from 3 to 50 acres in size. Slopes are smooth or concave.

On 96 percent of the acreage mapped as Mandarin sand, 0 to 3 percent slopes, Mandarin and similar soils make up 88 to 100 percent of the mapped areas. Dissimilar soils make up 0 to 12 percent.

Typically, the surface layer of the Mandarin soil is dark gray sand about 5 inches thick. The subsurface layer is gray sand about 21 inches thick. The subsoil, to a depth of about 54 inches, is sand. The upper 6 inches is dark reddish brown, the next 14 inches is dark brown, and the lower 8 inches is yellowish brown. The substratum to a depth of 80 inches or more is light gray sand.

Dissimilar soils included with this soil in mapping are Leon, Resota, and Rutlege soils. Leon soils are in the lower landscape positions and are poorly drained. Resota soils are in the slightly higher landscape positions. They do not have a well defined subsoil. Rutlege soils are in the lower landscape positions. They have a dark surface layer more than 10 inches thick.

The Mandarin soil has a water table at a depth of 18 to 42 inches for 4 to 6 months and at a depth of more than 42 inches for 6 to 8 months during most years. The water table is at a depth of 10 to 20 inches for as long as 2 weeks after periods of heavy rainfall in some years. The available water capacity is very low or low in the surface layer, subsurface layer, and substratum and moderate in the subsoil. Permeability is very rapid in the surface layer and subsurface layer and moderate in the subsoil. Natural fertility and the content of organic matter are low.

The natural vegetation consists mostly of bluejack oak, myrtle oak, sand live oak, and sand pine. In some areas sand pine is the dominant tree. The understory includes dwarf huckleberry, gopher apple, pricklypear, and saw palmetto. The most common native grass is pineland threeawn (wiregrass). Other vegetation includes grassleaf goldaster, reindeer moss, and cat greenbrier.

This soil is not suited to cultivated crops.

This soil is only moderately suited to pasture. The growth of grasses, such as coastal bermudagrass and bahiagrass, is fair if fertilizer is applied. Clovers are not adapted.

The potential productivity for pine trees is moderate. Limitations that restrict the use of equipment are a moderate management concern. Seedling mortality and plant competition are management concerns. Slash pine is preferred for planting.

Wetness is a moderate limitation affecting sites used for homes, small commercial buildings, and local roads and streets. It is a severe limitation in areas used for septic tank absorption fields. Using alternative systems or adding fill can help to overcome the wetness. Limitations affecting sewage lagoons and sanitary landfills are severe because of the high water table and seepage. The sandy surface layer is a severe limitation affecting areas used for recreational development. The addition of suitable topsoil or some other material can compensate for the sandy texture.

The capability subclass is VIs. The woodland ordination symbol is 8S.

18—Newhan-Corolla complex, rolling. These nearly level to steep, excessively drained and moderately well drained or somewhat poorly drained soils are in areas of undulating dunes near the gulf coast. Individual areas range from 40 to 800 acres in size.

On 90 percent of the acreage mapped as Newhan-Corolla complex, rolling, Newhan, Corolla, and similar soils make up 80 to 100 percent of the mapped areas. Dissimilar soils make up 0 to 20 percent. Generally, the mapped areas are about 54 percent Newhan and similar soils and 26 percent Corolla and similar soils.

Typically, the Newhan soil is white sand to a depth of about 45 inches. Below this to a depth of 80 inches or more is light gray sand. Some pedons have black, horizontal bands of mineral material.

Permeability is very rapid in the Newhan soil. The available water capacity, the content of organic matter, and natural fertility are very low. The water table is at a depth of more than 72 inches.

Typically, the surface layer of the Corolla soil is gray sand about 3 inches thick. Below this to a depth of 80 inches or more is light gray sand. Some pedons have black, horizontal bands of mineral material and lenses of gray sand.

Permeability is very rapid in the Corolla soil. The available water capacity, the content of organic matter, and natural fertility are very low. The water table is at a depth of 18 to 36 inches for 2 to 6 months during most years and at a depth of 36 to 60 inches during the rest of the year.

Dissimilar soils included with the Newhan and Corolla soils in mapping are Duckston soils. These included soils are in the lower landscape positions.

The natural vegetation on this map unit consists of sea oats, stunted sand pine, and sand live oak.

Present land use precludes the use of these soils for cultivated crops, improved pasture, or pine trees. The soils are used as sites for homes, lawns, parks, or playgrounds or as open spaces. The wetness, seepage, and a poor filtering capacity are severe limitations affecting most sanitary facilities. Regular applications of fertilizer and water are needed to maintain lawn grasses and ornamental plants. Good-quality topsoil should be added in areas used for lawns. Drought-resistant varieties should be selected for planting. Salt-tolerant plants should be used in areas near the Gulf of Mexico.

The capability subclass is VIIs. No woodland ordination symbol is assigned.

20—Udorthents, nearly level. These soils consist of material in areas of open excavations from which sand and loamy materials have been removed. Individual areas range from about 5 to 100 acres in size. The depth of the excavations ranges from 2 to more than 12 feet. The soil material is used primarily for use in the construction and repair of roads and as fill material for foundations.

Included areas, mostly mixtures of sandy, loamy, and clayey material, are piled or scattered around the edges of some of the excavated pits. This material has been mixed to such an extent that identification of individual soils is not possible.

Small areas of this map unit are throughout the county. Most areas are almost barren. Some of the areas have been abandoned, but many are still being used. A few areas are ponded during periods of high rainfall. Some areas support pine trees, but the soils are not suitable for cultivation or the production of pine trees.

No capability subclass or woodland ordination symbol is assigned.

21—Resota sand, 0 to 5 percent slopes. This moderately well drained, nearly level or gently sloping soil is on moderately high ridges on the Coastal Plain. Individual areas generally range from 10 to more than 50 acres in size, but some areas are as small as 5 acres. Slopes are smooth, convex, or concave.

On 99 percent of the acreage mapped as Resota sand, 0 to 5 percent slopes, Resota and similar soils make up 97 to 100 percent of the mapped areas. Dissimilar soils make up 0 to 3 percent.

Typically, the surface layer of the Resota soil is dark grayish brown sand about 3 inches thick. The subsurface layer is white sand about 15 inches thick. The subsoil is sand. The upper 4 inches is dark brown, the next 3 inches is yellowish brown, and the lower 22 inches is brownish yellow. The substratum to a depth of 80 inches or more is white sand.

Dissimilar soils included with this soil in mapping are Mandarin soils. These soils have a well defined subsoil. They are in the slightly lower landscape positions.

The Resota soil has a water table at a depth of 42 to more than 60 inches in most years. The water table recedes to a depth of 60 to 80 inches during dry periods. The available water capacity is very low. Permeability is very rapid. Natural fertility and the content of organic matter are low. Rainfall is rapidly absorbed, and there is little runoff.

The natural vegetation consists mostly of bluejack oak, myrtle oak, sand live oak, and sand pine. In some areas sand pine is the dominant tree. The understory includes dwarf huckleberry, gopher apple, pricklypear, and saw palmetto. The most common native grass is pineland threeawn (wiregrass). Other vegetation includes grassleaf goldaster, deermoss, and cat greenbrier. Vegetation in areas near the Gulf of Mexico is stunted because of salt spray.

This soil is moderately suited to pasture and hay. Deep-rooted plants, such as coastal bermudagrass and bahiagrass, are well adapted, but yields are reduced by periodic droughts. Regular applications of fertilizer and lime are needed. Grazing should be controlled to maintain the vigor of plants and maximize yields.

The potential productivity for pine trees is low. Seedling mortality is a severe management concern. The use of equipment is limited, and plant competition is a moderate management concern.

Limitations affecting sites used for homes, small commercial buildings, and local roads and streets are slight. The seasonal high water table is a moderate limitation on sites for septic tank absorption fields. Using alternative systems or adding fill can overcome the wetness. In areas used for septic tanks, the contamination of ground water is a hazard because of the poor filtering capacity of the soil. Seepage is a severe limitation affecting sewage lagoons and area sanitary landfills. Limitations affecting trench sanitary landfills are severe because of the seepage, the seasonal high water table, and the sandy texture of the soil. In areas used for sewage lagoons and landfills, the sandy sidewalls and the bottoms should be sealed.

In areas used for recreational development, the sandy surface layer is a severe limitation. The addition of suitable topsoil or some other material can compensate for the sandy texture.

The capability subclass is VIs. The woodland ordination symbol is 8S.

22—Rutlege sand, depressional. This very poorly drained, nearly level soil is in shallow depressional areas, such as ponds, bays, or sinks; on flood plains along streams and creeks; or on upland flats. Individual areas range from 5 to 80 acres in size. Slopes are smooth or concave and are less than 1 percent.

On 94 percent of the acreage mapped as Rutlege sand, depressional, Rutlege and similar soils make up 86 to 99 percent of the mapped areas. Dissimilar soils make up 1 to 14 percent.

Typically, the surface layer of the Rutlege soil is black sand about 8 inches thick. The subsurface layer is very dark gray sand about 5 inches thick. The underlying material to a depth of 80 inches or more is sand. The upper part is dark gray, the next part is gray, and the lower part is light brownish gray.

Dissimilar soils included with this soil in mapping are Leon and Dorovan soils. Leon soils are in the slightly higher landscape positions. They have a subsoil horizon that is stained with organic material. Dorovan soils are organic. They are in the slightly lower landscape positions.

The Rutlege soil has a water table at or near the surface for long periods during the year. Ponding is common. Flooding is common on the flood plains. The available water capacity is high in the surface layer and low in the substratum. Permeability is rapid throughout, but internal drainage is slow because of the high water table. Natural fertility is medium, and the content of organic matter is moderate. The response to artificial drainage is rapid.

The natural vegetation consists mostly of baldcypress, blackgum, red maple, and water tupelo and an understory of buttonbush and dahoon holly.

This soil is not suitable for cultivated crops because of the wetness.

If water-control measures are used to remove excess water, this soil is moderately well suited to improved pasture. These measures are not used in most areas, however, because of a lack of drainage outlets and the difficulty of installing a drainage system.

The potential productivity for pine trees is moderately high. The use of equipment is limited. Seedling mortality is a severe management concern, and plant competition is moderate. Slash pine is preferred for planting.

This soil has severe limitations affecting sites used for urban or recreational development, mainly because of the wetness and the ponding. Installing a drainage system and adding large amounts of fill material are necessary to make this soil suitable for these uses.

The capability subclass is VIIw. The woodland ordination symbol is 9W.

23—Troup sand, 0 to 5 percent slopes. This nearly level or gently sloping, well drained soil is on ridgetops in the uplands. Individual areas range from about 40 to 300 acres in size.

On 95 percent of the acreage mapped as Troup sand, 0 to 5 percent slopes, Troup and similar soils make up 92 to 100 percent of the mapped areas. Dissimilar soils make up 0 to 8 percent.

Typically, the surface layer of the Troup soil is dark brown sand about 5 inches thick. The subsurface layer is loamy sand about 43 inches thick. The upper part is dark yellowish brown, the next part is strong brown, and the lower part is yellowish red. The subsoil to a depth of 80 inches or more is red sandy clay loam.

Dissimilar soils included with this soil in mapping are Bonifay and Fuquay soils. These soils have a perched water table within a depth of 48 inches. They are in the slightly lower landscape positions.

Permeability is rapid in the upper part of the Troup soil and moderate in the lower part. The available water capacity is low. Runoff is slow. The seasonal high water table is at a depth of more than 80 inches. The soil dries quickly after rains. The shrink-swell potential and natural fertility are low.

The natural vegetation consists of longleaf pine and turkey oak. The understory includes aster, brackenfern, partridge pea, pineland beggarweed, and wild indigo. The most common native grass is pineland threeawn (wiregrass). Other native grasses include hairy panicum, yellow indiangrass, low panicum, and pineywoods dropseed.

This soil is generally unsuited to most cultivated crops because of droughtiness and the rapid leaching of plant nutrients. Irrigation is generally feasible in areas where irrigation water is readily available. Returning all crop residue to the soil and using a cropping system that includes grasses, legumes, or grass-legume mixtures conserve moisture, maintain fertility, and help to control erosion. Frequent applications of fertilizer and lime are generally needed. A crop rotation that includes close-growing cover crops, contour cultivation of row crops, and minimum tillage help to control erosion. Soil blowing is a hazard in cultivated areas, but it can be controlled by establishing a good ground cover of close-growing plants.

This soil is moderately suited to pasture. The very low available water capacity limits the production of plants during extended dry periods. Applications of fertilizer and lime help deep-rooted plants, such as coastal bermudagrass and bahiagrass, to tolerate drought. Proper stocking rates, pasture rotation, and timely deferment of grazing help to keep the pasture in good condition. Applications of fertilizer and lime are needed for the optimum growth of grasses and legumes.

This soil is moderately well suited to the production of slash pine. If site preparation is not adequate, competition from undesirable plants can prevent or delay the natural or artificial reestablishment of trees. Firelines and access roads should slope gently to streams and cross at a right angle. Water turnouts or broad-based dips are needed on roads to direct water and sediments away from the roads and streams and into the surrounding woods. Water bars are needed on skid trails and firelines. The major management concern is the low available water capacity, which results in severe seedling mortality and hinders growth. Appropriate species should be selected for planting. Leaving debris on the surface helps to maintain the content of organic matter.

This soil is poorly suited to recreational development. The sandy surface layer limits trafficability.

This soil is well suited to use as a site for homes, septic tank absorption fields, small commercial buildings, and local roads and streets. The main limitation is seepage from sewage lagoons and sanitary landfills. Cutbanks may cave on sites used for shallow excavations. Preserving the existing plant cover during construction and revegetating disturbed areas around construction sites help to control erosion. Plans for homesite development should provide for the preservation of as many trees as possible. Mulching, applying fertilizer, and irrigating help to establish lawn grasses and other small-seeded plants.

The capability subclass is IIIs. The woodland ordination symbol is 8S.

24—Troup sand, 5 to 8 percent slopes. This sloping, well drained soil is in the uplands. Individual areas range from about 30 to 500 acres in size.

On 92 percent of the acreage mapped as Troup sand, 5 to 8 percent slopes, Troup and similar soils make up 84 to 100 percent of the mapped areas. Dissimilar soils make up 0 to 16 percent.

Typically, the surface layer of the Troup soil is dark brown sand about 5 inches thick. The subsurface layer is loamy sand about 43 inches thick. The upper part is dark yellowish brown, the next part is strong brown, and the lower part is yellowish red. The subsoil to a depth of 80 inches or more is red sandy clay loam.

Dissimilar soils included with this soil in mapping are Bonifay, Dothan, and Fuquay soils. These soils have a perched water table within a depth of 48 inches. They are in the slightly lower landscape positions.

Permeability is rapid in the upper part of the Troup soil and moderate in the lower part. The available water capacity is low. Runoff is slow. The seasonal high water table is at a depth of more than 80 inches. The shrink-swell potential and natural fertility are low.

The natural vegetation consists of longleaf pine and turkey oak. The understory includes aster, brackenfern, partridge pea, pineland beggarweed, and wild indigo. The most common native grass is pineland threeawn (wiregrass). Other native grasses include hairy panicum, yellow indiangrass, low panicum, and pineywoods dropseed.

This soil is generally unsuited to most cultivated crops because of droughtiness and the rapid leaching of plant nutrients. Returning all crop residue to the soil and using a cropping system that includes grasses, legumes, or grass-legume mixtures conserve moisture, maintain fertility, and help to control erosion. Frequent applications of fertilizer and lime are generally needed. A crop rotation that includes close-growing cover crops, contour cultivation of row crops, and minimum tillage help to control erosion. Soil blowing is a hazard in cultivated areas, but it can be controlled by establishing a good ground cover of close-growing plants.

This soil is moderately suited to pasture. The very low available water capacity limits the production of plants during extended dry periods. Applications of fertilizer and lime help deep-rooted plants, such as coastal bermudagrass and bahiagrass, to tolerate drought. Proper stocking rates, pasture rotation, and timely deferment of grazing help to keep the pasture in good condition. Applications of fertilizer and lime are needed for the optimum growth of grasses and legumes.

This soil is moderately well suited to the production of slash pine. If site preparation is not adequate, competition from undesirable plants can prevent or delay the natural or artificial reestablishment of trees. Firelines and access roads should slope gently to streams and cross at a right angle. Water turnouts or broad-based dips are needed on roads to direct water and sediments away from the roads and streams and into the surrounding woods. Water bars are needed on skid trails and firelines. The major management concern is the low available water capacity, which increases the seedling mortality rate and hinders growth. Appropriate species should be selected for planting. Leaving debris on the surface helps to maintain the content of organic matter.

This soil is poorly suited to recreational development because of the sandy surface layer, which limits trafficability. Maintaining an adequate plant cover helps to control erosion and sedimentation and enhances the beauty of the area.

This soil is well suited to use as a site for homes, septic tank absorption fields, small commercial buildings, and local roads and streets. The caving of cutbanks in areas used for shallow excavations and seepage from sewage lagoons and sanitary landfills are the main limitations. Preserving the existing plant cover during construction and revegetating disturbed areas around construction sites help to control erosion. Plans for homesite development should provide for the preservation of as many trees as possible. Mulching, applying fertilizer, and irrigating help to establish lawn grasses and other small-seeded plants.

The capability subclass is IVs. The woodland ordination symbol is 8S.

25—Troup sand, 8 to 12 percent slopes. This strongly sloping, well drained soil is on side slopes in the uplands. Individual areas range from about 20 to 100 acres in size.

On 87 percent of the acreage mapped as Troup sand, 8 to 12 percent slopes, Troup and similar soils make up 80 to 98 percent of the mapped areas. Dissimilar soils make up 2 to 20 percent.

Typically, the surface layer of the Troup soil is dark brown sand about 5 inches thick. The subsurface layer is loamy sand about 43 inches thick. The upper part is dark yellowish brown, the next part is strong brown, and the lower part is yellowish red. The subsoil to a depth of 80 inches or more is red sandy clay loam.

Dissimilar soils included with this soil in mapping are Bonifay and Fuquay soils. These soils have a perched water table within a depth of 48 inches. They are in the lower landscape positions.

Permeability is rapid in the upper part of the Troup soil and moderate in the lower part. The available water capacity is low. Runoff is slow. The seasonal high water table is at a depth of more than 80 inches. The soil dries quickly after rains. The shrink-swell potential and natural fertility are low.

The natural vegetation consists of longleaf pine and turkey oak. The understory includes aster, brackenfern, partridge pea, pineland threeawn, beggarweed, and wild indigo. The most common native grass is pineland threeawn (wiregrass). Other native grasses include hairy panicum, yellow indiangrass, low panicum, and pineywoods dropseed.

This soil is not suited to cultivated crops.

This soil is poorly suited to pasture. The very low available water capacity limits the production of plants during extended dry periods. Applications of fertilizer and lime help deep-rooted plants, such as coastal bermudagrass and bahiagrass, to tolerate drought. Proper stocking rates, pasture rotation, and timely deferment of grazing help to keep the pasture in good condition. Applications of fertilizer and lime are needed for the optimum growth of grasses and legumes.

This soil is moderately well suited to the production of slash pine. If site preparation is not adequate, competition from undesirable plants can prevent or delay the natural or artificial reestablishment of trees. Mechanical planting of trees on the contour helps to control erosion. Firelines and access roads should slope gently to streams and cross at a right angle. Water turnouts or broad-based dips are needed on roads to direct water and sediments away from the roads and streams and into the surrounding woods. Water bars are needed on skid trails and firelines. The major management concern is the low available water capacity, which increases the seedling mortality rate and hinders growth. Appropriate species should be selected for planting. Leaving debris on the surface helps to maintain the content of organic matter.

This soil is poorly suited to recreational development. The main management concerns are the sandy surface layer, which limits trafficability, and the slope. Maintaining an adequate plant cover helps to control erosion and sedimentation and enhances the beauty of the area.

This soil is moderately suited to use as a site for homes, septic tank absorption fields, and local roads and streets. The main management concerns are the slope, the caving of cutbanks, and seepage from sewage lagoons and sanitary landfills. Preserving the existing plant cover during construction and revegetating disturbed areas around construction sites help to control erosion. Plans for homesite development should provide for the preservation of as many trees as possible. Mulching, applying fertilizer, and irrigating help to establish lawn grasses and other small-seeded plants.

The capability subclass is VIs. The woodland ordination symbol is 8S.

26—Troup sand, 12 to 25 percent slopes. This moderately steep or steep, well drained soil is on side slopes in the uplands. Individual areas range from about 5 to 80 acres in size.

On 87 percent of the acreage mapped as Troup sand, 12 to 25 percent slopes, Troup and similar soils make up 76 to 97 percent of the mapped areas. Dissimilar soils make up 3 to 24 percent.

Typically, the surface layer of the Troup soil is dark brown sand about 5 inches thick. The subsurface layer is loamy sand about 43 inches thick. The upper part is dark yellowish brown, the next part is brown, and the lower part is yellowish red. The subsoil to a depth of 80 inches or more is red sandy clay loam.

Dissimilar soils included with this soil in mapping are Cowarts and Dothan soils. Cowarts soils have loamy material within a depth of 20 inches. They are in the slightly lower landscape positions. Dothan soils have a perched water table within a depth of 48 inches.

Permeability is rapid in the upper part of the Troup soil and moderate in the lower part. The available water capacity is low. Runoff is slow. The seasonal high water table is at a depth of more than 80 inches. The soil dries quickly after rains. The shrink-swell potential and natural fertility are low.

The natural vegetation consists of longleaf pine and turkey oak. The understory includes aster, brackenfern, partridge pea, pineland beggarweed, and wild indigo. The most common native grass is pineland threeawn (wiregrass). Other native grasses include hairy panicum, yellow indiangrass, low panicum, and pineywoods dropseed.

This soil is not suited to cultivated crops or pasture.

This soil is moderately well suited to the production of slash pine. Gullies limit the use of equipment. Using a harvesting system that minimizes erosion is essential. If site preparation is not adequate, competition from undesirable plants can prevent or delay the natural or artificial reestablishment of trees. Using conventional harvesting methods is difficult because of the slope. The slope limits the kinds of equipment that can be used in forest management. Mechanical planting of trees on the contour helps to control erosion. Firelines and access roads should slope gently to streams and cross at a right angle. Water turnouts or broad-based dips are needed on roads to direct water and sediments away from the roads and streams and into the surrounding woods. Water bars are needed on skid trails and firelines. The major management concern is the low available water capacity, which increases the seedling mortality rate and hinders growth. Appropriate species should be selected for planting. Leaving debris on the surface helps to maintain the content of organic matter.

This soil is poorly suited to recreational development. The sandy surface layer and the slope are the main management concerns. Maintaining an adequate plant cover helps to control erosion and sedimentation and enhances the beauty of the area.

This soil is poorly suited to urban development. Seepage and the slope are the main management concerns. Preserving the existing plant cover during construction and revegetating disturbed areas around construction sites help to control erosion. Mulching, applying fertilizer, and irrigating help to establish lawn grasses and other small-seeded plants.

The capability subclass is VIIe. The woodland ordination symbol is 8R.

27—Urban land. This map unit is in nearly level or gently sloping areas that are covered with airports, shopping centers, parking lots, large buildings, streets, or sidewalks. The natural soil generally cannot be observed. Slopes range from 0 to 5 percent. Individual areas range from 20 to 150 acres in size.

Uncovered areas, mostly lawns, parks, vacant lots, and playgrounds, consist of Bonifay, Foxworth, Kureb, Lakeland, and Troup soils. These areas are too small to be mapped separately. The soils have been cut to a depth of 12 inches or more or have been covered by fill to an average depth of 12 inches. The fill consists mostly of sandy and loamy material.

Onsite investigation is needed to determine the suitability of areas of this map unit for a particular purpose.

No capability subclass or woodland ordination symbol is assigned.

34—Albany loamy sand, 0 to 5 percent slopes. This nearly level or gently sloping, somewhat poorly drained soil is on seepage slopes and low flats in the uplands. Individual areas range from about 5 to 30 acres in size.

On 90 percent of the acreage mapped as Albany loamy sand, 0 to 5 percent slopes, Albany and similar soils make up 86 to 90 percent of the mapped areas. Dissimilar soils make up 10 to 14 percent.

Typically, the surface layer of the Albany soil is very dark grayish brown loamy sand about 6 inches thick. The subsurface layer is loamy sand about 37 inches thick. The upper part is yellowish brown, the next part is light yellowish brown, and the lower part is light gray. The underlying material extends to a depth of 80 inches or more. The upper part is light gray fine sandy loam, and the lower part is light gray sandy clay loam.

Dissimilar soils included with this soil in mapping are Bonifay, Chipley, Foxworth, and Rutlege soils. Bonifay soils have a perched water table within a depth of 48 inches. Chipley and Foxworth soils do not have a subsoil. Rutlege soils have a dark surface layer more than 10 inches thick. They are in the lower landscape positions.

Permeability is rapid or moderately rapid in the surface layer and subsurface layer of the Albany soil and moderate in the subsoil. The available water capacity is very low in the surface layer, moderate or low in the subsurface layer, and moderate or high in the subsoil. The seasonal high water table is at a depth of 12 to 30 inches for 1 to 4 months. Natural fertility is low.

The natural vegetation consists of loblolly pine, American holly, hickory, southern magnolia, white oak, and water oak. The understory includes shining sumac and sparkleberry. The most common native grass is pineland threeawn (wiregrass). Other native grasses include broomsedge bluestem, longleaf uniola, low panicum, and spike uniola.

This soil is poorly suited to cultivated crops. The periodic wetness and the thick sandy surface layer are the main limitations. Crops grown include corn, soybeans, peanuts, and small grain. An adequate drainage system is needed in most areas to remove excess surface water and to reduce wetness, but suitable outlets generally are not available. Minimizing tillage and returning all crop residue to the soil or regularly adding other organic material improve fertility and help to maintain tilth and the content of organic matter. Frequent applications of fertilizer and lime are generally needed.

This soil is moderately well suited to pasture. Excessive water on the surface can be removed by lateral ditches. Suitable pasture plants are coastal bermudagrass, tifton-44 bermudagrass, improved bahiagrass, and legumes. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Applications of fertilizer and lime are needed for the optimum growth of grasses and legumes.

This soil is moderately well suited to the production of slash pine. The use of equipment is limited unless drainage is provided. If site preparation is not adequate, competition from undesirable plants can prevent or delay the natural or artificial reestablishment of trees. Appropriate species should be selected for planting. Bedding of rows helps to overcome the wetness. Water turnouts or broad-based dips are needed on roads to direct water and sediments away from the roads and streams and into the surrounding woods. Water bars are needed on skid trails and firelines. Leaving debris on the surface helps to maintain the content of organic matter.

In areas used for recreational development, the main limitations are the seasonal high water table and the sandy surface layer.

This soil is only moderately suited to urban development. The wetness and seepage are limitations affecting sanitary landfills and sewage lagoons. In areas used for these purposes, the sandy sidewalls should be filled. The wetness is a limitation in areas used for septic tank absorption fields. Using alternative systems or adding fill helps to overcome the wetness. Plans for homesite development should provide for the preservation of as many trees as possible. Plants that can tolerate wetness and droughtiness should be selected if drainage and irrigation are not provided. Septic tank absorption fields are mounded in most areas. Community sewage systems are needed in areas of dense homesite development to prevent the contamination of water supplies.

The capability subclass is IIIe. The woodland ordination symbol is 9W.

35—Angie sandy loam, 2 to 5 percent slopes. This moderately well drained soil is in the uplands. Individual areas range from 3 to 30 acres in size.

On 95 percent of the acreage mapped as Angie sandy loam, 2 to 5 percent slopes, Angie and similar soils make up 90 to 100 percent of the mapped areas. Dissimilar soils make up 0 to 10 percent.

Typically, the surface layer of the Angie soil is yellowish brown sandy loam about 6 inches thick. The subsoil extends to a depth of 80 inches or more. The upper part is strong brown silty clay loam and silty clay, the next part is yellowish brown clay, and the lower part is grayish brown clay.

Dissimilar soils included with this soil in mapping are small areas of Orangeburg and Pansey soils. Orangeburg soils are better drained than the Angie soil and do not have a water table within a depth of 80 inches. Pansey soils are in the lower landscape positions. They have a water table within a depth of 12 inches.

Permeability is moderate in the surface layer of the Angie soil and slow in the subsoil. Runoff is rapid. The seasonal high water table is at a depth of about 36 to 60 inches from December through April. The shrink-swell potential is high. Natural fertility is low.

The natural vegetation consists of loblolly pine, hickory, southern magnolia, white oak, and water oak. The understory includes shining sumac and sparkleberry. The most common native grass is pineland threeawn (wiregrass). Other native grasses include broomsedge bluestem, longleaf uniola, low panicum, and spike uniola.

This soil is moderately well suited to cultivated crops. Erosion is a hazard in areas used for row crops. Suitable crops are corn, soybeans, and peanuts. A tile drainage system can be used to lower the water table if suitable outlets are available. Returning all crop residue to the soil and using a cropping system that includes grasses, legumes, or grass-legume mixtures conserve moisture, maintain fertility, and help to control erosion. Frequent applications of fertilizer and lime are generally needed. A crop rotation that includes close-growing cover crops, contour cultivation of row crops, and minimum tillage help to control erosion.

This soil is well suited to pasture. Suitable pasture plants are tall fescue, clover, tifton-44 bermudagrass, coastal bermudagrass, and improved bahiagrass. Proper stocking rates, pasture rotation, and timely deferment of grazing help to keep the pasture in good condition. Applications of fertilizer and lime are needed for the optimum growth of grasses and legumes.

This soil is well suited to the production of loblolly pine. The wetness limits the use of equipment. Firelines and access roads should slope gently to streams and cross at a right angle. Water turnouts or broad-based dips are needed on roads to direct water and sediments away from the roads and streams and into the surrounding woods. Water bars are needed on skid trails and firelines.

This soil is moderately well suited to recreational development. The restricted permeability is the main limitation. The plant cover can be maintained by controlling traffic.

This soil is poorly suited to urban development. The shrink-swell potential and low strength are limitations in areas used for building site development. The restricted permeability and the seasonal high water table are limitations in areas used for septic tank absorption fields. The slope and the wetness are moderate management concerns in areas used for sewage lagoons. The seasonal high water table is a moderate limitation affecting sanitary landfills. A drainage system is needed if roads and building foundations are constructed. Preserving the existing plant cover during construction helps to control erosion. Plans for homesite development should provide for the preservation of as many trees as possible. The design of roads should offset the limited ability of the soil to support a load. Buildings and roads can be designed to compensate for the effects of shrinking and swelling. Septic tank absorption fields are mounded in most areas.

The capability subclass is IIIe. The woodland ordination symbol is 10W.

36—Bonifay sand, 0 to 5 percent slopes. This nearly level or gently sloping, well drained soil is on ridgetops in the uplands. Individual areas range from about 15 to 100 acres in size.

On 88 percent of the acreage mapped as Bonifay sand, 0 to 5 percent slopes, Bonifay and similar soils make up 75 to 100 percent of the mapped areas. Dissimilar soils make up 0 to 25 percent.

Typically, the surface layer of the Bonifay soil is very dark grayish brown sand about 7 inches thick. The subsurface layer is yellowish brown loamy sand about 37 inches thick. The subsoil extends to a depth of 80 inches or more. The upper part is brownish yellow sandy loam, and the lower part is brownish yellow sandy clay loam.

Dissimilar soils included with this soil in mapping are Albany, Foxworth, Lakeland, and Troup soils. Albany soils have a water table within a depth of 18 inches. They are in the lower landscape positions. Foxworth soils are sandy throughout. Lakeland and Troup soils do not have a water table within a depth of 80 inches. Lakeland soils do not have a subsoil. Troup soils are in the slightly higher landscape positions.

Permeability is rapid in the surface layer and subsurface layer of the Bonifay soil and moderate in the subsoil. The available water capacity is low in the surface layer and subsurface layer and moderate in the subsoil. Available moisture is generally insufficient for plants during dry periods in the summer and fall of most years. Runoff is slow. Water is perched above the subsoil during periods of heavy rainfall. The shrink-swell potential and natural fertility are low.

The natural vegetation consists of longleaf pine and turkey oak. The understory includes aster, brackenfern, partridge pea, pineland beggarweed, and wild indigo. The most common native grass is pineland threeawn (wiregrass). Other native grasses include hairy panicum, yellow indiangrass, low panicum, and pineywoods dropseed.

This soil is poorly suited to cultivated crops. Droughtiness and the rapid leaching of plant nutrients are the main limitations. Crops grown include cotton, peanuts, watermelons, and small grain. A well designed and well managed sprinkler irrigation system can help to maintain optimum soil moisture and maximize yields. Minimizing tillage and returning all crop residue to the soil or regularly adding other organic material improve fertility and help to maintain tilth and the content of organic matter. Frequent applications of fertilizer and lime are generally needed. A crop rotation that includes close-growing cover crops, contour cultivation of row crops, and minimum tillage help to control erosion.

This soil is moderately suited to pasture. The low available water capacity limits the production of plants during extended dry periods. Applications of fertilizer and lime help deep-rooted plants, such as coastal bermudagrass and bahiagrass, to tolerate drought. Suitable pasture plants are coastal bermudagrass, tifton-44 bermudagrass, and improved bahiagrass. Proper stocking rates, pasture rotation, and timely deferment of grazing help to keep the pasture in good condition.

This soil is moderately well suited to the production of slash pine. The sandy texture of the surface layer limits the use of equipment. If site preparation is not adequate, competition from undesirable plants can prevent or delay the natural or artificial reestablishment of trees. Appropriate species should be selected for planting. The low available water capacity generally affects the seedling survival rate in areas where understory plants are numerous. Using special equipment, such as rubber-tired or crawler machinery, and harvesting during dry periods can help to overcome problems caused by the sandy texture of the soil. Site preparation, such as chopping, burning, applying herbicide, and bedding, removes debris, helps to control plant competition, and facilitates hand and mechanical planting. Leaving debris on the surface helps to maintain the content of organic matter.

This soil is moderately well suited to recreational development. The sandy surface layer is a limitation. Adding topsoil or some other material can overcome this limitation. Maintaining an adequate plant cover helps to control erosion and sedimentation and enhances the beauty of the area.

This soil is moderately well suited to urban development. The restricted permeability is a moderate limitation on sites for septic tank absorption fields. Using alternative systems or adding fill material helps to overcome this limitation. Seepage is a severe limitation affecting sewage lagoons and sanitary landfills. In areas used for these purposes, the sandy sidewalls should be sealed.

The capability subclass is IIIs. The woodland ordination symbol is 10S.

37—Bonifay sand, 5 to 8 percent slopes. This sloping or strongly sloping, well drained soil is on side slopes in the uplands. Individual areas range from about 10 to 60 acres in size.

On 84 percent of the acreage mapped as Bonifay sand, 5 to 8 percent slopes, Bonifay and similar soils make up 80 to 91 percent of the mapped areas. Dissimilar soils make up 9 to 20 percent.

Typically, the surface layer of the Bonifay soil is very dark grayish brown sand about 7 inches thick. The subsurface layer is yellowish brown loamy sand about 37 inches thick. The subsoil extends to a depth of 80 inches or more. The upper part is brownish yellow sandy loam, and the lower part is brownish yellow sandy clay loam.

Dissimilar soils included with this soil in mapping are Albany, Foxworth, Lakeland, and Troup soils. Albany soils have a water table within a depth of 18 inches. They are in the lower landscape positions. Foxworth soils are sandy throughout. Lakeland and Troup soils do not have a water table within a depth of 80 inches. Lakeland soils do not have a subsoil.

Permeability is rapid in the surface layer and subsurface layer of the Bonifay soil and moderate in the subsoil. The available water capacity is low in the surface layer and subsurface layer and moderate in the subsoil. Available moisture is generally insufficient for plants during dry periods in the summer and fall of most years. Runoff is slow. Water is perched above the subsoil during periods of heavy rainfall. The shrink-swell potential and natural fertility are low.

The natural vegetation consists of longleaf pine and turkey oak. The understory includes aster, brackenfern, partridge pea, pineland beggarweed, and wild indigo. The most common native grass is pineland threeawn (wiregrass). Other native grasses include hairy panicum, yellow indiangrass, low panicum, and pineywoods dropseed.

This soil is poorly suited to cultivated crops. Droughtiness and the rapid leaching of plant nutrients are the main management concerns. Crops grown include cotton, peanuts, watermelons, and small grain. A well designed and well managed sprinkler irrigation system helps to maintain optimum soil moisture and maximize yields. Minimizing tillage and returning all crop residue to the soil or regularly adding other organic material improve fertility and help to maintain tilth and the content of organic matter. Frequent applications of fertilizer and lime are generally needed. A crop rotation that includes close-growing cover crops, contour cultivation of row crops, and minimum tillage help to control erosion.

This soil is moderately suited to pasture. The low available water capacity limits the production of plants during extended dry periods. Applications of fertilizer and lime help deep-rooted plants, such as coastal bermudagrass and bahiagrass, to tolerate drought. The main suitable pasture plants are coastal bermudagrass, tifton-44 bermudagrass, and improved bahiagrass. Proper stocking rates, pasture rotation, and timely deferment of grazing help to keep the pasture in good condition.

This soil is moderately well suited to the production of slash pine. The sandy texture of the surface layer limits the use of equipment. If site preparation is not adequate, competition from undesirable plants can prevent or delay the natural or artificial reestablishment of trees. Appropriate species should be selected for planting. The low available water capacity generally affects the seedling survival rate in areas where understory plants are numerous. Using special equipment, such as rubber-tired or crawler machinery, and harvesting during dry periods help to overcome problems caused by the sandy texture of the soil. Site preparation, such as chopping, burning, applying herbicide, and bedding, removes debris, helps to control plant competition, and facilitates hand and mechanical planting. Leaving debris on the surface helps to maintain the content of organic matter.

This soil is moderately well suited to recreational development. The sandy surface layer is the main management concern. Adding topsoil or some other material can compensate for the sandy texture. Maintaining an adequate plant cover helps to control erosion and sedimentation and enhances the beauty of the area.

This soil is moderately well suited to urban development. The restricted permeability is a moderate limitation on sites for septic tank absorption fields. Using alternative systems or adding fill helps to overcome this limitation. Seepage and the slope are major management concerns in areas used for sewage lagoons and sanitary landfills. In areas used for these purposes, the sandy sidewalls should be sealed.

The capability subclass is IVs. The woodland ordination symbol is 10S.

38—Dothan loamy sand, 0 to 2 percent slopes. This nearly level, well drained soil is on broad ridgetops in the uplands. Individual areas range from about 10 to 100 acres in size.

On 90 percent of the acreage mapped as Dothan loamy sand, 0 to 2 percent slopes, Dothan and similar soils make up 81 to 99 percent of the mapped areas. Dissimilar soils make up 1 to 19 percent.

Typically, the surface layer of the Dothan soil is very dark grayish brown loamy sand about 5 inches thick. The subsurface layer, to a depth of about 12 inches, is yellowish brown loamy sand. The subsoil to a depth of 80 inches or more is sandy clay loam. The upper part is yellowish brown, and the lower part is brownish yellow and reddish yellow.

Dissimilar soils included with this soil in mapping are Escambia, Orangeburg, and Notcher soils. Escambia soils have a water table within a depth of 24 inches. Orangeburg soils do not have a water table within a depth of 80 inches. Notcher soils do not have a perched water table.

Permeability is moderately rapid in the upper part of the Dothan soil and moderately slow in the lower part.

The available water capacity is low or moderate in the surface layer and subsurface layer and very low to moderate in the subsoil. Runoff is slow. A perched seasonal high water table is at a depth of 36 to 60 inches during periods of heavy rainfall. The shrink-swell potential and natural fertility are low.

The natural vegetation consists of loblolly pine, American holly, hickory, southern magnolia, white oak, and water oak. The understory includes shining sumac and sparkleberry. The most common native grass is pineland threeawn (wiregrass). Other native grasses include broomsedge bluestem, longleaf uniola, low panicum, and spike uniola.

This soil is well suited to cultivated crops. The wetness and a restricted root zone are slight management concerns. Suitable crops are corn, soybeans, peanuts, and cotton. A well designed and well managed sprinkler irrigation system can help to maintain optimum soil moisture and maximize yields. Minimizing tillage and returning all crop residue to the soil or regularly adding other organic material improve fertility and help to maintain tilth and the content of organic matter. Frequent applications of fertilizer and lime are generally needed.

This soil is well suited to pasture. The low available water capacity limits the production of plants during extended dry periods. Applications of fertilizer and lime help deep-rooted plants, such as coastal bermudagrass and bahiagrass, to tolerate drought. Suitable pasture plants are coastal bermudagrass, tifton-44 bermudagrass, and improved bahiagrass. Proper stocking rates, pasture rotation, and timely deferment of grazing help to keep the pasture in good condition. Applications of fertilizer and lime are needed for the optimum growth of grasses and legumes.

This soil is well suited to the production of slash pine (fig. 3). If site preparation is not adequate, competition from undesirable plants can prevent or delay the natural or artificial reestablishment of trees. The major management concern is plant competition. Appropriate species should be selected for planting. Leaving debris on the surface helps to maintain the content of organic matter.

This soil is well suited to recreational development. The plant cover can be maintained by controlling traffic.

This soil is well suited to urban development. The main limitations are the seasonal high water table and the restricted permeability in the subsoil. The restricted permeability is a moderate limitation on sites for septic tank absorption fields. The wetness is a moderate limitation in areas used for trench sanitary landfills. Preserving the existing plant cover during construction helps to control erosion. Mulching, applying fertilizer, and irrigating help to establish lawn grasses and other small-seeded plants.

The capability class is I. The woodland ordination symbol is 9A.

39—Dothan loamy sand, 2 to 5 percent slopes. This gently sloping, well drained soil is on ridgetops in the uplands. Individual areas range from about 20 to 100 acres in size.

On 89 percent of the acreage mapped as Dothan loamy sand, 2 to 5 percent slopes, Dothan and similar soils make up 78 to 100 percent of the mapped areas. Dissimilar soils make up 0 to 22 percent.

Typically, the surface layer of the Dothan soil is light olive brown loamy sand about 5 inches thick. The subsurface layer, to a depth of about 12 inches, is yellowish brown loamy sand. The subsoil to a depth of 80 inches or more is sandy clay loam. The upper part is yellowish brown, and the lower part is brownish yellow and reddish yellow.

Dissimilar soils included with this soil in mapping are Angie, Escambia, Orangeburg, and Notcher soils. Angie soils have a clayey subsoil. Escambia soils have a water table within a depth of 24 inches. Orangeburg soils do not have a water table within a depth of 80 inches. Notcher soils do not have a perched water table.

Permeability is moderately rapid in the upper part of the Dothan soil and moderately slow in the lower part. The available water capacity is low or moderate in the surface layer and subsurface layer and very low to moderate in the subsoil. Runoff is slow. A perched seasonal high water table is at a depth of 36 to 60 inches during periods of heavy rainfall. The shrink-swell potential and natural fertility are low.

The natural vegetation consists of loblolly pine, American holly, hickory, southern magnolia, white oak, and water oak. The understory includes shining sumac and sparkleberry. The most common native grass is pineland threeawn (wiregrass). Other native grasses include broomsedge bluestem, longleaf uniola, low panicum, and spike uniola.

This soil is moderately suited to cultivated crops. The wetness and a restricted root zone are slight limitations. Suitable crops are corn, soybeans, peanuts, and cotton. A well designed and well managed sprinkler irrigation system can help to maintain optimum soil moisture and maximize yields. Minimizing tillage and returning all crop residue to the soil or regularly adding other organic material improve fertility and help to maintain tilth and the content of organic matter. Frequent applications of fertilizer and lime are generally needed.

This soil is well suited to pasture. The low available water capacity limits the production of plants during

Figure 3.—A stand of pine trees in an area of Dothan loamy sand, 0 to 2 percent slopes.

extended dry periods. Applications of fertilizer and lime help deep-rooted plants, such as coastal bermudagrass and bahiagrass, to tolerate drought. Suitable pasture plants are coastal bermudagrass, tifton-44 bermudagrass, and improved bahiagrass. Proper stocking rates, pasture rotation, and timely deferment of grazing help to keep the pasture in good condition. Applications of fertilizer and lime are needed for the optimum growth of grasses and legumes.

This soil is well suited to the production of slash pine. If site preparation is not adequate, competition from undesirable plants can prevent or delay the natural or artificial reestablishment of trees. Water turnouts or broad-based dips are needed on roads to direct water and sediments away from the roads and streams and into the surrounding woods. Water bars are needed on skid trails and firelines. The major management concern is the low available water capacity, which increases the seedling mortality rate and hinders growth. Appropriate species should be selected for planting. Leaving debris on the surface helps to maintain the content of organic matter. Areas on rolling uplands are subject to erosion.

This soil is well suited to recreational development. The plant cover can be maintained by controlling traffic.

This soil is well suited to urban development. The main limitations are the seasonal high water table and the restricted permeability in the subsoil. The restricted permeability is a moderate limitation on sites for septic tank absorption fields. The wetness is a moderate limitation affecting trench sanitary landfills. Preserving the existing plant cover during construction helps to control erosion. Mulching, applying fertilizer, and irrigating help to establish lawn grasses and other small-seeded plants.

The capability subclass is IIe. The woodland ordination symbol is 9A.

40—Dothan loamy sand, 5 to 8 percent slopes. This sloping or strongly sloping, well drained soil is on side slopes in the uplands. Individual areas range from about 20 to 100 acres in size.

On 90 percent of the acreage mapped as Dothan loamy sand, 5 to 8 percent slopes, Dothan and similar soils make up 79 to 100 percent of the mapped areas. Dissimilar soils make up 0 to 21 percent.

Typically, the surface layer of the Dothan soil is light olive brown loamy sand about 5 inches thick. The subsurface layer, to a depth of about 12 inches, is yellowish brown loamy sand. The subsoil to a depth of 80 inches or more is sandy clay loam. The upper part is yellowish brown, and the lower part is brownish yellow and reddish yellow.

Dissimilar soils included with this soil in mapping are Orangeburg and Notcher soils. Orangeburg soils do not have a water table within a depth of 80 inches. Notcher soils do not have a perched water table.

Permeability is moderately rapid in the upper part of the Dothan soil and moderately slow in the lower part. The available water capacity is low or moderate in the surface layer and subsurface layer and very low to moderate in the subsoil. Runoff is slow. The seasonal high water table is at a depth of 36 to 60 inches during periods of heavy rainfall. The shrink-swell potential and natural fertility are low.

The natural vegetation consists of loblolly pine, American holly, hickory, southern magnolia, white oak, and water oak. The understory includes shining sumac and sparkleberry. The most common native grass is pineland threeawn (wiregrass). Other native grasses include broomsedge bluestem, longleaf uniola, low panicum, and spike uniola.

This soil is moderately suited to cultivated crops. The wetness and a slightly restricted root zone are the main limitations. Suitable crops are corn, soybeans, peanuts, and cotton. A well designed and well managed sprinkler irrigation system can help to maintain optimum soil moisture and maximize yields. Minimizing tillage and returning all crop residue to the soil or regularly adding other organic material improve fertility and help to maintain tilth and the content of organic matter. Frequent applications of fertilizer and lime are generally needed.

This soil is well suited to pasture. The low or moderate available water capacity limits the production of plants during extended dry periods. Applications of fertilizer and lime help deep-rooted plants, such as coastal bermudagrass and bahiagrass, to tolerate drought. Suitable pasture plants are coastal bermudagrass, tifton-44 bermudagrass, and improved bahiagrass. Proper stocking rates, pasture rotation, and timely deferment of grazing help to keep the pasture in good condition. Applications of fertilizer and lime are needed for the optimum growth of grasses and legumes.

This soil is well suited to the production of slash pine. If site preparation is not adequate, competition from undesirable plants can prevent or delay the natural or artificial reestablishment of trees. Water turnouts or broad-based dips are needed on roads to direct water and sediments away from the roads and streams and into the surrounding woods. Water bars are needed on skid trails and firelines. The major management concern is the low available water capacity, which increases the seedling mortality rate and hinders growth. Appropriate species should be selected for planting. Leaving debris on the surface helps to maintain the content of organic matter. Areas on rolling uplands are subject to erosion.

This soil is well suited to recreational development. The plant cover can be maintained by controlling traffic.

This soil is well suited to urban development. The main limitations are the seasonal high water table and the restricted permeability in the subsoil. The restricted permeability is a moderate limitation on sites for septic tank absorption fields. The wetness is a moderate limitation affecting trench sanitary landfills. Preserving the existing plant cover during construction helps to control erosion. Mulching, applying fertilizer, and irrigating help to establish lawn grasses and other small-seeded plants.

The capability subclass is IIIe. The woodland ordination symbol is 9A.

41—Fuquay loamy fine sand, 0 to 5 percent slopes. This nearly level or gently sloping, well drained soil is on broad ridgetops and gently sloping side slopes. Individual areas range from about 15 to 100 acres in size.

On 87 percent of the acreage mapped as Fuquay loamy fine sand, 0 to 5 percent slopes, Fuquay and similar soils make up 78 to 97 percent of the mapped areas. Dissimilar soils make up 3 to 22 percent.

Typically, the surface layer of the Fuquay soil is dark grayish brown loamy fine sand about 5 inches thick. The subsurface layer is brownish yellow loamy sand about 17 inches thick. The subsoil extends to a depth of about 67 inches. The upper part is light yellowish brown and yellowish brown fine sandy loam, the next part is yellowish brown sandy clay loam, and the lower part is yellow sandy clay loam. The underlying material to a depth of 80 inches or more is yellow fine sandy loam.

Dissimilar soils included with this soil in mapping are Leefield and Troup soils. Leefield soils have a high water table at a depth of 18 to 30 inches. They are in the slightly lower landscape positions. Troup soils do not have a water table within a depth of 80 inches.

Permeability is rapid in the surface layer and subsurface layer of the Fuquay soil and moderate in the subsoil. The seasonal high water table is at a depth of about 48 to 72 inches from January through March. Water is perched above the subsoil during periods of heavy rainfall. The shrink-swell potential and natural fertility are low.

The natural vegetation consists of loblolly pine, American holly, hickory, southern magnolia, white oak, and water oak. The understory includes shining sumac and sparkleberry. The most common native grass is pineland threeawn (wiregrass). Other native grasses include broomsedge bluestem, longleaf uniola, low panicum, and spike uniola.

This soil is moderately suited to cultivated crops. In areas used for row crops, the main limitations are droughtiness, the restricted permeability in the subsoil, and the rapid leaching of plant nutrients. Suitable crops are cotton, corn, soybeans, peanuts, and small grain. Irrigation is generally feasible in most areas where irrigation water is readily available. Minimizing tillage and returning all crop residue to the soil or regularly adding other organic material improve fertility and help to maintain tilth and the content of organic matter. Frequent applications of fertilizer and lime are generally needed. A crop rotation that includes close-growing cover crops, contour cultivation of row crops, and minimum tillage help to control erosion.

This soil is well suited to pasture. Suitable pasture plants are coastal bermudagrass, tifton-44 bermudagrass, and improved bahiagrass. Proper stocking rates, pasture rotation, and timely deferment of grazing help to keep the pasture in good condition. Applications of fertilizer and lime are needed for the optimum growth of grasses and legumes.

This soil is moderately well suited to the production of slash pine and loblolly pine. The wetness limits the use of equipment unless drainage is provided. If site preparation is not adequate, competition from undesirable plants can prevent or delay the natural or artificial reestablishment of trees. Only trees that can tolerate seasonal wetness should be planted. Firelines and access roads should slope gently to streams and cross at a right angle. Water turnouts or broad-based dips are needed on roads to direct water and sediments away from the roads and streams and into the surrounding woods. Water bars are needed on skid trails and firelines.

This soil is moderately well suited to recreational development. The sandy surface layer is the main limitation. Adding suitable topsoil or some other material can compensate for the sandy texture. The plant cover can be maintained by controlling traffic. The slope is a management concern in areas used for playgrounds.

This soil is moderately well suited to urban development. The restricted permeability is a limitation in areas used for septic tank absorption fields. The slope is a moderate management concern on sites for sewage lagoons. Limitations are slight on sites for sanitary landfills. Preserving the existing plant cover during construction helps to control erosion. Plans for homesite development should provide for the preservation of as many trees as possible. Mulching, applying fertilizer, and irrigating help to establish lawn grasses and other small-seeded plants.

The capability subclass is IIs. The woodland ordination symbol is 8S.

42—Fuquay loamy fine sand, 5 to 8 percent slopes. This sloping or strongly sloping, well drained soil is on side slopes in the uplands. Individual areas range from about 5 to 80 acres in size.

On 87 percent of the acreage mapped as Fuquay loamy fine sand, 5 to 8 percent slopes, Fuquay and similar soils make up 80 to 100 percent of the mapped areas. Dissimilar soils make up 0 to 20 percent.

Typically, the surface layer of the Fuquay soil is dark grayish brown loamy fine sand about 5 inches thick. The subsurface layer is brownish yellow loamy fine sand about 17 inches thick. The subsoil extends to a depth of about 67 inches. The upper part is light yellowish brown and yellowish brown fine sandy loam, the next part is yellowish brown sandy clay loam, and the lower part is yellow sandy clay loam. The underlying material to a depth of 80 inches or more is yellow fine sandy loam.

Dissimilar soils included with this soil in mapping are Leefield and Troup soils. Leefield soils are in the slightly lower landscape positions. They have a high water table at a depth of 18 to 30 inches. Troup soils do not have a water table within a depth of 80 inches.

Permeability is rapid in the surface layer and subsurface layer of the Fuquay soil and moderate in the subsoil. The seasonal high water table is at a depth of about 48 to 72 inches from January through March.

Water is perched above the subsoil during periods of heavy rainfall. The shrink-swell potential and natural fertility are low.

The natural vegetation consists of American holly, hickory, southern magnolia, white oak, and water oak. The understory includes sumac and sparkleberry. The most common native grass is pineland threeawn (wiregrass). Other native grasses include longleaf uniola, low panicum, and spike uniola.

This soil is moderately suited to cultivated crops. Droughtiness, the restricted permeability in the subsoil, and the rapid leaching of plant nutrients are the main limitations in areas used for row crops. Suitable crops are cotton, corn, soybeans, peanuts, and small grain. Irrigation is generally feasible in most areas where irrigation water is readily available. Minimizing tillage and returning all crop residue to the soil or regularly adding other organic material improve fertility and help to maintain tilth and the content of organic matter. Frequent applications of fertilizer and lime are generally needed. A crop rotation that includes close-growing cover crops, contour cultivation of row crops, and minimum tillage help to control erosion.

This soil is well suited to pasture. Suitable pasture plants are coastal bermudagrass, tifton-44 bermudagrass, and improved bahiagrass. Proper stocking rates, pasture rotation, and timely deferment of grazing help to keep the pasture in good condition. Applications of fertilizer and lime are needed for the optimum growth of grasses and legumes.

This soil is moderately well suited to the production of slash pine and longleaf pine. The wetness limits the use of equipment unless drainage is provided. If site preparation is not adequate, competition from undesirable plants can prevent or delay the natural or artificial reestablishment of trees. Only trees that can tolerate seasonal wetness should be planted. Firelines and access roads should slope gently to streams and cross at a right angle. Water turnouts or broad-based dips are needed on roads to direct water and sediments away from the roads and streams and into the surrounding woods. Water bars are needed on skid trails and firelines.

This soil is moderately well suited to recreational development. The sandy surface layer is the main limitation. Adding suitable topsoil or some other material can compensate for the sandy texture. The plant cover can be maintained by controlling traffic. The slope is a management concern in areas used for playgrounds.

This soil is moderately well suited to urban development. The restricted permeability is a limitation on sites for septic tank absorption fields. The slope is a moderate management concern on sites for sewage lagoons. Limitations are slight on sites for sanitary landfills. Preserving the existing plant cover during construction helps to control erosion. Plans for homesite development should provide for the preservation of as many trees as possible. Mulching, applying fertilizer, and irrigating help to establish lawn grasses and other small-seeded plants.

The capability subclass is IIIs. The woodland ordination symbol is 8S.

43—Kinston, Johnston, and Bibb soils, frequently flooded. These nearly level, poorly drained and very poorly drained soils are on flood plains along narrow creeks and streams and major streams and rivers. The soils do not occur in a regularly repeating pattern on the landscape. Some areas are made up of Kinston and similar soils, some are made up of Johnston and similar soils, some are made up of Bibb and similar soils, and some are made up of all three soils. Slopes are dominantly less than 2 percent. Individual areas are elongated and range from 3 to 500 acres in size.

On 95 percent of the acreage mapped as Kinston, Johnston, and Bibb soils, frequently flooded, Kinston, Johnston, Bibb, and similar soils make up 90 to 100 percent of the mapped areas. Dissimilar soils make up 0 to 10 percent.

The Kinston soil is poorly drained. Typically, the surface layer is very dark gray silt loam about 8 inches thick. The subsurface layer is dark gray silt loam about 9 inches thick. The underlying material to a depth of 80 inches or more is sandy clay loam. The upper part is grayish brown, the next part is light brownish gray, and the lower part is light gray.

Permeability is moderate in the Kinston soil. The available water capacity is moderate or high. The effective rooting depth is about 6 to 10 inches. Runoff is slow. Natural fertility is medium. The soil is subject to brief periods of flooding in the winter, spring, and summer.

The Johnston soil is very poorly drained. Typically, the surface layer is black fine sandy loam about 24 inches thick. The next layer is dark grayish brown fine sandy loam about 3 inches thick. Below this to a depth of 80 inches or more is sand. The upper part is gray, the next part is dark grayish brown, and the lower part is light brownish gray.

Permeability is moderately rapid or rapid in the Johnston soil. The available water capacity is moderate or high. The effective rooting depth is limited by the seasonal high water table, which is at the surface to 2 feet above the surface from November through July. Runoff is very slow. Natural fertility is high. The soil is subject to brief or long periods of flooding at any time of the year.

The Bibb soil is poorly drained. Typically, the surface layer is very dark gray loam about 6 inches thick. The underlying material extends to a depth of 80 inches or more. The upper part is dark grayish brown silt loam, and the lower part is light gray sandy loam.

Permeability is moderate in the Bibb soil. The available water capacity is moderate or high. The effective rooting depth is limited by the seasonal high water table, which is at a depth of about 0.5 foot to 1.5 feet from December through April. Runoff is slow. Natural fertility is high. The soil is subject to brief periods of flooding in the winter and spring.

Dissimilar soils included with these soils in mapping are Rutlege soils and small areas of organic soils. Rutlege soils have a dark, mineral surface layer more than 10 inches thick. The organic soils are 16 to 51 inches thick.

The natural vegetation on this map unit consists of American elm, black willow, green ash, silver birch, sweetgum, American sycamore, water oak, and willow oak. The understory includes crossvine, greenbrier, peppervine, poison ivy, trumpet creeper, and wild grape.

These soils are not suited to cultivated crops or pasture because of the wetness and the flooding.

Most of the acreage in this map unit is used as woodland. The soils are moderately suited to the production of loblolly pine, longleaf pine, and sweetgum. The wetness and the flooding are the main management concerns. The wetness limits the use of equipment. If site preparation is not adequate, competition from undesirable plants can prevent or delay the natural or artificial reestablishment of trees. Water-tolerant trees should be selected, and they should be planted or harvested during dry periods. Suitable trees include loblolly pine, slash pine, and sweetgum. Bedding of rows helps to overcome the wetness. Trees are subject to windthrow because of the limited rooting depth. Some areas may be suited to cypress and hardwoods.

Some areas of the Bibb soil are used for recreation. The wetness and the flooding are the main management concerns.

These soils are not suited to urban development because of the wetness and the flooding.

Wildlife habitat can be improved by low-level weirs for water control; level ditches; controlled burning; and, in places, controlled harvesting.

The capability subclass is VIIw. The woodland ordination symbol is 9W for the Kinston and Bibb soils and 7W for the Johnston soil.

44—Leefield-Stilson complex, 0 to 5 percent slopes. These nearly level or gently sloping, somewhat poorly drained and moderately well drained soils are on seepage slopes and low flats. Individual areas are irregular in shape and range from 5 to 50 acres in size.

On 93 percent of the acreage mapped as Leefield-Stilson complex, 0 to 5 percent slopes, Leefield, Stilson, and similar soils make up 80 to 100 percent of the mapped areas. Dissimilar soils make up 0 to 20 percent. Generally, the mapped areas are about 70 percent Leefield and similar soils and 20 percent Stilson and similar soils.

Typically, the surface layer of the Leefield soil is black loamy sand about 6 inches thick. The subsurface layer is sand about 19 inches thick. The upper part is yellowish brown, and the lower part is light yellowish brown. The subsoil to a depth of 80 inches or more is sandy clay loam. The upper part is brownish yellow, the next part is yellow, and the lower part is brownish yellow and yellow.

Permeability is rapid in the surface layer and subsurface layer of the Leefield soil and moderately slow or moderate in the subsoil. The available water capacity is low in the surface layer and subsurface layer and moderate or low in the subsoil. Natural fertility is low.

Typically, the surface layer of the Stilson soil is very dark grayish brown loamy sand about 5 inches thick. The subsurface layer is light yellowish brown sand about 17 inches thick. The subsoil extends to a depth of 80 inches or more. The upper part is yellowish brown sandy loam, the next part is brownish yellow and reticulately mottled sandy clay loam, and the lower part is mottled red, brown, and gray sandy clay loam.

Permeability is rapid in the surface layer and subsurface layer of the Stilson soil and moderate in the subsoil. The available water capacity is low in the surface layer and subsurface layer and moderate or low in the subsoil. Natural fertility is low.

Dissimilar soils included with the Leefield and Stilson soils in mapping are the well drained Bonifay, Dothan, and Fuquay soils. These dissimilar soils are in the higher landscape positions.

The natural vegetation on this map unit consists of loblolly pine, American holly, hickory, southern magnolia, white oak, and water oak. The understory includes shining sumac and sparkleberry. The most common native grass is pineland threeawn (wiregrass). Other native grasses include broomsedge bluestem, longleaf uniola, low panicum, and spike uniola.

These soils are moderately well suited to cultivated crops. Wetness is the main limitation. Most climatically adapted crops can be grown if artificial drainage is provided. Proper arrangement and bedding of tree rows, lateral ditches or tiles, and well constructed outlets help to remove excess surface water and lower the water table. A crop rotation that includes close-growing cover crops, contour cultivation of row crops, and minimum tillage help to control erosion. Frequent applications of fertilizer and lime are generally needed.

These soils are well suited to pasture. The main suitable pasture plants are coastal bermudagrass and bahiagrass. Proper grazing practices, weed control, and applications of fertilizer are needed to maximize the quality of forage.

These soils are well suited to the production of loblolly pine and longleaf pine. The main management concerns are the wetness, seedling mortality, and plant competition. The wetness limits the use of equipment. Special site preparation, such as harrowing and bedding or double bedding, helps to establish seedlings, reduces the seedling mortality rate, and increases early growth. If site preparation is not adequate, competition from undesirable plants can prevent or delay the natural or artificial reestablishment of trees.

The seasonal high water table is the main limitation on sites for buildings or waste disposal systems. Drainage should be provided on sites for buildings. The restricted permeability and the high water table are limitations on sites for septic tank absorption fields. The absorption fields are mounded in most areas. Revegetating disturbed areas around construction sites helps to control erosion. Plans for homesite development should provide for the preservation of as many trees as possible. Plants that can tolerate wetness and droughtiness should be selected if drainage and irrigation are not provided. Mulching, applying fertilizer, and irrigating help to establish lawn grasses and other small-seeded plants.

The seasonal high water table is the main limitation affecting areas used for recreation.

The capability subclass is IIw. The woodland ordination symbol is 8W for the Leefield soil and 9W for the Stilson soil.

45—Orangeburg sandy loam, 0 to 2 percent slopes. This nearly level, well drained soil is on broad ridgetops in the uplands. Individual areas range from about 15 to 2,000 acres in size.

On 86 percent of the acreage mapped as Orangeburg sandy loam, 0 to 2 percent slopes, Orangeburg and similar soils make up 80 to 98 percent of the mapped areas. Dissimilar soils make up 2 to 20 percent.

Typically, the surface layer of the Orangeburg soil is dark brown sandy loam about 5 inches thick. The subsurface layer is reddish brown sandy loam about 4 inches thick. The subsoil to a depth of 80 inches or more is red sandy clay loam.

Dissimilar soils included with this soil in mapping are Dothan, Fuquay, and Notcher soils and small areas of soils that have a clayey subsoil. Dothan, Fuquay, and Notcher soils have a perched water table.

Permeability is moderately rapid in the upper part of the Orangeburg soil and moderate in the lower part. The available water capacity is low in the surface layer and subsurface layer and moderate in the subsoil. Runoff is slow. The seasonal high water table is at a depth of more than 80 inches. The shrink-swell potential is low. Natural fertility is medium.

The natural vegetation consists of loblolly pine, American holly, hickory, southern magnolia, white oak, and water oak. The understory includes shining sumac and sparkleberry. The most common native grass is pineland threeawn (wiregrass). Other native grasses include broomsedge bluestem, longleaf uniola, low panicum, and spike uniola.

This soil is well suited to cultivated crops. The main suitable crops are corn, cotton, soybeans, peanuts, and small grain. A well designed and well managed sprinkler irrigation system can help to maintain optimum soil moisture and maximize yields. Minimizing tillage and returning all crop residue to the soil or regularly adding other organic material improve fertility and help to maintain tilth and the content of organic matter. Frequent applications of fertilizer and lime are generally needed. A crop rotation that includes close-growing cover crops, contour cultivation of row crops, and minimum tillage help to control erosion.

This soil is well suited to pasture. Suitable pasture plants are coastal bermudagrass, tifton-44 bermudagrass, improved bahiagrass, and legumes. Proper grazing practices, weed control, and fertilizer are needed for maximum quality of forage. Applications of fertilizer and lime are needed for the optimum growth of grasses and legumes.

This soil is moderately well suited to the production of loblolly pine, longleaf pine, and slash pine. If site preparation is not adequate, competition from undesirable plants can prevent or delay the natural or artificial reestablishment of trees. Appropriate species should be selected for planting. Leaving debris on the surface helps to maintain the content of organic matter.

This soil is well suited to recreational development. The plant cover can be maintained by controlling traffic.

This soil is well suited to use as a site for urban development or septic tank absorption fields. Seepage is the main limitation on sites for sewage lagoons. Sidewalls should be sealed. Preserving the existing plant cover during construction and revegetating disturbed areas around construction sites help to control erosion. Plans for homesite development should provide for the preservation of as many trees as possible. Mulching, applying fertilizer, and irrigating help to establish lawn grasses and other small-seeded plants.

The capability class is I. The woodland ordination symbol is 8A.

46—Orangeburg sandy loam, 2 to 5 percent slopes. This gently sloping, well drained soil is on ridgetops in the uplands. Individual areas range from about 15 to 100 acres in size.

On 83 percent of the acreage mapped as Orangeburg sandy loam, 2 to 5 percent slopes, Orangeburg and similar soils make up 76 to 90 percent of the mapped areas. Dissimilar soils make up 10 to 24 percent.

Typically, the surface layer of the Orangeburg soil is dark brown sandy loam about 5 inches thick. The subsurface layer is reddish brown sandy loam about 4 inches thick. The subsoil to a depth of 80 inches or more is red sandy clay loam.

Dissimilar soils included with this soil in mapping are Dothan, Fuquay, and Notcher soils. These soils have a perched water table.

Permeability is moderately rapid in the upper part of the Orangeburg soil and moderate in the lower part. The available water capacity is low in the surface layer and subsurface layer and moderate in the subsoil. Runoff is slow. The seasonal high water table is at a depth of more than 80 inches. The shrink-swell potential is low. Natural fertility is medium.

The natural vegetation consists of loblolly pine, American holly, hickory, southern magnolia, white oak, and water oak. The understory includes shining sumac and sparkleberry. The most common native grass is pineland threeawn (wiregrass). Other native grasses include broomsedge bluestem, longleaf uniola, low panicum, and spike uniola.

This soil is well suited to cultivated crops. The main suitable crops are corn, cotton, soybeans, peanuts, and small grain. A well designed and well managed sprinkler irrigation system can help to maintain optimum soil moisture and maximize yields. Minimizing tillage and returning all crop residue to the soil or regularly adding other organic material improve fertility and help to maintain tilth and the content of organic matter. Frequent applications of fertilizer and lime are generally needed. A crop rotation that includes close-growing cover crops, contour cultivation of row crops, and minimum tillage help to control erosion.

This soil is well suited to pasture. Suitable pasture plants are coastal bermudagrass, tifton-44 bermudagrass, improved bahiagrass, and legumes. Proper grazing practices, weed control, and applications of fertilizer are needed for maximum quality of forage. Fertilizer and lime are needed for the optimum growth of grasses and legumes.

This soil is moderately well suited to the production of loblolly pine, longleaf pine, and slash pine. If site preparation is not adequate, competition from undesirable plants can prevent or delay the natural or artificial reestablishment of trees. Appropriate species should be selected for planting. Leaving debris on the surface helps to maintain the content of organic matter.

This soil is well suited to recreational development. The plant cover can be maintained by controlling traffic.

This soil is well suited to use as a site for urban development or septic tank absorption fields. Seepage is the main limitation on sites for sewage lagoons. Sidewalls should be sealed. Preserving the existing plant cover during construction and revegetating disturbed areas around construction sites help to control erosion. Plans for homesite development should provide for the preservation of as many trees as possible. Mulching, applying fertilizer, and irrigating help to establish lawn grasses and other small-seeded plants.

The capability subclass is IIe. The woodland ordination symbol is 8A.

47—Orangeburg sandy loam, 5 to 8 percent slopes. This sloping, well drained soil is on side slopes in the uplands. Individual areas range from about 10 to 60 acres in size.

On 85 percent of the acreage mapped as Orangeburg sandy loam, 5 to 8 percent slopes, Orangeburg and similar soils make up 85 to 100 percent of the mapped areas. Dissimilar soils make up 0 to 15 percent.

Typically, the surface layer of the Orangeburg soil is dark brown sandy loam about 5 inches thick. The subsurface layer is reddish brown sandy loam about 4 inches thick. The subsoil to a depth of 80 inches or more is red sandy clay loam.

Dissimilar soils included with this soil in mapping are Dothan, Fuquay, Notcher, and Troup soils and small areas of soils that have a clayey subsoil. Dothan, Fuquay, and Notcher soils have a perched water table. Troup soils are sandy to a depth of 40 to 79 inches.

Permeability is moderately rapid in the upper part of the Orangeburg soil and moderate in the lower part. The available water capacity is low in the surface layer and subsurface layer and moderate in the subsoil. Runoff is slow. The seasonal high water table is at a depth of more than 80 inches. The shrink-swell potential is low. Natural fertility is medium.

The natural vegetation consists of loblolly pine, American holly, hickory, southern magnolia, white oak, and water oak. The understory includes shining sumac and sparkleberry. The most common native grass is pineland threeawn (wiregrass). Other native grasses include broomsedge bluestem, longleaf uniola, low panicum, and spike uniola.

This soil is well suited to cultivated crops. The main suitable crops are corn, cotton, soybeans, peanuts, and small grain. A well designed and well managed sprinkler irrigation system can help to maintain optimum soil moisture and maximize yields. Minimizing tillage and returning all crop residue to the soil or regularly adding other organic material improve fertility and help to maintain tilth and the content of organic matter. Frequent applications of fertilizer and lime are generally needed. A crop rotation that includes close-growing cover crops, contour cultivation of row crops, and minimum tillage help to control erosion.

This soil is well suited to pasture. Suitable pasture plants are coastal bermudagrass, tifton-44 bermudagrass, improved bahiagrass, and legumes. Proper grazing practices, weed control, and applications of fertilizer are needed to maximize the quality of forage. Applications of fertilizer and lime are needed for the optimum growth of grasses and legumes.

This soil is moderately well suited to the production of loblolly pine, longleaf pine, and slash pine. If site preparation is not adequate, competition from undesirable plants can prevent or delay the natural or artificial reestablishment of trees. Appropriate species should be selected for planting. Leaving debris on the surface helps to maintain the content of organic matter.

This soil is well suited to recreational development. The plant cover can be maintained by controlling traffic.

This soil is well suited to use as a site for urban development or septic tank absorption fields. Seepage is the main limitation on sites for sewage lagoons. Sidewalls should be sealed. Preserving the existing plant cover during construction and revegetating disturbed areas around construction sites help to control erosion. Plans for homesite development should provide for the preservation of as many trees as possible. Mulching, applying fertilizer, and irrigating help to establish lawn grasses and other small-seeded plants.

The capability subclass is IIIe. The woodland ordination symbol is 8A.

48—Pickney loamy sand, depressional. This nearly level, very poorly drained soil is along drainageways and in depressions. Slopes are dominantly less than 2 percent. Individual areas range from about 5 to 100 acres in size.

On 82 percent of the acreage mapped as Pickney loamy sand, depressional, Pickney and similar soils make up 80 to 92 percent of the mapped areas. Dissimilar soils make up 8 to 20 percent.

Typically, the surface layer of the Pickney soil is black loamy sand about 27 inches thick. The subsurface layer, to a depth of about 45 inches, is black sand. The underlying material to a depth of 80 inches or more is dark gray sand.

Dissimilar soils that are included with this soil in mapping are Dorovan and Leon soils. Dorovan soils are organic to a depth of more than 51 inches. Leon soils have a sandy subsoil.

Permeability is rapid in the Pickney soil. The available water capacity is low. Water is ponded on the surface for about 4 to 6 months in most years. Natural fertility is medium.

The natural vegetation consists of blackgum, buckwheattree, pond pine, slash pine, and sweetbay. The understory includes dog-hobble, fetterbush, large gallberry, and titi.

This soil is generally unsuited to most cultivated crops because of the wetness.

This soil is moderately well suited to pasture if good water-control measures are applied. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition.

This soil is moderately well suited to the production of loblolly pine and longleaf pine. The wetness limits the use of equipment. Trees commonly are subject to windthrow if the soil is excessively wet and winds are strong. Seedling mortality, the windthrow hazard, and plant competition are the major management concerns. The equipment limitation is a concern unless drainage is provided. Bedding of rows helps to overcome the wetness. Only trees that can tolerate seasonal wetness should be planted. Among the trees that are suitable for planting are loblolly pine and longleaf pine. If site preparation is not adequate, competition from undesirable plants can prevent or delay the natural or artificial reestablishment of trees.

This soil is not suited to use as a site for urban or recreational development because of the ponding and the wetness.

The capability subclass is VIw. The woodland ordination symbol is 7W.

49—Bonifay-Dothan-Angie complex, 5 to 12 percent slopes. These sloping or strongly sloping, well drained and moderately well drained soils are on side slopes in the uplands. Individual areas range from 3 to 200 acres in size.

On 95 percent of the acreage mapped as Bonifay-Dothan-Angie complex, 5 to 12 percent slopes, Bonifay, Dothan, Angie, and similar soils make up 91 to 99 percent of the mapped areas. Dissimilar soils make up 1 to 9 percent. Generally, the mapped areas consist of about 35 percent Bonifay and similar soils, 35 percent Dothan and similar soils, and 21 percent Angie and similar soils.

The Bonifay soil is well drained. Typically, the surface layer is very dark grayish brown sand about 7 inches thick. The subsurface layer is yellowish brown loamy sand about 37 inches thick. The subsoil extends to a depth of 80 inches or more. The upper part is brownish yellow sandy loam, and the lower part is brownish yellow sandy clay loam.

Permeability is rapid in the surface layer and subsurface layer of the Bonifay soil and moderate in the subsoil. The available water capacity is low in the surface layer and subsurface layer and moderate in the subsoil. Runoff is slow. The seasonal high water table is at a depth of about 3.5 to 5.0 feet for brief periods during wet periods. Natural fertility is low.

The Dothan soil is well drained. Typically, the surface layer is very dark grayish brown loamy sand about 5 inches thick. The subsurface layer is yellowish brown loamy sand about 7 inches thick. The subsoil to a depth of 80 inches or more is sandy clay loam. The upper part is yellowish brown, and the lower part is brownish yellow and reddish yellow.

Permeability is moderate in the Dothan soil. The available water capacity is low in the surface layer and subsurface layer and moderate in the subsoil. Runoff is generally slow, but it is very rapid in unprotected areas during heavy rains. The seasonal high water table is at a depth of more than 80 inches. Natural fertility is low.

The Angie soil is moderately well drained. Typically, the surface layer is yellowish brown sandy loam about 6 inches thick. The subsoil extends to a depth of 80 inches or more. The upper part is strong brown silty clay loam and silty clay, the next part is yellowish brown clay, and the lower part is light brownish gray clay.

Permeability is moderate in the surface layer of the Angie soil and slow in the subsoil. The available water capacity is low or moderate. Runoff is moderately rapid. The seasonal high water table is at a depth of about 36 to 60 inches. Natural fertility is low.

Dissimilar soils included with the Bonifay, Dothan, and Angie soils in mapping are Lakeland, Orangeburg, and Troup soils and small areas of soils that have a clayey subsoil. Lakeland soils do not have a water table within a depth of 80 inches. They are sandy throughout. Orangeburg and Troup soils do not have a perched water table. Troup soils are sandy to a depth of 40 to 79 inches.

The natural vegetation on this map unit consists of loblolly pine, longleaf pine, American holly, turkey oak, and hickory. The understory includes shining sumac, aster, brackenfern, partridge pea, and sparkleberry. The most common native grass is pineland threeawn (wiregrass). Other native grasses include hairy panicum, broomsedge bluestem, yellow indiangrass, low panicum, and longleaf uniola.

These soils are poorly suited to cultivated crops. The slope is the main management concern. A crop rotation that includes close-growing cover crops, buffer strips, and minimum tillage help to control erosion. Limiting tillage for seedbed preparation and controlling weeds help to control runoff and erosion. All tillage should be on the contour or across the slope.

In areas used for pasture, the slope is the main management concern. All adapted pasture plants can be grown, but bunch-type species that are planted alone generally are not suited because of the hazard of erosion. The main suitable pasture plants are coastal bermudagrass, tifton-44 bermudagrass, improved bahiagrass, and legumes. Proper stocking rates, pasture rotation, and timely deferment of grazing help to keep the pasture in good condition. Applications of fertilizer and lime are needed for the optimum growth of grasses and legumes.

These soils are moderately well suited to pines and hardwoods. Plant competition is the main management concern. Using a harvesting system that minimizes the hazard of erosion is essential. If site preparation is not adequate, competition from undesirable plants can prevent or delay the natural or artificial reestablishment of trees. Appropriate species should be selected for planting. The trees that are suitable for planting include loblolly pine and slash pine. Mechanical planting of trees on the contour helps to control erosion. Water turnouts or broad-based dips are needed on roads to direct water and sediments away from the roads and streams and into the surrounding woods. Water bars are needed on skid trails and firelines. Leaving debris on the surface helps to maintain the content of organic matter.

These soils are moderately suited to recreational development. The slope limits use mainly to a few paths and trails, which should extend across the slope. Maintaining an adequate plant cover helps to control erosion and sedimentation and enhances the beauty of the area.

These soils are moderately suited to urban development. In areas used for building site development, onsite waste disposal, septic tank absorption fields, or sanitary landfills, the depth to the water table and the slope are moderate management concerns. Using alternative systems, land shaping, or adding fill can help to overcome the wetness and problems caused by the slope. Preserving the existing plant cover during construction and revegetating disturbed areas around construction sites help to control erosion. Plans for homesite development should provide for the preservation of as many trees as possible.

The capability subclass is IVe. The woodland ordination symbol is 9S for the Bonifay soil, 9A for the Dothan soil, and 10W for the Angie soil.

50—Yemassee, Garcon, and Bigbee soils, occasionally flooded. These nearly level or gently sloping, somewhat poorly drained and excessively drained soils are on flood plains along major streams and rivers. The soils do not occur in a regular repeating pattern on the landscape. Some areas consist of Yemassee and similar soils, some consist of Garcon and similar soils, some consist of Bigbee and similar soils, and some consist of all three soils. Slopes are dominantly less than 2 percent but are as much as 5 percent in some areas. Individual areas are elongated and range from 3 to 100 acres in size.

On 95 percent of the acreage mapped as Yemassee, Garcon, and Bigbee soils, occasionally flooded, Yemassee, Garcon, Bigbee, and similar soils make up 91 to 99 percent of the mapped areas. Dissimilar soils make up 1 to 9 percent.

The Yemassee soil is somewhat poorly drained. Typically, the surface layer is very dark gray fine sandy loam about 5 inches thick. The subsurface layer is yellowish brown fine sandy loam about 3 inches thick. The subsoil, to a depth of about 50 inches, is sandy clay loam. The upper part is yellowish brown, and the lower part is gray. The substratum extends to a depth of 80 inches or more. The upper part is gray fine sandy loam, and the lower part is light gray sand.

Permeability is moderately rapid in the surface layer and subsurface layer of the Yemassee soil and moderate in the subsoil. The available water capacity is low in the surface layer and subsurface layer and moderate or high in the subsoil. The effective rooting depth is limited by the seasonal high water table, which is at a depth of about 1.0 to 1.5 feet from December through March. Runoff is slow. The soil is subject to brief periods of flooding in winter and spring. Natural fertility is low.

The Garcon soil is somewhat poorly drained. Typically, the surface layer is very dark gray loamy fine sand about 7 inches thick. The subsurface layer is pale brown loamy fine sand about 28 inches thick. The subsoil extends to a depth of about 70 inches. The upper part is light brownish yellow sandy clay loam, and the lower part is light brownish gray fine sandy loam. The substratum to a depth of 80 inches or more is light gray fine sand.

Permeability is rapid in the surface layer, subsurface layer, and substratum of the Garcon soil and moderate in the subsoil. The available water capacity is moderate. The effective rooting depth is limited by the seasonal high water table, which is at a depth of about 1.5 to 3.0 feet from January through April. Runoff is slow. The soil is subject to brief periods of flooding in the spring. Natural fertility is low.

The Bigbee soil is excessively drained. Typically, the surface layer is very dark grayish brown fine sand about 6 inches thick. The subsurface layer is brown fine sand about 3 inches thick. The underlying material extends to a depth of 80 inches or more. The upper part is light yellowish brown loamy fine sand, the next part is very pale brown sand, and the lower part is white sand.

Permeability is rapid in the Bigbee soil. The available water capacity is low. The effective rooting depth is limited by the seasonal high water table, which is at a depth of about 3.5 to 6.0 feet from January through March. Runoff is slow. The soil is subject to brief periods of flooding in the spring. Natural fertility is low.

Dissimilar soils included with the Yemassee, Garcon, and Bigbee soils in mapping are Bibb, Johnston, Kinston, and Rutlege soils and small areas of soils that have organic material at a depth of 16 to 51 inches. Bibb, Johnston, and Kinston soils are in the lower landscape positions. They have a high water table at a depth of less than 12 inches. Rutlege soils have a dark surface layer that is more than 10 inches thick.

The natural vegetation on this map unit consists of American holly, flowering dogwood, hawthorn, loblolly pine, southern magnolia, white oak, water oak, live oak, laurel oak, slash pine, and sweetgum. The understory includes gallberry, saw palmetto, shining sumac, waxmyrtle, and sparkleberry. The most common native grass is pineland threeawn (wiregrass). Other native grasses include chalky bluestem, broomsedge bluestem, yellow indiangrass, lopsided indiangrass, low panicum, and switchgrass.

These soils are moderately suited to cultivated crops. The wetness and the flooding are the major management concerns. Corn and soybeans are suitable crops if an adequate drainage system is installed. The hazard of flooding can be reduced by constructing dikes and water-retention structures. If suitable outlets are available, lateral ditches and tile drains can be used to lower the water table. Minimizing tillage and returning all crop residue to the soil or regularly adding other organic material improve fertility and help to maintain tilth and the content of organic matter. Frequent applications of fertilizer and lime are generally needed.

These soils are well suited to pasture. The wetness and the flooding are the major management concerns. The main suitable pasture plants are coastal bermudagrass and improved bahiagrass. Proper stocking rates, pasture rotation, and timely deferment of grazing help to keep the pasture in good condition. Applications of fertilizer and lime are needed for the optimum growth of grasses and legumes.

Most of the acreage is used as woodland. These soils are well suited to the production of pines and hardwoods. The wetness and the flooding are the main management concerns. The wetness limits the use of equipment. If site preparation is not adequate, competition from undesirable plants can prevent or delay the natural or artificial reestablishment of trees. Appropriate species should be selected for planting. Bedding of rows helps to overcome the wetness. The trees that are suitable for planting include slash pine and loblolly pine. Site preparation, such as chopping, burning, applying herbicide, and bedding, removes debris, reduces plant competition, and facilitates hand and mechanical planting. Leaving debris on the surface helps to maintain the content of organic matter.

These soils are moderately suited to recreational development. The wetness and the flooding are the major management concerns. Good drainage is needed in areas used for paths and trails. Protection from flooding is needed.

These soils are poorly suited to use as a site for urban development and sanitary facilities. The wetness and the flooding are the major management concerns. Excess water can be removed by using shallow ditches and by providing the proper grade. Roads and streets should be elevated above the expected flood level. The flooding can be controlled by using major flood-control structures.

Wildlife habitat can be improved by low-level weirs for water control; level ditches; controlled burning; and, in places, controlled harvesting.

The capability subclass is IIw. The woodland ordination symbol is 9W for the Yemassee soil, 10W for the Garcon soil, and 9S for the Bigbee soil.

51—Troup-Orangeburg-Cowarts complex, 5 to 12 percent slopes. These sloping or strongly sloping, well drained soils are on side slopes in the uplands. Individual areas are irregular in shape and range from 3 to 100 acres in size.

On 85 percent of the acreage mapped as Troup-Orangeburg-Cowarts complex, 5 to 12 percent slopes, Troup, Orangeburg, Cowarts, and similar soils make up 80 to 97 percent of the mapped areas. Dissimilar soils make up 3 to 20 percent. Generally, the mapped areas consist of about 47 percent Troup and similar soils, 18 percent Orangeburg and similar soils, and 15 percent Cowarts and similar soils.

Typically, the surface layer of the Troup soil is dark brown sand about 5 inches thick. The subsurface layer is dark yellowish brown loamy sand about 9 inches thick. Below this, to a depth of about 48 inches, is strong brown and yellowish red loamy sand. The subsoil to a depth of 80 inches or more is red sandy clay loam.

Permeability is rapid in the surface layer and subsurface layer of the Troup soil and moderate in the subsoil. The available water capacity is low in the surface layer and subsurface layer and moderate in the subsoil. Runoff is slow. Water erosion is only a problem if water-control measures are not used. The seasonal high water table is at a depth of more than 80 inches.

Typically, the surface layer of the Orangeburg soil is dark brown sandy loam about 5 inches thick. The subsurface layer is reddish brown sandy loam about 4 inches thick. The subsoil to a depth of 80 inches or more is red sandy clay loam.

Permeability is moderately rapid in the upper part of the Orangeburg soil and moderate in the lower part. The available water capacity is low in the surface layer and subsurface layer and moderate in the subsoil. Runoff is rapid, and erosion is a hazard in unprotected areas. The seasonal high water table is at a depth of more than 80 inches. Natural fertility is medium.

Typically, the surface layer of the Cowarts soil is yellowish brown loamy sand about 4 inches thick. The subsurface layer is brownish yellow loamy sand about 11 inches thick. The subsoil extends to a depth of about 38 inches. The upper part is yellowish brown sandy clay loam, and the lower part is reticulately mottled sandy clay loam. The underlying material extends to a depth of 80 inches or more. The upper part is mottled fine sand, and the lower part is yellow sand.

Permeability is moderately rapid in the surface layer, subsurface layer, and substratum of the Cowarts soil and moderate in the subsoil. The available water capacity is low or moderate in the surface layer, subsurface layer, and substratum and moderate in the subsoil. Runoff is slow. Unprotected areas are subject to severe erosion. The seasonal high water table is at a depth of more than 80 inches. Natural fertility is low.

Dissimilar soils included with the Troup, Orangeburg, and Cowarts soils in mapping are Bonifay, Chipley, and Dothan soils. Bonifay and Dothan soils have a perched water table. Chipley soils are sandy throughout and have a water table within a depth of 30 inches.

The natural vegetation on this map unit consists of loblolly pine, American holly, hickory, southern magnolia, white oak, and water oak. The understory includes shining sumac and sparkleberry. The most common native grass is pineland threeawn (wiregrass). Other native grasses include broomsedge bluestem, longleaf uniola, low panicum, and spike uniola.

These soils are poorly suited to cultivated crops. The slope and the hazard of erosion are the main management concerns. Returning all crop residue to the soil and using a cropping system that includes grasses, legumes, or grass-legume mixtures conserve moisture, maintain fertility, and help to control erosion. Frequent applications of fertilizer and lime are generally needed.

A crop rotation that includes close-growing cover crops, contour cultivation of row crops, and minimum tillage help to control erosion. Using gradient terraces and contour farming can reduce the hazard of sheet and rill erosion on the steeper slopes.

These soils are moderately well suited to pasture. The main suitable pasture plants are coastal bermudagrass, tifton-44 bermudagrass, improved bahiagrass, and legumes. Proper stocking rates, pasture rotation, and timely deferment of grazing help to keep the pasture in good condition. Applications of fertilizer and lime are needed for the optimum growth of grasses and legumes.

These soils are well suited to the production of pines and hardwoods. The slope and the hazard of erosion are the main management concerns. Using a harvesting system that minimizes erosion is essential. If site preparation is not adequate, competition from undesirable plants can prevent or delay the natural or artificial reestablishment of trees. Appropriate species should be selected for planting. The trees that are suitable for planting include slash pine, loblolly pine, and longleaf pine. Mechanical planting of trees on the contour helps to control erosion. Water turnouts or broad-based dips are needed on roads to direct water and sediments away from the roads and streams and into the surrounding woods. Water bars are needed on skid trails and firelines. Leaving debris on the surface helps to maintain the content of organic matter.

These soils are poorly suited to recreational development. The slope and the hazard of erosion are the main management concerns. Maintaining an adequate plant cover helps to control erosion and sedimentation and enhances the beauty of the area.

These soils are moderately suited to urban development. Limitations affecting septic tank absorption fields are moderate. Seepage and the slope are major management concerns in areas used for sewage lagoons and sanitary landfills. Sandy sidewalls should be sealed.

The capability subclass is VIs. The woodland ordination symbol is 8S for the Troup soil, 8A for the Orangeburg soil, and 9A for the Cowarts soil.

52—Escambia fine sandy loam, 0 to 3 percent slopes. This gently sloping, moderately well drained soil is on low side slopes in the uplands. Individual areas range from about 5 to 80 acres in size.

On 97 percent of the acreage mapped as Escambia fine sandy loam, 0 to 3 percent slopes, Escambia and similar soils make up 92 to 100 percent of the mapped areas. Dissimilar soils make up 0 to 8 percent.

Typically, the surface layer of the Escambia soil is very dark gray fine sandy loam about 5 inches thick. The subsurface layer is brownish yellow fine sandy loam about 3 inches thick. The subsoil extends to a depth of 80 inches or more. The upper part is brownish yellow fine sandy loam, and the lower part is reticulately mottled sandy clay loam.

Dissimilar soils included with this soil in mapping are Dothan, Fuquay, and Stilson soils. These soils are better drained than the Escambia soil, but they have a perched water table during periods of high rainfall. Also included are soils that have a clayey subsoil.

Permeability is slow in the Escambia soil. The available water capacity is low or moderate. Runoff is slow. The seasonal high water table is at a depth of about 18 to 30 inches during the winter months. The soil dries slowly after heavy rains. The shrink-swell potential and natural fertility are low.

The natural vegetation consists of loblolly pine, American holly, hickory, southern magnolia, white oak, and water oak. The understory includes shining sumac and sparkleberry. The most common native grass is pineland threeawn (wiregrass). Other native grasses include broomsedge bluestem, longleaf uniola, low panicum, and spike uniola.

This soil is moderately suited to cultivated crops. Wetness is the main limitation. Suitable crops are corn, soybeans, peanuts, and cotton. The perched water table generally limits the suitability of the soil for deep-rooted crops. Minimizing tillage and returning crop residue to the soil or regularly adding other organic material improve fertility and help to maintain tilth and the content of organic matter. Frequent applications of fertilizer and lime are generally needed. Using gradient terraces and contour farming can reduce the hazard of sheet and rill erosion on the steeper slopes.

This soil is well suited to pasture. Seedbeds should be prepared on the contour or across the slope. The low available water capacity limits the production of plants during extended dry periods. Applications of fertilizer and lime help deep-rooted plants, such as coastal bermudagrass and bahiagrass, to tolerate drought. Proper stocking rates, pasture rotation, and timely deferment of grazing help to keep the pasture in good condition. Applications of fertilizer and lime are needed for the optimum growth of grasses and legumes.

This soil is well suited to the production of slash pine. If site preparation is not adequate, competition from undesirable plants can prevent or delay the natural or artificial reestablishment of trees. Mechanical planting of trees on bedded rows helps to overcome the seasonal high water table. Water turnouts or broad-based dips are needed on roads to direct water and sediments away from the roads and streams and into the surrounding woods. Water bars are needed on skid trails and firelines. The major management concern is the low available water capacity, which increases the seedling mortality rate and hinders growth. Appropriate species should be selected for planting. Leaving debris on the surface helps to maintain the content of organic matter. Areas on rolling uplands are subject to erosion.

This soil is moderately well suited to recreational development. The wetness is the main limitation. The plant cover can be maintained by controlling traffic.

In areas used for urban development, wetness is the main limitation. The wetness is a severe limitation on sites for septic tank absorption fields and trench sanitary landfills. Preserving the existing plant cover during construction helps to control erosion. Plants that can tolerate wetness and droughtiness should be selected if drainage and irrigation are not provided. Mulching, applying fertilizer, and irrigating help to establish lawn grasses and other small-seeded plants.

The capability subclass is IIw. The woodland ordination symbol is 9W.

53—Notcher gravelly sandy loam, 0 to 2 percent slopes. This nearly level, moderately well drained soil is on broad ridgetops in the uplands. Individual areas range from about 5 to 80 acres in size.

On 95 percent of the acreage mapped as Notcher gravelly sandy loam, 0 to 2 percent slopes, Notcher and similar soils make up 92 to 100 percent of the mapped areas. Dissimilar soils make up 0 to 8 percent.

Typically, the surface layer of the Notcher soil is very dark gray gravelly sandy loam about 4 inches thick. The subsurface layer is yellowish brown gravelly sandy loam about 6 inches thick. The subsoil to a depth of 80 inches or more is gravelly sandy clay loam. The upper part is yellowish brown, the next part is brownish yellow, and the lower part is brownish yellow. The lower part of the subsoil is mottled in shades of red and gray.

Dissimilar soils included with this soil in mapping are Angie and Escambia soils. Angie soils have a clayey subsoil. Escambia soils are in the slightly lower landscape positions. They have a high water table at a depth of 18 to 30 inches.

Permeability is moderately slow in the Notcher soil. The available water capacity is very low or moderate in the surface layer and subsurface layer and low or moderate in the subsoil. Runoff is medium. The seasonal high water table is at a depth of 36 to 48 inches for 1 or 2 months. Water is perched above the subsoil during periods of heavy rainfall. The shrink-swell potential and natural fertility are low.

The natural vegetation consists of loblolly pine, American pine, hickory, southern magnolia, white oak, and water oak. The understory includes shining sumac and sparkleberry. The most common native grass is pineland threeawn (wiregrass). Other native grasses include broomsedge bluestem, longleaf uniola, low panicum, and spike uniola.

This soil is well suited to cultivated crops. Suitable crops are corn, soybeans, peanuts, and cotton. The perched water table generally limits the suitability of the soil for deep-rooted crops. Minimizing tillage and returning crop residue to the soil or regularly adding other organic material improve fertility and help to maintain tilth and the content of organic matter. Frequent applications of fertilizer and lime are generally needed.

This soil is well suited to pasture. The low available water capacity limits the production of plants during extended dry periods. Applications of fertilizer and lime help deep-rooted plants, such as coastal bermudagrass and bahiagrass, to tolerate drought. Proper stocking rates, pasture rotation, and timely deferment of grazing help to keep the pasture in good condition. Applications of fertilizer and lime are needed for the optimum growth of grasses and legumes.

This soil is well suited to the production of slash pine. If site preparation is not adequate, competition from undesirable plants can prevent or delay the natural or artificial reestablishment of trees. Appropriate species should be selected for planting. Leaving debris on the surface helps to maintain the content of organic matter.

This soil is well suited to recreational development. The plant cover can be maintained by controlling traffic.

This soil is moderately suited to urban development. The main limitations are the seasonal high water table and the restricted permeability. The wetness and the restricted permeability are severe limitations on sites for septic tank absorption fields. Preserving the existing plant cover during construction helps to control erosion. Plants that can tolerate wetness and droughtiness should be selected if drainage and irrigation are not provided. Mulching, applying fertilizer, and irrigating help to establish lawn grasses and other small-seeded plants. Small stones are a problem in areas used for lawns.

The capability class is I. The woodland ordination symbol is 9A.

54—Notcher gravelly sandy loam, 2 to 5 percent slopes. This gently sloping, moderately well drained soil is on side slopes in the uplands. Individual areas range from about 5 to 80 acres in size.

On 90 percent of the acreage mapped as Notcher gravelly sandy loam, 2 to 5 percent slopes, Notcher and similar soils make up 78 to 100 percent of the mapped areas. Dissimilar soils make up 0 to 22 percent.

Typically, the surface layer of the Notcher soil is very dark gray gravelly sandy loam about 4 inches thick. The subsurface layer is yellowish brown gravelly sandy loam about 6 inches thick. The subsoil to a depth of 80 inches or more is gravelly sandy loam. The upper part is yellowish brown, the next part is brownish yellow, and the lower part is brownish yellow and is mottled in shades of red and gray.

Dissimilar soils included with this soil in mapping are Angie and Escambia soils. Angie soils have a clayey subsoil. Escambia soils are in the lower landscape positions. They have a water table at a depth of 18 to 30 inches.

Permeability is moderately slow in the Notcher soil. The available water capacity is very low to moderate in the surface layer and subsurface layer and low or moderate in the subsoil. Runoff is medium. The seasonal high water table is at a depth of 36 to 48 inches for 1 or 2 months. Water is perched above the subsoil during periods of heavy rainfall. The shrink-swell potential and natural fertility are low.

The natural vegetation consists of loblolly pine, American holly, hickory, southern magnolia, white oak, and water oak. The understory includes shining sumac and sparkleberry. The most common native grass is pineland threeawn (wiregrass). Other native grasses include broomsedge bluestem, longleaf uniola, low panicum, and spike uniola.

This soil is moderately suited to cultivated crops. The wetness and a restricted root zone are the main limitations. Suitable crops are corn, soybeans, peanuts, and cotton. Minimizing tillage and returning all crop residue to the soil or regularly adding other organic material improve fertility and help to maintain tilth and the content of organic matter. Frequent applications of fertilizer and lime are generally needed. Using gradient terraces and contour farming can reduce the hazard of sheet and rill erosion on the steeper slopes.

This soil is well suited to pasture. The low available water capacity limits the production of plants during extended dry periods. Applications of fertilizer and lime help deep-rooted plants, such as coastal bermudagrass and bahiagrass, to tolerate drought. Proper stocking rates, pasture rotation, and timely deferment of grazing help to keep the pasture in good condition. Applications of fertilizer and lime are needed for the optimum growth of grasses and legumes.

This soil is well suited to the production of slash pine. If site preparation is not adequate, competition from undesirable plants can prevent or delay the natural or artificial reestablishment of trees. Water turnouts or broad-based dips are needed on roads to direct water and sediments away from the roads and streams and into the surrounding woods. Water bars are needed on skid trails and firelines. The major management concern is the low available water capacity, which increases the seedling mortality rate and hinders growth. Appropriate species should be selected for planting. Leaving debris on the surface helps to maintain the content of organic matter. Areas on rolling uplands are subject to erosion.

This soil is well suited to recreational development. The plant cover can be maintained by controlling traffic.

This soil is moderately suited to urban development. The main limitations are the seasonal high water table and the restricted permeability. The wetness and the restricted permeability are severe limitations on sites for septic tank absorption fields. Preserving the existing plant cover during construction helps to control erosion. Plants that can tolerate wetness and droughtiness should be selected if drainage and irrigation are not provided. Mulching, applying fertilizer, and irrigating help to establish lawn grasses and other small-seeded plants. Small stones are a problem in areas used for lawns.

The capability subclass is IIe. The woodland ordination symbol is 9A.

55—Pansey sandy loam, depressional. This very poorly drained soil is in upland depressions. Slopes are concave and are dominantly less than 1 percent. Individual areas are generally round or oval and range from 3 to 5 acres in size.

On 88 percent of the acreage mapped as Pansey sandy loam, depressional, Pansey and similar soils make up 91 to 99 percent of the mapped areas. Dissimilar soils make up 1 to 9 percent.

Typically, the surface layer of the Pansey soil is very dark gray sandy loam about 6 inches thick. The subsurface layer is dark gray and gray sandy loam about 11 inches thick. The subsoil to a depth of about 80 inches is sandy clay loam that is mottled in shades of red, brown, and gray. The upper part is gray, the next part is light brownish gray, and the lower part is light gray.

Dissimilar soils included with this soil in mapping are soils that have a clayey subsoil.

Permeability is slow in the Pansey soil. The available water capacity is very low or low in the surface layer and low or moderate in the subsoil. Runoff is slow. Undrained areas are ponded for 4 to 8 months in most years.

The natural vegetation consists mostly of baldcypress, blackgum, red maple, and water tupelo and an understory of buttonbush and dahoon holly.

This soil is poorly suited to cultivated crops because of the wetness.

This soil is poorly suited to pasture. The wetness and the ponding are the major management concerns. The wetness limits the choice of plants and the period of grazing.

This soil is poorly suited to the production of slash pine. The wetness and the ponding are the major management concerns. Trees should be planted or harvested during dry periods. Bedding of rows helps to overcome the wetness. Only trees that can tolerate seasonal wetness should be planted. Trees are subject to windthrow because of the limited rooting depth. Overcoming the excessive wetness is very difficult. Some areas may be suited to cypress and hardwoods if the trees are harvested and planted during extended dry periods.

This soil is poorly suited to urban and recreational development because of the wetness and the ponding.

The capability subclass is VIIw. The woodland ordination symbol is 9A.

56—Pansey sandy loam, 1 to 3 percent slopes. This gently sloping, poorly drained soil is on low side slopes in the uplands. Individual areas range from about 3 to 500 acres in size.

On 88 percent of the acreage mapped as Pansey sandy loam, 1 to 3 percent slopes, Pansey and similar soils make up 82 to 94 percent of the mapped areas. Dissimilar soils make up 6 to 18 percent.

Typically, the surface layer of the Pansey soil is very dark gray sandy loam about 6 inches thick. The subsurface layer is dark gray and gray sandy loam about 11 inches thick. The subsoil to a depth of 80 inches or more is sandy clay loam that is mottled in shades of red, brown, and gray. The upper part is gray, the next part is light brownish gray, and the lower part is light gray.

Dissimilar soils included with this soil in mapping are Dothan and Escambia soils. These soils are in the higher landscape positions. They are better drained than the Pansey soil.

Permeability is slow in the Pansey soil. The available water capacity is very low or low in the surface layer and low or moderate in the subsoil. Runoff is slow. The soil receives runoff and seepage water from the surrounding higher soils.

The natural vegetation consists mostly of slash pine, sand live oak, and an understory of dwarf huckleberry, gallberry, saw palmetto, shining sumac, and waxmyrtle. The most common native grass is pineland threeawn (wiregrass). Other grasses are chalky bluestem, broomsedge bluestem, yellow indiangrass, lopsided indiangrass, low panicum, and sedges.

This soil is poorly suited to cultivated crops. The periodic wetness is the main limitation. An adequate drainage system is needed in most areas to remove excess surface water and reduce the wetness, but suitable outlets are generally not available. Minimizing tillage and returning all crop residue to the soil or regularly adding other organic material improve fertility and help to maintain tilth and the content of organic matter. Frequent applications of fertilizer and lime are generally needed.

This soil is moderately suited to pasture. Excess water on the surface can be removed by lateral ditches. Suitable pasture plants are coastal bermudagrass, tifton-44 bermudagrass, improved bahiagrass, and legumes. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Applications of fertilizer and lime are needed for the optimum growth of grasses and legumes.

This soil is moderately well suited to the production of slash pine. The wetness limits the use of equipment unless drainage is provided. If site preparation is not adequate, competition from undesirable plants can prevent or delay the natural or artificial reestablishment of trees. Appropriate species should be selected for planting. Bedding of rows helps to overcome the wetness. Water turnouts or broad-based dips are needed on roads to direct water and sediments away from the roads and streams and into the surrounding woods. Water bars are needed on skid trails and firelines. Leaving debris on the surface helps to maintain the content of organic matter.

This soil is poorly suited to recreational development because of the wetness.

This soil is poorly suited to urban development. The wetness and seepage are limitations on sites for septic tank absorption fields. Using alternative systems or adding fill can help to overcome these limitations. Plans for homesite development should provide for the preservation of as many trees as possible. Plants that can tolerate wetness should be selected if drainage is not provided. Septic tank absorption fields are mounded in most areas. If the density of housing is moderate or high, community sewage systems are needed to prevent the contamination of water supplies.

The capability subclass is IVw. The woodland ordination symbol is 10W.

Prime Farmland

In this section, prime farmland is defined and the soils in Okaloosa County that are considered prime farmland are listed.

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the Nation's short- and long-range needs for food and fiber. The acreage of high-quality farmland is limited, and the U.S. Department of Agriculture recognizes that government at local, State, and Federal levels, as well as individuals, must encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland soils, as defined by the U.S. Department of Agriculture, are soils that are best suited to food, feed, forage, fiber, and oilseed crops. Such soils have properties that favor the economic production of sustained high yields of crops. The soils need only to be treated and managed by acceptable farming methods. The moisture supply must be adequate, and the growing season must be sufficiently long. Prime farmland soils produce the highest yields with minimal expenditure of energy and economic resources. Farming these soils results in the least damage to the environment.

Prime farmland soils may presently be used as cropland, pasture, or woodland or for other purposes. They are used for food or fiber or are available for these uses. Urban or built-up land, public land, and water areas cannot be considered prime farmland. Urban or built-up land is any contiguous unit of land 10 acres or more in size that is used for such purposes as housing, industrial, and commercial sites, sites for institutions or public buildings, small parks, golf courses, cemeteries, railroad yards, airports, sanitary landfills, sewage treatment plants, and water-control structures. Public land is land not available for farming in National forests, National parks, military reservations, and State parks.

Prime farmland soils usually receive an adequate and dependable supply of moisture from precipitation or irrigation. The temperature and growing season are favorable. The acidity or alkalinity level of the soils is acceptable. The soils have few or no rocks and are permeable to water and air. They are not excessively erodible or saturated with water for long periods and are not frequently flooded during the growing season. The slope ranges mainly from 0 to 5 percent.

The following map units are considered prime farmland in Okaloosa County. 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 extent of each unit is given in table 2. The soil qualities that affect use and management are described in the section "Detailed Soil Map Units."

The soils identified as prime farmland in Okaloosa County are:

35	Angie sandy loam, 2 to 5 percent slopes
38	Dothan loamy sand, 0 to 2 percent slopes
39	Dothan loamy sand, 2 to 5 percent slopes
45	Orangeburg sandy loam, 0 to 2 percent slopes
46	Orangeburg sandy loam, 2 to 5 percent slopes
52	Escambia fine sandy loam, 0 to 3 percent slopes
53	Notcher gravelly sandy loam, 0 to 2 percent slopes
54	Notcher gravelly sandy loam, 2 to 5 percent slopes

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 potentials of natural resources and the environment. Also, it can help to prevent 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 behavioral 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 for predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; and for wildlife habitat. It can be used to identify the potentials 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 that is in harmony with nature.

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

John D. Lawrence, conservation agronomist, Natural Resources 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, including some not commonly grown in the survey area, are identified; the system of land capability classification used by the Natural Resources 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 the heading "Detailed Soil Map Units." Specific information can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

In 1986, more than 73,000 acres in Okaloosa County was used for crops and pasture. Of this total, 30,000 acres was used for permanent pasture; 31,000 acres for row crops, mainly soybeans; 7,000 acres for close-growing crops, mainly wheat and oats; and the rest for cotton, peanuts, corn, truck crops, and other crops.

The potential of the soils in Okaloosa County for increased production of food is good. About 20,000 acres of potentially good cropland and 60,000 acres of potentially good pastureland is currently used as woodland. In addition to the reserve productive capacity represented by this land, food production could also be increased considerably by extending the latest crop production technology to all of the cropland in the county. This soil survey can greatly facilitate the application of such technology.

Field crops adapted to the soils and climate of the survey area include many that are not now commonly grown. Soybeans, cotton, corn, and peanuts are the common row crops. Grain sorghum, sunflowers, potatoes, and similar crops could also be grown. Wheat and oats are the common close-growing crops. Rye could also be grown, and grass seed could be produced from fescue, common bermudagrass, and bahiagrass.

Specialty crops grown commercially in Okaloosa County are vegetables, pecans, peaches, and strawberries. A small acreage is used for melons, sweet corn, tomatoes, greens, and other vegetables. Large areas in the county could be used for other specialty crops, such as blueberries, grapes, and plums.

Deep soils that have good natural drainage and that warm up early in spring, such as the Dothan, Notcher, and Orangeburg soils that have slopes of less than 5 percent, are especially well suited to many vegetables and small fruits. These soils cover about 62,000 acres in the county. Also, if irrigated, the Bonifay, Lakeland, and Troup soils that have slopes of less than 5 percent are very well suited to vegetables and small fruits. Crops can generally be planted and harvested earlier on these soils than on the other soils in the county.

Most of the well drained soils in the survey area are suitable for orchards and nurseries, but soils in low positions, where frost is frequent and air drainage is poor, are generally poorly suited to early vegetables, small fruits, and orchards.

The latest information and suggestions for growing specialty crops are available from local offices of the Cooperative Extension Service and the Natural Resources Conservation Service.

Generally, the soils that are well suited to crops also are well suited to urban development. The acreage used for crops and pasture has remained constant, but some areas of woodland have been developed for urban use. In 1980, about 46,558 acres of the county was urban or built-up land. Each year approximately 1,800 additional acres is developed for urban uses in Milligan, Baker, Laurel Hill, and other towns in Okaloosa County. Much of this land is well suited to crops. Information in this publication can be used in planning future land use.

The paragraphs that follow describe the management needed for crops and pasture in the survey area.

Erosion is the major potential soil problem on about one-third of the cropland and one-fifth of the pastureland in Okaloosa County. Water erosion is a hazard on soils that have slopes of more than 2 percent. The Dothan, Notcher, and Orangeburg soils that have slopes of 2 to 5 percent are examples. Dothan and Notcher soils have a seasonal high water table, which is an additional concern. Soil blowing is a hazard on soils that are dry and bare and are not sheltered from strong winds. Bonifay, Lakeland, Lucy, Troup, and some Orangeburg soils are examples. Soil blowing damages tender crops.

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. Second, erosion on farmland results in the sedimentation of streams. Controlling erosion minimizes this pollution and improves the quality of water for municipal and recreational uses and for fish and wildlife.

Erosion-control practices provide a protective surface cover, help to control runoff, and increase the rate of water infiltration. A cropping system that keeps a plant cover on the surface for extended periods can minimize erosion losses and maintain the productive capacity of the soil. On livestock farms, which require pasture and hay, including grasses and legumes in the cropping system helps to control erosion, improves tilth, and provides nitrogen for subsequent crops.

Minimizing tillage and leaving crop residue on the surface increase the rate of water infiltration and help to control runoff and erosion. No-till farming helps to control erosion in sloping areas used for corn and soybeans. This practice can be adapted to most soils in the survey area. It is less feasible, however, in eroded areas than in other areas.

Terraces and diversions reduce the length of slopes and help to control runoff and erosion. They are most practical on deep, well drained soils that have regular slopes. Dothan, Notcher, and Orangeburg soils are suitable for terraces.

Contour farming is an important erosion-control practice in Okaloosa County. It is most suitable on soils that have smooth, uniform slopes, including most areas of the sloping Dothan, Fuquay, Lucy, Notcher, and Orangeburg soils.

Soil blowing is a hazard on the sandy Bonifay, Lakeland, Orangeburg, and Troup soils. Strong winds can damage these soils in only a few hours if the soils are dry and are not covered by vegetation or surface mulch. Maintaining a plant cover or surface mulch can minimize soil blowing on these soils. Windbreaks consisting of adapted shrubs and trees, such as laurelcherry and slash pine, or strips of small grain are effective in controlling soil blowing.

Information on the design of erosion-control measures for each kind of soil is available from local offices of the Natural Resources Conservation Service.

Soil drainage is the major management concern on some of the acreage used for crops and pasture in the survey area. Poorly drained and very poorly drained soils are naturally so wet that the production of common crops is generally not possible. Somewhat poorly drained soils, such as Albany and Leefield soils, are so wet that crops are damaged during most years unless the soils are artificially drained.

Except during periods when the water table is high, Albany soils have good natural drainage, but they tend to dry out slowly after rains. Small areas of wet soils along drainageways and in swales are commonly included in areas of moderately well drained soils, especially those that have slopes of 2 to 5 percent. A drainage system is needed in some of these wetter areas.

Surface drainage is needed in most areas of the poorly drained and somewhat poorly drained soils that are used intensively for row crops. The design of surface drainage systems varies with the kind of soil. For example, drains should be more closely spaced in soils that are slowly permeable than in the more rapidly permeable soils. Information on water-control practices for each kind of soil is available from local offices of the Natural Resources Conservation Service.

Soil fertility is naturally low in most of the soils on uplands in Okaloosa County. All of the soils on uplands are naturally acid. The soils on the flood plains, such as Bibb, Johnston, Kinston, and Yemassee soils, range from very strongly acid to slightly acid. These soils have a higher content of plant nutrients than most of the soils on uplands.

Many of the soils on uplands are naturally very strongly acid. These soils require applications of ground limestone to raise the pH level sufficiently for good growth of crops that grow only on nearly neutral soils. Levels of available phosphorus and potassium are naturally low in most of the upland 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 expected 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 in the infiltration of water into the soil. Soils with good tilth are granular and porous.

Most of the soils used for crops in Okaloosa County have a light-colored surface layer of loamy sand or sandy loam that has a low content of organic matter. Generally, such soils have poor tilth. Regular additions of crop residue, manure, and other organic material can improve tilth.

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 3. 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 land capability classification also is shown in the table.

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 on 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 ensures the smallest possible loss.

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 3 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 Natural Resources 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 use as cropland. 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 criteria used in grouping the soils do not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include 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.

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 they 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.

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

There are no subclasses in class I because the soils of this class have few limitations. The soils in class V are subject to little or no erosion, but they have other limitations that restrict their use to pasture, rangeland, woodland, wildlife habitat, or recreation. Class V contains only the subclasses indicated by *w, s,* or *c.*

The capability classification of each map unit is given in the section "Detailed Soil Map Units" and in the yields table.

Woodland Management and Productivity

Soils vary in their ability to produce trees. Available water capacity and depth of the root zone have major effects on tree growth. Fertility and texture also influence tree growth. Elevation, aspect, and climate determine the kinds of trees that can grow on a site. Elevation and aspect are of particular importance in mountainous areas.

This soil survey can be used by woodland managers planning ways to increase the productivity of forest land. Some soils respond better to applications of fertilizer than others, and some are more susceptible to landslides and erosion after roads are built and timber is harvested. Some soils require special reforestation efforts. In the section "Detailed Soil Map Units," the description of each map unit in the survey area suitable for timber includes information about productivity, limitations in harvesting timber, and management concerns in producing timber. Table 4 summarizes this forestry information and rates the soils for a number of factors to be considered in management. *Slight, moderate,* and *severe* are used to indicate the degree of the major soil limitations to be considered in forest management.

Table 4 lists the *ordination symbol* for each soil. The first part of the ordination symbol, a number, indicates the potential productivity of a soil for the indicator species in cubic meters per hectare. The larger the number, the greater the potential productivity. Potential productivity is based on the site index and the point where mean annual increment is the greatest.

The second part of the ordination symbol, a letter, indicates the major kind of soil limitation affecting use and management. The letter *R* indicates a soil that has a significant limitation because of steepness of slope. The letter *X* indicates that a soil has restrictions because of stones or rocks on the surface. The letter *W* indicates a soil in which excessive water, either seasonal or year-round, causes a significant limitation. The letter *T* indicates a soil that has, within the root zone, excessive alkalinity or acidity, sodium salts, or other toxic substances that limit the development of desirable trees. The letter *D* indicates a soil that has a limitation because of a restricted rooting depth, such as a shallow soil that is underlain by hard bedrock, a hardpan, or other layers that restrict roots. The letter *C* indicates a soil that has a limitation because of the kind or amount of clay in the upper part of the profile. The letter *S* indicates a dry, sandy soil. The letter *F* indicates a soil that has a large amount of coarse fragments. The letter *A* indicates a soil having no significant limitations that affect forest use and management. If a soil has more than one limitation, the priority is as follows: R, X, W, T, D, C, S, and F.

Ratings of the *erosion hazard* indicate the probability that damage may occur if site preparation or harvesting activities expose the soil. The risk is *slight* if no particular preventive measures are needed under ordinary conditions; *moderate* if erosion-control measures are needed for particular silvicultural activities; and *severe* if special precautions are needed to control erosion for most silvicultural activities. Ratings of moderate or severe indicate the need for construction of higher standard roads, additional maintenance of roads, additional care in planning harvesting and reforestation activities, or the use of special equipment.

Ratings of *equipment limitation* indicate limits on the use of forest management equipment, year-round or seasonal, because of such soil characteristics as slope, wetness, stoniness, and susceptibility of the surface layer to compaction. As slope gradient and length increase, it becomes more difficult to use wheeled equipment. On the steeper slopes, tracked equipment is needed. On the steepest slopes, even tracked equipment cannot be operated and more sophisticated systems are needed. The rating is *slight* if equipment use is restricted by wetness for less than 2 months and if special equipment is not needed. The rating is *moderate* if slopes are so steep that wheeled equipment cannot be operated safely across the slope, if wetness restricts equipment use from 2 to 6 months per year, if stoniness restricts the use of ground-based equipment, or if special equipment is needed to prevent or minimize compaction. The rating is *severe* if slopes are so steep that tracked equipment cannot be operated safely across the slope, if wetness restricts equipment use for more than 6 months per year, if stoniness restricts the use of ground-based equipment, or if special equipment is needed to prevent or minimize compaction. Ratings of moderate or severe indicate a need to choose the best suited equipment and to carefully plan the timing of harvesting and other management activities.

Ratings of *seedling mortality* refer to the probability of the death of naturally occurring or properly planted seedlings of good stock in periods of normal rainfall, as influenced by kinds of soil or topographic features. Seedling mortality is caused primarily by too much water or too little water. The factors used in rating a soil for seedling mortality are texture of the surface layer, depth to a seasonal high water table and the length of the period when the water table is high, rock fragments in the surface layer, rooting depth, and the aspect of the slope. The mortality rate generally is highest on soils that have a sandy or clayey surface layer. The risk is *slight* if, after site preparation, expected mortality is less than 25 percent; *moderate* if expected mortality is between 25 and 50 percent; and *severe* if expected mortality exceeds 50 percent. Ratings of moderate or severe indicate that it may be necessary to use containerized or larger than usual planting stock or to make special site preparations, such as bedding, furrowing, installing a surface drainage system, and providing artificial shade for seedlings. Reinforcement planting is often needed if the risk is moderate or severe.

Ratings of *windthrow hazard* indicate the likelihood that trees will be uprooted by the wind. A restricted rooting depth is the main reason for windthrow. The rooting depth can be restricted by a high water table, a fragipan, or bedrock or by a combination of such factors as wetness, texture, structure, and depth. The risk is *slight* if strong winds cause trees to break but do not uproot them; *moderate* if strong winds cause an occasional tree to be blown over and many trees to break; and *severe* if moderate or strong winds commonly blow trees over. Ratings of moderate or severe indicate that care is needed in thinning or that the stand should not be thinned at all. Special equipment may be needed to prevent damage to shallow root systems in partial cutting operations. A plan for the periodic removal of windthrown trees and the maintenance of a road and trail system may be needed.

Ratings of *plant competition* indicate the likelihood of the growth or invasion of undesirable plants. Plant competition is more severe on the more productive soils, on poorly drained soils, and on soils having a restricted root zone that holds moisture. The risk is *slight* if competition from undesirable plants hinders adequate natural or artificial reforestation but does not necessitate intensive site preparation and maintenance. The risk is *moderate* if competition from undesirable plants hinders natural or artificial reforestation to the extent that intensive site preparation and maintenance are needed. The risk is *severe* if competition from undesirable plants prevents adequate natural or artificial reforestation unless the site is intensively prepared and maintained. A moderate or severe rating indicates the need for site preparation to ensure the development of an adequately stocked stand. Managers must plan site preparation measures to ensure reforestation without delays.

The *potential productivity* of *common trees* on a soil is expressed as a *site index*. Common trees are listed in the order of their observed general occurrence. Generally, only two or three species dominate. The first tree listed for each soil is the indicator species for that soil. An indicator species is a tree that is common in the area and that is generally the most productive on a given soil.

The *site index* is determined by taking height measurements and determining the age of selected trees within stands of a given species. This index is the average height, in feet, that the trees attain in a specified number of years. This index applies to fully stocked, even-aged, unmanaged stands.

The *productivity class* represents an expected volume produced by the most important trees, expressed in cubic meters per hectare per year.

Trees to plant are those that are used for reforestation or, under suitable conditions, natural regeneration. They are suited to the soils and can produce a commercial wood crop. The desired product, topographic position (such as a low, wet area), and personal preference are three factors among many that can influence the choice of trees for use in reforestation.

Recreation

In table 5, the soils of the survey area are rated according to the 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 sewer lines. 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 recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In table 5, 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 5 can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 8 and interpretations for dwellings without basements and for local roads and streets in table 7.

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 gentle slopes and are not wet or subject to flooding during the period of use. The surface absorbs rainfall readily but remains firm and is not dusty when dry. Strong slopes 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 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 firm after rains and is not dusty when dry. If grading is needed, the depth of the soil over 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.

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. The suitability of the soil for tees or greens is not considered in rating the soils.

Wildlife Habitat

John F. Vance, Jr., biologist, Natural Resources Conservation Service, helped prepare this section.

Okaloosa County has extensive areas of good wildlife habitat, including areas in the sandhills and flatwoods and areas of cropland interspersed with swamps and hardwoods along rivers and creeks. Important inland areas include the Eglin Air Force Base Reservation (235,000 acres), the Blackwater State Forest (63,000 acres), Hart's Pasture Wildlife Management Area (10,000 acres), and the areas along the Blackwater, Yellow, Shoal, and East Bay Rivers. Important coastal areas include the Choctawhatchee Bay, the Gulf of Mexico, and the coastal strand barrier island, part of which is included in the Gulf Islands National Seashore. Although the barrier island is small, it is especially important to the thousands of migrating birds that cross the Gulf of Mexico during the spring and fall.

The primary game species include white-tailed deer, squirrels, turkey, bobwhite quail, mourning dove, feral hogs, and waterfowl. Nongame species include raccoon, rabbit, armadillo, opossum, skunks, bobcat, gray fox, red fox, otter, and a variety of songbirds, wading birds, woodpeckers, predatory birds, reptiles, and amphibians.

There are about 60 lakes and ponds in Okaloosa County. The largest are Hurricane Lake (400 acres) and Karick Lake (70 acres). These freshwater areas provide good opportunities for fishing. Opportunities for fishing also are provided by the Blackwater, Yellow, Shoal, and East Bay Rivers and their tributaries; the Choctawhatchee Bay; and the Gulf of Mexico. Freshwater species include largemouth bass, channel catfish, bullhead, bluegill, redear, spotted sunfish, warmouth, black crappie, chain pickerel, gar, bowfin, and sucker. Important saltwater species include spotted trout, croaker, striped mullet, flounder, and red drum.

There are a number of endangered and threatened species in Okaloosa County. These species range from the rarely seen red-cockaded woodpecker to the more common southeastern kestrel. A detailed list of these species and information on range and habitat needs are available in the local office of the Natural Resources Conservation Service.

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 6, 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 created, 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 flooding. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, soybeans, wheat, browntop millet, and grain sorghum.

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, flooding, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are bahiagrass, lovegrass, Florida beggarweed, clover, and sesbania.

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 flooding. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are bluestem, goldenrod, beggarweed, partridge pea, and bristlegrass.

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, available water capacity, and wetness. Examples of these plants are oak, palmetto, cherry, sweetgum, wild grape, hawthorn, dogwood, hickory, blackberry, and blueberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are firethorn, wild plum, and American beautyberry.

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, cypress, cedar, and juniper.

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, saltgrass, cordgrass, 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. Wildlife attracted to these areas include bobwhite quail, dove, 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, gray 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, otter, mink, and beaver.

Engineering

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. Ratings are given for 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 should 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 kinds 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 evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, earthfill, and topsoil; plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and 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 7 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 the depth to a cemented pan or to a very firm, dense layer; stone content; 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 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, shrinking and swelling, and organic layers can cause the movement of footings. A high water table, depth to a cemented pan, large stones, slope, and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 or 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. Depth to a cemented pan, a high water table, flooding, large stones, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, frost action 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, depth to bedrock or to a cemented pan, the available water capacity in the upper 40 inches, and the content of salts, sodium, and sulfidic materials affect plant growth. Flooding, wetness, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established.

Sanitary Facilities

Table 8 shows the degree and 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 8 also shows the suitability of the soils for use as daily cover for landfill. 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, depth to a cemented pan, and flooding affect absorption of the effluent. Large stones and cemented pans interfere with installation.

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 are 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 8 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, depth to a cemented pan, flooding, large stones, and content of organic matter.

Excessive seepage resulting from rapid permeability in 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 and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor.

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 groundwater pollution. Ease of excavation and revegetation should be considered.

The ratings in table 8 are based on soil properties, site features, and observed performance of the soils. Permeability, depth to a cemented pan, a high water table, slope, and flooding affect both types of landfill. Texture, stones, highly organic layers, soil reaction, and content of salts and sodium affect trench 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 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 a cemented pan or 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 9 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 to 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 large stones, 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, a 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 a moderate shrink-swell potential, slopes of 15 to 25 percent, or many stones. Depth to the water table is 1 to 3 feet. Soils rated *poor* have a plasticity index of more than 10, a high shrink-swell potential, many stones, or slopes of more than 25 percent. They are wet and have a water table at a depth of less than 1 foot. These soils 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. They are used in many kinds of construction. Specifications for each use vary widely. In table 9, 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), the thickness of suitable material, and the content of rock fragments. 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. Coarse fragments of soft bedrock, such as shale and siltstone, are not considered to be sand and gravel.

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

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 high 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 releases a variety of plant nutrients as it decomposes.

Water Management

Table 10 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; embankments, dikes, and levees; and aquifer-fed excavated ponds. 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 and the depth to permeable material. 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. Unfavorable features include less than 5 feet of suitable material and a high content of stones, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table, permeability of the aquifer, and quality of the water as inferred from the salinity of the soil. The content of large stones affects the ease of excavation.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to a cemented pan or to other 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, susceptibility to flooding, subsidence of organic layers, and the potential for frost action. Excavating and grading and the stability of ditchbanks are affected by depth to a cemented pan, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, or sulfur. 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, intake rate, permeability, erosion hazard, and slope. The construction of a system is affected by large stones and depth to a cemented pan. The performance of a system is affected by the depth of the root zone, the amount of salts or sodium, and soil reaction.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to control erosion and conserve moisture by intercepting runoff. Slope, wetness, large stones, and depth to a cemented pan affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of soil blowing or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Large stones, wetness, slope, and depth to a cemented pan affect the construction of grassed waterways. A hazard of soil blowing, low available water capacity, restricted rooting depth, toxic substances such as salts or sodium, 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 17.

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. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help to characterize key soils.

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classification, 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 11 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 the heading "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 about 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.

Rock fragments 3 to 10 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.

Physical and Chemical Properties

Table 12 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 the 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 earthmoving 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 ⅓-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 and septic tank absorption fields.

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.

Salinity is a measure of soluble salts in the soil at saturation. It is expressed as the electrical conductivity of the saturation extract, in millimhos per centimeter at 25 degrees C. Estimates are based on field and laboratory measurements at representative sites of nonirrigated soils. The salinity of irrigated soils is affected by the quality of the irrigation water and by the frequency of water application. Hence, the salinity of soils in individual fields can differ greatly from the value given in the table. Salinity affects the suitability of a soil for crop production, the stability of soil if used as construction material, and the potential of the soil to corrode metal and concrete.

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 classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; and *high*, more than 6 percent. *Very high*, more 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.

Wind erodibility groups are made up of soils that have similar properties affecting their resistance to soil blowing in cultivated areas. The groups indicate the susceptibility to soil blowing. Soils are grouped according to the following distinctions:

1. Coarse sands, sands, fine sands, and very fine sands. These soils are generally not suitable for crops. They are extremely erodible, and vegetation is difficult to establish.

2. Loamy coarse sands, loamy sands, loamy fine sands, loamy very fine sands, and sapric soil material. These soils are very highly erodible. Crops can be grown if intensive measures to control soil blowing are used.

3. Coarse sandy loams, sandy loams, fine sandy loams, and very fine sandy loams. These soils are highly erodible. Crops can be grown if intensive measures to control soil blowing are used.

4L. Calcareous loams, silt loams, clay loams, and silty clay loams. These soils are erodible. Crops can be grown if intensive measures to control soil blowing are used.

4. Clays, silty clays, noncalcareous clay loams, and silty clay loams that are more than 35 percent clay. These soils are moderately erodible. Crops can be grown if measures to control soil blowing are used.

5. Noncalcareous loams and silt loams that are less than 20 percent clay and sandy clay loams, sandy clays, and hemic soil material. These soils are slightly erodible. Crops can be grown if measures to control soil blowing are used.

6. Noncalcareous loams and silt loams that are more than 20 percent clay and noncalcareous clay loams that are less than 35 percent clay. These soils are very slightly erodible. Crops can be grown if ordinary measures to control soil blowing are used.

7. Silts, noncalcareous silty clay loams that are less than 35 percent clay, and fibric soil material. These soils are very slightly erodible. Crops can be grown if ordinary measures to control soil blowing are used.

8. Soils that are not subject to soil blowing because of coarse fragments on the surface or because of surface wetness.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In table 12, 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 in 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 13 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 infiltration 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.

If a soil is assigned to two hydrologic groups in table 13, the first letter is for drained areas and the second is for undrained areas.

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

Table 13 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, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year); and *frequent* that it occurs often under normal weather conditions (the chance of flooding is more than 50 percent in any year). Duration is expressed as *very brief* (less than 2 days), *brief* (2 to 7 days), *long* (7 days to 1 month), and *very long* (more than 1 month). The time of year that floods are most likely to occur is expressed in months. About two-thirds to three-fourths of all flooding occurs during the stated period.

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 little or no horizon development.

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 estimates are based mainly on the evidence of a saturated zone, namely grayish colors or mottles in the soil. Indicated in table 13 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 13.

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.

Two numbers in the column showing depth to the water table indicate the normal range in depth to a saturated zone. Depth is given to the nearest half foot. The first numeral in the range indicates the highest water level. A plus sign preceding the range in depth indicates that the water table is above the surface of the soil. "More than 6.0" indicates that the water table is below a depth of 6 feet or that it is within a depth of 6 feet for less than a month.

Subsidence is the settlement of organic soils or of saturated mineral soils of very low density. Subsidence generally results from either desiccation and shrinkage or oxidation of organic material, or both, following drainage. Subsidence takes place gradually, usually over a period of several years. Table 13 shows the expected initial subsidence, which usually is a result of drainage, and total subsidence, which results from a combination of factors.

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 hazard of corrosion. 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

Dr. Victor W. Carlisle, professor of soil science, Soil Science Department, University of Florida, Agricultural Experiment Station, prepared this section.

Parameters for physical, chemical, and mineralogical properties of representative pedons sampled in Okaloosa County are presented in tables 14, 15, and

16. The analyses were conducted and coordinated by the Soil Characterization Laboratory at the University of Florida. Detailed profile descriptions of analyzed soils are given in alphabetical order in the section "Classification of the Soils." Profile information and laboratory data for the soils in Okaloosa County and in other counties in Florida are on file at the Soil Science Department, University of Florida.

Typical pedons were sampled from pits at carefully selected locations. Samples were air dried, crushed, and sieved through a 2-millimeter screen. Most of the analytical methods used are outlined in Soil Survey Investigations Report No. 1 *(9)*.

Particle-size distribution was determined using a modified pipette method with sodium hexametaphosphate dispersion. Hydraulic conductivity and bulk density were determined on undisturbed soil cores. Water-retention parameters were obtained from duplicate undisturbed soil cores placed in tempe pressure cells. Weight percentages of water retained at 100 centimeters water (1/10 bar) and 345 centimeters water (1/3 bar) were calculated from volumetric water percentages divided by bulk density. Samples were oven dried and ground to pass a 2-millimeter sieve, and the 15-bar water retention was determined. Organic carbon was determined by a modification of the Walkley-Black wet combustion method.

Extractable bases were obtained by leaching soils with normal ammonium acetate buffered at pH 7.0. Sodium and potassium in the extract were determined by flame emission, and calcium and magnesium were determined by atomic absorption spectrophotometry. Extractable acidity was determined by the barium chloride-triethanolamine method at pH 8.2. Cation-exchange capacity was calculated by summation of extractable bases and extractable acidity. Base saturation is the ratio of extractable bases to cation-exchange capacity expressed in percent. The pH measurements were made with a glass electrode using a soil-water ratio of 1:1; a 0.01 molar calcium chloride solution in a 1:2 soil-solution ratio; and normal potassium chloride solution in a 1:1 soil-solution ratio.

Electrical conductivity determinations were made with a conductivity bridge on 1:1 soil to water mixtures. Iron and aluminum extractable in sodium dithionite-citrate were determined by atomic absorption spectrophotometry. Aluminum, carbon, and iron were extracted from probable spodic horizons with 0.1 molar sodium pyrophosphate. Determination of aluminum and iron was by atomic absorption, and determination of extracted carbon was by the Walkley-Black wet combustion method.

Mineralogy of the clay fraction less than 2 microns was ascertained by x-ray diffraction. Peak heights at 18-angstrom, 14-angstrom, 7.2-angstrom, 4.83-angstrom, and 4.31-angstrom positions represent montmorillonite, interstratified expandable vermiculite or 14-angstrom intergrades, kaolinite, gibbsite, and quartz, respectively. Peaks were measured, added, and normalized to give percent soil minerals identified in the x-ray diffractograms. These percentage values do not indicate absolute determined quantities of soil minerals but do imply a relative distribution of minerals in a particular mineral suite. Absolute percentages would require additional knowledge of particle size, crystallinity, unit structure substitution, and matrix problems.

The results of physical analyses are shown in table 14. Soils sampled for laboratory analyses in Okaloosa County are inherently very sandy, but many pedons have an argillic horizon in the lower part of the solum. Chipley, Foxworth, Kureb, Lakeland, Leon, Mandarin, and Resota soils have more than 90 percent total sand to a depth of 2 meters or more. The content of clay in these soils rarely exceeds 3 percent. Hurricane sand has more than 90 percent sand in all horizons, except for the Bh1 horizon. Deeper argillic horizons in the Bonifay, Dothan, Escambia, Fuquay, Leefield, Notcher, Orangeburg, and Troup soils have enhanced amounts of clay ranging from 14.8 to 28.0 percent. The content of silt ranges from 0.1 percent in the C4 horizon of Foxworth sand to 32.9 percent in the Btg2 horizon of Escambia fine sandy loam. Fine sand dominates the sand fractions of the Bigbee, Dothan, Escambia, Fuquay, Leefield, Notcher, and Orangeburg soils. All horizons of the Bigbee soils contain more than 50 percent fine sand. Medium sand dominates the sand fractions of the Bonifay, Chipley, Foxworth, Hurricane, Kureb, Lakeland, Leon, Mandarin, Resota, and Troup soils. All horizons of the Chipley, Hurricane, Kureb, Lakeland, Leon, Mandarin, and Resota soils contain more than 50 percent sand. All horizons of the Bigbee and Leefield soils have more than 20 percent very fine sand, and all horizons of the Escambia, Notcher, and Orangeburg soils have more than 10 percent. All horizons of the Chipley, Foxworth, Hurricane, Kureb, Lakeland, Leon, Mandarin, and Resota soils have less than 5 percent very fine sand, and Hurricane, Kureb, Leon, Mandarin, and Resota soils contain less than 1 percent. All horizons of Bigbee fine sand and Escambia fine sandy loam contain less than 2 percent coarse sand. All horizons of the Bonifay, Lakeland, and Troup soils contain 10 percent or more coarse sand. The content of coarse sand generally ranges from 2 to 8 percent in all other soils. Very coarse sand is nondetectable throughout all horizons of the Bigbee, Chipley, and Hurricane soils. Most other soils have less than 1 percent very coarse sand.

Excessively sandy soils in Okaloosa County, such as Chipley, Foxworth, Kureb, Lakeland, and Mandarin soils, become very droughty during periods of low precipitation. Conversely, these soils are rapidly saturated when they receive large amounts of rainfall. Soils with inherently poor drainage, such as the Leon soils, may remain saturated because ground water is close to the surface for long periods.

Hydraulic conductivity values exceed 34 centimeters per hour throughout the Foxworth, Kureb, and Lakeland soils. Similarly, values of more than 34 centimeters per hour are recorded for Chipley, Hurricane, and Resota soils to a depth of slightly more than 1 meter. Hydraulic conductivity values in Bonifay, Dothan, Escambia, Fuquay, Leefield, Notcher, and Orangeburg soils rarely exceed 2.0 centimeters per hour in the argillic horizon. Hydraulic conductivity values are less than 1.0 centimeter per hour throughout the profile of Escambia fine sandy loam. Low hydraulic conductivity values at a shallow depth in Dothan, Escambia, and Notcher soils may affect the design and function of septic tank absorption fields. Hydraulic conductivity values in the Bh horizon of the Leon and Mandarin soils are higher than those generally recorded for spodic horizons in most Florida soils. The amount of water available to plants can be estimated from bulk density and water content data. Excessively sandy soils, such as Chipley, Foxworth, Hurricane, Kureb, Lakeland, Leon, Mandarin, and Resota soils, retain very small amounts of available water. Conversely, soils with higher amounts of fine textured materials, such as Dothan, Escambia, and Notcher soils, retain much larger amounts of available water.

The results of chemical analyses are shown in table 15. Most of the soils in Okaloosa County contain small amounts of extractable bases. All soils that were tested contain three or more horizons that have less than 1 milliequivalent per 100 grams extractable bases. Bigbee, Chipley, Dothan, Escambia, Foxworth, Fuquay, Hurricane, Kureb, Leon, Mandarin, Notcher, and Resota soils contain less than 1 milliequivalent per 100 grams extractable bases throughout. Bigbee, Chipley, Foxworth, Hurricane, Kureb, Leon, Mandarin, and Resota soils and Escambia fine sand contain less than 0.5 milliequivalent per 100 grams extractable bases throughout. The relatively mild, humid climate of Okaloosa County results in a rapid depletion of basic cations (calcium, magnesium, potassium, and sodium) through leaching.

Calcium is the dominant base in most of the soils, but magnesium is dominant in Escambia fine sand and Leefield loamy fine sand and in the argillic horizon of the Dothan and Notcher soils and Escambia fine sandy loam. Bigbee, Chipley, Dothan, Escambia, Foxworth, Fuquay, Hurricane, Kureb, Leon, Mandarin, Notcher, and Resota soils contain 0.50 milliequivalent per 100 grams or less extractable calcium throughout. Bigbee, Chipley, Foxworth, Hurricane, Leon, Mandarin, Notcher, and Resota soils and Escambia fine sandy loam contain less than 0.25 milliequivalent per 100 grams extractable calcium. Extractable magnesium exceeds 0.50 milliequivalent per 100 grams in one of the deeper horizons of Escambia fine sandy loam and one of the deeper argillic horizons of Leefield loamy fine sand. Combined amounts of extractable calcium and magnesium rarely exceed 0.50 milliequivalent per 100 grams in the surface layer. The content of sodium is generally less than 0.05 milliequivalent per 100 grams; however, several horizons in the Notcher soils have slightly more than this amount. Except for Troup sand, all of the soils have horizons that have 0.05 milliequivalent per 100 grams or less potassium. Bigbee, Chipley, Dothan, Foxworth, Hurricane, Kureb, Leon, Mandarin, and Resota soils have one or more horizons that have nondetectable amounts of extractable potassium.

Values for cation-exchange capacity, an indicator of nutrient-holding capacity, exceed 10 milliequivalents per 100 grams in the surface layer of the Escambia, Lakeland, Leefield, and Notcher soils. A slightly enhanced cation-exchange capacity parallels the higher clay content in the Bt horizon of the Bonifay, Dothan, Escambia, Fuquay, Leefield, Notcher, Orangeburg, and Troup soils. Soils that have a low cation-exchange capacity in the surface layer, such as Kureb soils, require only a small amount of lime or sulfur to significantly alter both their base status and soil reaction. Generally, soils with inherently low fertility are associated with low values for extractable bases and a low cation-exchange capacity, and fertile soils are associated with high values for extractable bases, a high base saturation value, and a high cation-exchange capacity.

The content of organic carbon is less than 1 percent in all horizons of the Bonifay, Dothan, Fuquay, Kureb, Resota, and Troup soils. In the surface layer of the Bigbee, Chipley, Escambia, Foxworth, Lakeland, Leefield, Notcher, and Orangeburg soils, the organic carbon content ranges from 1.02 to 2.74 percent. The content of organic carbon generally decreases rapidly with increasing depth. It increases, however, in the Bh horizon of the Hurricane, Leon, Mandarin, and Resota soils. Since organic carbon content in the surface layer is directly related to the nutrient- and water-holding capacity of sandy soils, management practices that conserve and maintain organic carbon are highly desirable.

Electrical conductivity values are low for all of the soils sampled in Okaloosa County, ranging from nondetectable amounts to 0.08 millimho per centimeter. Nondetectable electrical conductivity values were recorded for the entire profiles of the Kureb, Leon, and Mandarin soils. These data indicate that the soluble salt content of the soils, except for those in areas immediately adjacent to the Gulf of Mexico, are insufficient to have a detrimental effect on the growth of salt-sensitive plants.

Soil reaction in water generally ranges between pH 4.0 and 5.5. Values in excess of this range occur in the Lakeland and Troup soils. Reaction in the Troup soils ranges from pH 5.5 to 6.1. It ranges from pH 6.9 to 7.1 in the Lakeland soils. With very few exceptions, the reaction in calcium chloride and potassium chloride is less than 1.0 pH unit lower than the reaction in water. The maximum availability of plant nutrients is generally attained when soil reaction is between pH 6.5 and 7.5. In Florida, however, maintaining soil reaction above pH 6.0 is not economically feasible for most kinds of agricultural production.

The ratio of sodium pyrophosphate extractable carbon and aluminum to clay in the Bh horizon of the Hurricane, Leon, and Mandarin soils is sufficient to meet chemical criteria established for spodic horizons. Sodium pyrophosphate extractable iron is 0.03 percent or less in the Bh horizon of the Hurricane, Leon, and Mandarin soils. The ratio of sodium pyrophosphate extractable iron and aluminum to citrate-dithionite extractable iron and aluminum is also sufficient to meet criteria established for spodic horizons in these soils. Sodium pyrophosphate extractable iron does not exceed 0.03 percent or is nondetectable in the Hurricane soils.

Citrate-dithionite extractable iron in the Bt horizon of the Bonifay, Dothan, Escambia, Fuquay, Leefield, Notcher, Orangeburg, and Troup soils ranges from 0.02 to 5.70 percent. Aluminum extracted by citrate-dithionite from the Bt horizon of these soils ranges from 0.05 to 0.56 percent. Larger amounts of citrate-dithionite extractable iron generally occur in the Bt horizon than in the Bh horizon. The amount of iron and aluminum in the soils of Okaloosa County is not sufficient to restrict the availability of phosphorus.

Mineralogy of the sand fractions, which are 0.05 millimeter to 2.0 millimeters in size, is siliceous. Quartz is overwhelmingly dominant in all pedons. Varying amounts of heavy minerals are in most horizons. The greatest concentration is in the very fine sand fraction. The soils have no weatherable minerals. The crystalline mineral components of the clay fraction, which is less than 0.002 millimeter in size, are reported in table 16 for the major horizons of the pedons sampled. The clay mineralogical suite was made up mostly of montmorillonite, a 14-angstrom intergrade, kaolinite, gibbsite, and quartz.

Montmorillonite occurs in the Bigbee, Chipley, Foxworth, Hurricane, Kureb, Lakeland, Leon, Mandarin, and Resota soils. The 14-angstrom intergrade mineral occurs in all horizons of all the soils sampled. Kaolinite also occurs in all horizons of all the soils sampled. Gibbsite was nondetectable in the Escambia, Fuquay, Leefield, Leon, Mandarin, and Resota soils. Varying amounts of gibbsite occurs in the Bigbee, Bonifay, Chipley, Dothan, Foxworth, Hurricane, Lakeland, Notcher, Orangeburg, and Troup soils. Quartz occurs throughout all of the soils that were sampled. The amounts of calcite and mica are insufficient for the assignment of numerical values.

Montmorillonite in the soils in Okaloosa County appears to have been inherited from the sediments in which the soils formed. It generally occurs most abundantly in poorly drained soils where the alkaline elements have not been leached by percolating rainwater; however, montmorillonite can occur in moderate amounts regardless of present drainage or chemical conditions. It is probably the least stable mineral component in the present acidic environment. It is a major constituent of the clay minerals occurring in the Kureb, Leon, and Resota soils. Because all of these soils are composed of more than 90 percent sand and very small amounts of clay, the amount of shrinking and swelling is negligible. None of the soils sampled in Okaloosa County contain enough montmorillonite to create construction problems.

The 14-angstrom intergrade, a mineral of uncertain origin, is widespread in Florida soils. It tends to be more prevalent under moderately acidic, relatively well drained conditions, although it occurs in a variety of soil environments. This mineral is a major constituent of sand grain coatings in the Bigbee, Chipley, Kureb, Lakeland, and Resota soils. The amount of coatings in the Bigbee, Chipley, and Lakeland soils is sufficient to meet taxonomic criteria established for the recognition of coated classes of Quartzipsamments. The amount of coatings in the Kureb and Resota soils is not sufficient to meet these criteria. The occurrence of relatively large amounts of 14-angstrom intergrades and the general tendency for these minerals to decrease in quantity with increasing depth suggest that the 14-angstrom intergrade minerals are among the most stable species in this weathering environment.

Kaolinite was most likely inherited from the parent material, but it may have formed as a weathering product of other minerals. It is relatively stable in the acidic environment of the soils in Okaloosa County. The general tendency of kaolinite to increase in abundance with increasing depth indicates that this mineral species is less stable than the 14-angstrom intergrades in the severe weathering environment near the surface. Gibbsite is dominant in the Notcher, Orangeburg, and Troup soils but nondetectable in the Escambia, Fuquay, Kureb, Leefield, Leon, Mandarin, and Resota soils. This inconsistent occurrence of gibbsite is suggestive of inherited soil properties. Clay-sized quartz has primarily resulted from decrements of the silt fraction. As is usual for Florida soils, mica occurs infrequently and in very small amounts. Soils that are dominated by montmorillonite and 14-angstrom intergrades have a much higher cation-exchange capacity and retain more plant nutrients than soils with a similar total clay content that are dominated by kaolinite, gibbsite, or quartz.

Engineering Index Test Data

Table 17 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 Soil Laboratory, Florida Department of Transportation, Bureau of Materials and Research.

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 422 (ASTM), D 2217 (ASTM); Liquid limit—T 89 (AASHTO), D 4318 (ASTM); Plasticity index—T 90 (AASHTO), D 4318 (ASTM); and Moisture density—T 99 (AASHTO), D 698 (ASTM).

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories *(8)*. 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 18 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Eleven 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 Psammaquents (*Psamm*, meaning sand texture, plus *aquent*, the suborder of the Entisols that has 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 Psammaquents.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, 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 siliceous, thermic Typic Psammaquents.

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" *(8)*. 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."

Albany Series

The Albany series consists of very deep, somewhat poorly drained, moderately permeable soils that formed in sandy and loamy sediments. These soils are on broad, nearly level or gently sloping uplands. A seasonal high water table is at a depth of 12 to 30 inches for 1 to 4 months annually. Slopes range from 0 to 5 percent. The soils are loamy, siliceous, thermic Grossarenic Paleudults.

Albany soils are associated with Bibb, Bonifay, Fuquay, Kinston, Lakeland, Leefield, and Stilson soils. Bibb and Kinston soils are poorly drained. Bonifay soils are better drained than the Albany soils. Fuquay, Leefield, and Stilson soils have a Bt horizon at a depth of 20 to 40 inches. Lakeland soils do not have a Bt horizon.

Typical pedon of Albany loamy sand, 0 to 5 percent slopes, 1,050 feet west and 1,575 feet south of the northeast corner of sec. 28, T. 3 N., R. 23 W.

A—0 to 6 inches; very dark grayish brown (10YR 3/2) loamy sand; weak fine granular structure; loose; common fine and medium roots; very strongly acid; clear smooth boundary.

E1—6 to 14 inches; yellowish brown (10YR 5/4) loamy sand; single grained; loose; common fine roots; very strongly acid; gradual smooth boundary.

E2—14 to 22 inches; light yellowish brown (10YR 6/4) loamy sand; single grained; loose; few fine roots; strongly acid; gradual smooth boundary.

E3—22 to 35 inches; light yellowish brown (10YR 6/4) loamy sand; few fine faint light gray (10YR 7/2), few fine prominent brownish yellow (10YR 6/8), and common medium distinct light gray (10YR 7/1) mottles; single grained; loose; strongly acid; gradual smooth boundary.

E4—35 to 43 inches; light gray (10YR 7/2) loamy sand; common medium distinct light gray (10YR 7/1), few fine distinct brownish yellow (10YR 6/8), and few fine faint light brownish gray (10YR 6/2) mottles; single grained; loose; strongly acid; clear smooth boundary.

Btg1—43 to 66 inches; light gray (10YR 7/2) fine sandy loam; common medium distinct light gray (10YR 7/1), few fine distinct brownish yellow (10YR 6/8), and few fine faint light brownish gray (10YR 6/2) mottles; weak medium subangular blocky structure; very friable; strongly acid; clear smooth boundary.

Btg2—66 to 80 inches; light gray (10YR 7/2) sandy clay loam; common medium distinct yellow (10YR 7/6) mottles; weak medium subangular blocky structure; friable; strongly acid.

The solum is more than 80 inches thick. Reaction ranges from medium acid to extremely acid.

The A or Ap horizon has hue of 10YR or 2.5Y, value of 3 to 6, and chroma of 1 or 2. It is 6 to 12 inches thick. It is sand, fine sand, loamy sand, or loamy fine sand.

The E horizon has hue of 10YR or 2.5Y, value of 5 to 8, and chroma of 1 to 8. In some pedons it has few or common mottles in shades of white, gray, yellow, olive, red, and brown. Mottles that have chroma of 2 or less are within a depth of 30 inches. The texture is sand or loamy sand. Clean sand grains are common. The combined thickness of the A and E horizons ranges from 40 to less than 80 inches.

The Btg horizon has hue of 10YR, 7.5YR, or 2.5Y or is neutral in hue. It has value of 4 to 8 and chroma of 0 to 8. In some pedons the lower part of the Btg horizon has no dominant matrix color and is mottled in shades of red, yellow, and gray. The texture of the Btg horizon is sandy loam or sandy clay loam. The content of clay in the upper 20 inches ranges from 18 to 35 percent.

Angie Series

The Angie series consists of very deep, moderately well drained, slowly permeable soils that formed in clayey marine sediments. These soils are on gently sloping uplands. Evidence of prolonged wetness is at a depth of 36 to 60 inches. Slopes range from 0 to 5 percent. The soils are clayey, mixed, thermic Aquic Paleudults.

Angie soils are associated with Cowarts, Dothan, Fuquay, Orangeburg, and Notcher soils. These associated soils have a Bt horizon that contains less than 35 percent clay. Also, Dothan, Fuquay, and Notcher soils have a layer that contains more than 5 percent plinthite within a depth of 60 inches.

Typical pedon of Angie sandy loam, 2 to 5 percent slopes, 850 feet south and 1,900 feet west of the northeast corner of sec. 6, T. 5 N., R. 24 W.

A—0 to 6 inches; yellowish brown (10YR 5/4) sandy loam; weak fine subangular blocky structure; friable; many fine and few medium roots; strongly acid; clear smooth boundary.

Bt1—6 to 14 inches; strong brown (7.5YR 5/6) silty clay loam; few fine distinct light olive brown (2.5Y 5/6) mottles; moderate medium subangular blocky structure; friable; many fine and few medium roots; strongly acid; clear smooth boundary.

Bt2—14 to 26 inches; strong brown (7.5YR 5/6) silty clay; few fine distinct red (2.5YR 4/6) and yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; friable; few fine roots; strongly acid; gradual wavy boundary.

Bt3—26 to 47 inches; yellowish brown (10YR 5/6) clay; common medium prominent red (2.5YR 4/6) and yellowish red (5YR 5/6) and common medium distinct light gray (10YR 7/1) mottles; weak coarse subangular blocky structure; friable; few very fine roots; strongly acid; gradual wavy boundary.

Bg—47 to 80 inches; grayish brown (2.5Y 5/2) clay; common medium prominent yellowish brown (10YR 5/6) and brownish yellow (10YR 6/6) and few medium distinct light gray (5Y 7/1) mottles; massive; firm; strongly acid.

The solum is more than 60 inches thick. Reaction is strongly acid or very strongly acid throughout the profile.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 1 to 4. It is 3 to 9 inches thick.

The AE or E horizon, if it occurs, has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 to 4. It is 3 to 8 inches thick.

The B or BE horizon, if it occurs, has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 to 4. It is 3 to 8 inches thick.

The upper part of the Bt horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 4 to 8. Gray mottles that have chroma of 2 or less are within a depth of 30 inches. The Bt horizon is silty clay loam, clay loam, or clay. The content of clay ranges from 35 to 50 percent. The Bt horizon is 20 to 50 inches thick. The lower part of the Bt horizon or the Bg horizon has hue of 2.5Y or 5Y, value of 5 to 7, and chroma of 1 or 2.

The BC horizon, if it occurs, has colors similar to those of the lower part of the Bt horizon. It is silty clay loam, clay loam, or clay.

Bibb Series

The Bibb series consists of very deep, poorly drained, moderately permeable soils that formed in stratified, loamy and sandy alluvial sediments. These soils are on flood plains along creeks, streams, and rivers. They are commonly flooded, and they are saturated in the winter and early spring. Slopes generally range from 0 to 2 percent, but short, steep slopes that are as much as 5 feet high are along stream meanders. The soils are coarse-loamy, siliceous, acid, thermic Typic Fluvaquents.

Bibb soils are associated with Chipley, Dorovan, Escambia, Johnston, Kinston, and Rutlege soils. Chipley and Escambia soils are on adjacent uplands. They are better drained than the Bibb soils. Dorovan soils are on flood plains and in depressions. They are organic and are more poorly drained than the Bibb soils. Johnston and Kinston soils are on flood plains. Johnston soils are more poorly drained than the Bibb soils. Kinston soils have more than 18 percent clay in the control section. Rutlege soils are in low, flat depressions and in ponded areas. They have an umbric epipedon and are sandy throughout.

Typical pedon of Bibb loam, in an area of Kinston, Johnston, and Bibb soils, frequently flooded; on the flood plain along the Blackwater River, 2,250 feet east and 350 feet south of the northwest corner of sec. 10, T. 4 N., R. 25 W.

A—0 to 6 inches; very dark gray (10YR 3/1) loam; weak fine granular structure; friable; many fine, medium, and coarse roots; strongly acid; clear wavy boundary.

Cg1—6 to 20 inches; dark grayish brown (10YR 4/2) silt loam; few fine distinct brown (10YR 5/3) mottles; weak medium subangular blocky structure; friable; common fine and medium roots; very strongly acid; clear wavy boundary.

Cg2—20 to 80 inches; light gray (10YR 7/2) sandy loam; single grained; loose; common thin strata of loamy sand and silt loam; very strongly acid.

Reaction is strongly acid or very strongly acid.

The A horizon has hue of 10YR, value of 2 to 4, and chroma of 1 to 3. It is 6 to 20 inches thick.

The C horizon has hue of 10YR or 2.5Y or is neutral in hue. It has value of 3 to 7 and chroma of 0 to 2. In some pedons it is mottled in shades of brown or yellow. The 10- to 40-inch control section is stratified sand, loamy sand, loamy fine sand, sandy loam, fine sandy loam, or silt loam. The average content of clay is less than 18 percent. In some pedons the C horizon has a high content of organic matter.

Bigbee Series

The Bigbee series consists of very deep, excessively drained, rapidly permeable soils that formed in sandy fluvial sediments near rivers and large streams. These soils are subject to flooding. They have a seasonal high water table at a depth of 42 to 72 inches for about 1 to 2 months during most years. Slopes range from 0 to 5 percent. The soils are thermic, coated Typic Quartzipsamments.

Bigbee soils are associated with Bibb, Garcon, Johnston, Kinston, Rutlege, and Yemassee soils. These associated soils are more poorly drained than the Bigbee soils.

Typical pedon of Bigbee fine sand, in an area of Yemassee, Garcon, and Bigbee soils, occasionally flooded; 1,950 feet east and 2,100 feet south of the northwest corner of sec. 11, T. 2 N., R. 24 W.

A—0 to 6 inches; very dark grayish brown (10YR 3/2) fine sand; single grained; loose; many fine, medium, and coarse roots; very strongly acid; clear wavy boundary.

AC—6 to 9 inches; brown (10YR 5/3) fine sand; single grained; loose; common fine and medium roots; very strongly acid; clear wavy boundary.

C1—9 to 22 inches; light yellowish brown (10YR 6/4) loamy fine sand; single grained; loose; common fine and medium roots; very strongly acid; clear wavy boundary.

C2—22 to 40 inches; very pale brown (10YR 7/4) sand; few medium distinct white (10YR 8/2) mottles; single grained; loose; common fine roots; very strongly acid; clear wavy boundary.

C3—40 to 51 inches; very pale brown (10YR 7/3) sand; common medium distinct white (10YR 8/2) mottles; single grained; loose; few fine roots; very strongly acid; clear wavy boundary.

C4—51 to 80 inches; white (10YR 8/2) sand; common medium prominent very pale brown (10YR 7/3) mottles; single grained; loose; few fine roots; very strongly acid.

The sand and loamy sand are more than 80 inches thick. The soils do not have lamellae. Reaction ranges from medium acid to very strongly acid.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 2 to 4. It is 4 to 8 inches thick.

The AC horizon, if it occurs, has hue of 10YR, value of 3 to 5, and chroma of 2 to 4. It is 0 to 3 inches thick.

The upper part of the C horizon has hue of 10YR, value of 5 to 7, and chroma of 4 or 5. It is 6 to 30 inches thick. The lower part of the C horizon has hue of 10YR, value of 6 to 8, and chroma of 1 to 3. In some pedons, the C horizon is mottled in shades of white, yellow, brown, red, and gray. The particle-size control section contains 5 to 10 percent silt and clay. A few pedons have pockets of uncoated sand grains. Some pedons are underlain by coarse sand or gravel at a depth of 6 to 16 feet.

Bonifay Series

The Bonifay series consists of very deep, well drained, moderately permeable soils that formed in sandy and loamy marine sediments. These soils are on broad, nearly level to sloping ridges and side slopes. A high water table is at a depth of 48 to 60 inches for short periods after heavy rainfall. These soils are dry during the summer. Slopes range from 0 to 8 percent. The soils are loamy, siliceous, thermic Grossarenic Plinthic Paleudults.

Bonifay soils are associated with Albany, Dothan, Escambia, Fuquay, Leefield, Lucy, Notcher, Stilson, and Troup soils. Albany and Escambia soils have a seasonal high water table that is closer to the surface than that in the Bonifay soils. Dothan and Notcher soils have an A horizon that is less than 20 inches thick. Fuquay, Leefield, Lucy, and Stilson soils have an argillic horizon at a depth of 20 to 40 inches. Troup soils have an argillic horizon that has hue of 7.5YR or redder. Also, they have less than 5 percent plinthite within a depth of 60 inches.

Typical pedon of Bonifay sand, 0 to 5 percent slopes, 1,400 feet north and 1,800 feet east of the southwest corner of sec. 33, T. 4 N., R. 25 W.

A—0 to 7 inches; very dark grayish brown (10YR 3/2) sand; single grained; loose; common fine and medium roots; strongly acid; abrupt wavy boundary.

E1—7 to 28 inches; yellowish brown (10YR 5/6) loamy sand; single grained; loose; few fine and medium roots; strongly acid; clear wavy boundary.

E2—28 to 44 inches; yellowish brown (10YR 5/6) loamy sand; single grained; loose; many uncoated sand grains; few ironstone pebbles that are 5 to 30 millimeters in diameter; few fine roots; very strongly acid; clear wavy boundary.

Btv1—44 to 59 inches; brownish yellow (10YR 6/6) sandy loam; common medium distinct light brownish gray (2.5Y 6/2) mottles; weak medium subangular blocky structure; friable; about 8 to 10 percent, by volume, firm brittle plinthite nodules; strongly acid; abrupt wavy boundary.

Btv2—59 to 80 inches; brownish yellow (10YR 6/8) sandy clay loam; common medium distinct yellow (10YR 7/8) and light gray (10YR 7/2) and common medium prominent yellowish red (5YR 5/8) mottles; moderate medium subangular blocky structure; friable; few thin discontinuous ironstone clastics that are 11 millimeters by 45 millimeters; strongly acid.

The solum ranges from 60 to more than 80 inches in thickness. Reaction is strongly acid or very strongly acid throughout the profile. The content of ironstone pebbles that are 2 to 15 millimeters in diameter ranges from 1 to 5 percent, by volume. Depth to a horizon that contains more than 5 percent plinthite is commonly 50 to 60 inches but ranges from 42 to 60 inches.

The A or Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 1 to 3. It is 3 to 8 inches thick.

The E horizon has hue of 10YR, value of 5 to 8, and chroma of 3 to 8. It is 37 to 52 inches thick. The texture is sand or loamy sand. In some pedons this horizon has masses of uncoated sand grains that have hue of 10YR, value of 7 or 8, and chroma of 1 or 2.

The BE horizon, if it occurs, is typically sandy loam but ranges to sandy clay loam. In some pedons it does not have mottles or plinthite.

The Bt or Btv horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 4 to 8. It is mottled in shades of yellow, brown, or red. It is sandy loam or sandy clay loam and has 15 to 35 percent clay and less than 20 percent silt. In some pedons the Btv horizon is firm and compact and contains 5 to 25 percent, by volume, firm, brittle plinthite. In some pedons the Bt or Btv horizon is reticulately mottled in shades of red, yellow, brown, and gray.

Chipley Series

The Chipley series consists of very deep, somewhat poorly drained, rapidly permeable soils that formed in sandy marine sediments. These soils are on nearly level to sloping uplands and on nearly level, low ridges in the flatwoods. A seasonal high water table is at a depth of 20 to 40 inches for 2 to 4 months during most years. Slopes range from 0 to 5 percent. The soils are thermic, coated Aquic Quartzipsamments.

Chipley soils are associated with Albany, Foxworth, Hurricane, Lakeland, Leon, Mandarin, Rutlege, and Troup soils. Albany and Troup soils have a loamy subsoil. Foxworth and Lakeland soils are better drained than the Chipley soils. Hurricane, Leon, and Mandarin soils have a spodic horizon. Rutlege soils are more poorly drained than the Chipley soils.

Typical pedon of Chipley sand, in an area of Chipley and Hurricane soils, 0 to 5 percent slopes; 1,300 feet east and 850 feet south of the northwest corner of sec. 18, T. 2 N., R. 23 W.

A—0 to 6 inches; very dark gray (10YR 3/1) sand; single grained; loose; organic matter and uncoated sand grains have a salt-and-pepper appearance; many fine, medium, and coarse roots; extremely acid; clear wavy boundary.

AC—6 to 15 inches; dark grayish brown (10YR 4/2) sand; single grained; loose; many fine, medium, and coarse roots; common uncoated sand grains; very strongly acid; clear wavy boundary.

C1—15 to 20 inches; light yellowish brown (10YR 6/4) sand; common medium distinct strong brown (7.5YR 5/6) mottles along root channels; single grained; loose; many fine, medium, and coarse roots; common uncoated sand grains; very strongly acid; gradual wavy boundary.

C2—20 to 34 inches; light yellowish brown (10YR 6/4) sand; common medium distinct strong brown (7.5YR 5/6) mottles that have red (2.5YR 5/8) centers around root channels; common medium distinct light gray (10YR 7/2) mottles; single grained; loose; common fine and medium roots; many uncoated sand grains; very strongly acid; gradual wavy boundary.

C3—34 to 48 inches; brownish yellow (10YR 6/6) sand; many medium distinct strong brown (7.5YR 5/6) mottles along root channels; many medium distinct light gray (10YR 7/2) mottles; single grained; loose; few fine roots; many uncoated sand grains; very strongly acid; gradual wavy boundary.

C4—48 to 61 inches; very pale brown (10YR 7/4) sand; many medium distinct strong brown (7.5YR 5/6) and light gray (10YR 7/2) mottles; single grained; loose; few fine roots; many uncoated sand grains; very strongly acid; gradual wavy boundary.

C5—61 to 80 inches; white (10YR 8/1) sand; single grained; loose; uncoated sand grains; medium acid.

The soils are sand or fine sand to a depth of 80 inches or more. The content of silt and clay at a depth of 10 to 40 inches is 5 to 10 percent. Reaction ranges from very strongly acid to medium acid throughout the profile, except in areas where lime has been applied.

The A or Ap horizon has hue of 10YR, value of 2 to 5, and chroma of 1 or 2. It is generally 4 to 20 inches thick, but where value is 3 or less, this horizon is less than 10 inches thick.

The AC horizon, if it occurs, has colors and textures similar to those of the A horizon.

The C horizon has hue of 10YR, 7.5YR, 2.5Y, or 5Y, value of 5 to 8, and chroma of 1 to 6. The upper part commonly has chroma of 3 to 6, and the lower part has chroma of 1 to 3. Common or many gray mottles are at a depth of 20 to 40 inches. Some pedons have a few streaks of gray or light gray uncoated sand grains along root channels in the upper part of the C horizon.

Corolla Series

The Corolla series consists of moderately well drained and somewhat poorly drained, very rapidly permeable soils. These soils formed in thick deposits of marine sands that have been reworked by wind and wave action. They are nearly level to sloping and are on flat and gentle slopes between dunes and next to depressions and sloughs along the coast. A seasonal high water table is at a depth of 18 to 36 inches for 2 to 6 months annually. The water table is at a depth of 36 to 60 inches during the rest of the year. Slopes range from 2 to 6 percent. The soils are thermic, uncoated Aquic Quartzipsamments.

Corolla soils are associated with Foxworth, Kureb, Lakeland, Mandarin, Newhan, and Resota soils. Foxworth and Lakeland soils have a yellow substratum. Kureb and Resota soils have a yellow subsoil. Mandarin soils have a spodic horizon. Newhan soils are excessively drained.

Typical pedon of Corolla sand, in an area of Newhan-Corolla complex, rolling; 5,000 feet west of the entrance to the U.S. Coast Guard Office Building on U.S. Highway 98 and 400 feet south of U.S. Highway 98:

A—0 to 3 inches; light gray (10YR 6/1) sand; single grained; loose; medium acid; clear wavy boundary.

C1—3 to 20 inches; light gray (10YR 7/1) sand; single

grained; loose; medium acid; gradual wavy boundary.
C2—20 to 80 inches; light gray (10YR 7/2) sand; single grained; loose; medium acid.

The soils are sand or fine sand to a depth of 80 inches or more. Reaction ranges from medium acid to mildly alkaline throughout.

The A horizon has hue of 10YR or 2.5Y or is neutral in hue. It has value of 3 to 7 and chroma of 0 to 3. It is 2 to 8 inches thick.

The C horizon has hue of 10YR or 2.5Y or is neutral in hue. It has value of 4 to 7 and chroma of 0 to 2. In some pedons it has few high-chroma mottles.

The Ab horizon, if it occurs, is at a depth of 24 to 72 inches. It has colors similar to those of the A horizon. It contains few or common pieces of undecomposed plant material.

The Cb horizon, if it occurs, has hue of 10YR or 2.5Y or is neutral in hue. It has value of 4 to 7 and chroma of 0 to 2.

Cowarts Series

The Cowarts series consists of very deep, well drained, slowly permeable soils that formed in sandy and loamy marine sediments. These soils are on sloping to strongly sloping side slopes along creeks and drainageways on the Coastal Plain and in the uplands. Slopes range from 5 to 12 percent. The soils are fine-loamy, siliceous, thermic Typic Kanhapludults.

Cowarts soils are associated with Bonifay, Dothan, Fuquay, Lakeland, Orangeburg, and Troup soils. The solum of the Bonifay, Dothan, Fuquay, Orangeburg, and Troup soils is more than 60 inches thick. Lakeland soils are sandy throughout.

Typical pedon of Cowarts loamy sand, in an area of Troup-Orangeburg-Cowarts complex, 5 to 12 percent slopes; 450 feet east and 1,300 feet south of the northwest corner of sec. 14, T. 4 N., R. 25 W.

A—0 to 4 inches; yellowish brown (10YR 5/4) loamy sand; weak fine granular structure; friable; common fine and medium roots; strongly acid; abrupt wavy boundary.
E—4 to 15 inches; brownish yellow (10YR 6/6) loamy sand; weak fine granular structure; friable; common fine and medium roots; strongly acid; clear wavy boundary.
Bt—15 to 26 inches; yellowish brown (10YR 5/8) sandy clay loam; weak medium subangular blocky structure; friable; few fine faint pale brown (10YR 6/3) and red (2.5YR 4/6) mottles; few fine and medium roots; strongly acid; clear wavy boundary.
Btv—26 to 32 inches; yellowish brown (10YR 5/8) sandy clay loam; weak medium subangular blocky structure; firm; few fine faint pale brown (10YR 6/3) and red (2.5YR 4/6) mottles; approximately 5 percent plinthite; strongly acid; gradual smooth boundary.
BC—32 to 38 inches; reticulately mottled yellowish brown (10YR 5/6), light gray (10YR 7/1), yellow (10YR 7/8), strong brown (7.5YR 5/6), and yellowish red (5YR 5/6) sandy clay loam that has pockets or strata of finer or coarser textured material; massive; firm; strongly acid; abrupt wavy boundary.
C—38 to 60 inches; reticulately mottled yellow (10YR 7/6), white (10YR 8/1), yellowish red (5YR 5/8), and reddish yellow (5YR 6/8 and 7/6) sandy loam, sandy clay loam, and clay loam; massive; friable; strongly acid.

The thickness of the solum ranges from 20 to 40 inches. Reaction is strongly acid or very strongly acid throughout the profile.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 2 to 4. It is 4 to 6 inches thick.

The E horizon has hue of 10YR, value of 4 to 6, and chroma of 4 to 8. It is 4 to 12 inches thick.

Some pedons have a thin BE horizon. This horizon has hue of 10YR, 7.5YR, or 2.5Y, value of 5 or 6, and chroma of 4 to 8. It is sandy loam or fine sandy loam.

The Bt horizon has hue of 10YR to 5YR, value of 5 or 6, and chroma of 4 to 8. The texture is commonly sandy clay loam, but it ranges to sandy clay in the lower part of the horizon. The content of plinthite is as much as 5 percent. The Bt horizon is 12 to 34 inches thick.

The BC horizon has colors similar to those of the Bt horizon or is reticulately mottled. It is mottled in shades of gray, red, and brown. The texture ranges from sandy loam to sandy clay. The BC horizon is as much as 10 inches thick.

The C horizon has hue of 10YR, 7.5YR, 5YR, or 2.5YR, value of 4 to 7, and chroma of 2 to 8. It has mottles in shades of gray, brown, red, and yellow. It ranges from loamy sand to sandy clay. Pockets of material coarser or finer than the matrix are common.

Dorovan Series

The Dorovan series consists of very deep, very poorly drained, moderately permeable soils that formed in decomposed woody and herbaceous plant remains. These soils are on broad, nearly level flood plains along the major streams and in large hardwood swamps. Internal drainage is impeded by a high water table that is near the surface most of the year. Slopes are less than 1 percent. The soils are dysic, thermic Typic Medisaprists.

Dorovan soils are associated with Chipley, Kinston, Pickney, and Rutlege soils. These associated soils are mineral soils.

Typical pedon of Dorovan muck, frequently flooded, in a swamp, 2,650 feet east and 600 feet north of the southwest corner of sec. 8, T. 1 S., R. 24 W.

Oe—0 to 4 inches; very dark grayish brown (10YR 3/2) mucky peat; black when rubbed and pressed; approximately 60 percent fiber unrubbed and rubbed; 25.8 percent mineral content; massive; nonsticky; many fine, medium, and coarse roots; extremely acid; clear wavy boundary.

Oa1—4 to 60 inches; black (10YR 2/1) muck that remains black when rubbed and pressed; less than 5 percent fiber unrubbed and rubbed; 22.3 percent mineral content; massive; nonsticky; common fine roots; extremely acid; gradual wavy boundary.

Oa2—60 to 80 inches; very dark brown (10YR 2/2) muck; black unrubbed and rubbed; 23.4 percent mineral content; massive; nonsticky; few fine roots; extremely acid.

The organic material is more than 51 inches thick. Reaction is extremely acid in the organic layers.

The Oe and Oa horizons have hue of 10YR to 5YR or are neutral in hue. They have value of 2 or 3 and chroma of 0 to 2. In the Oa horizon, the content of unrubbed fiber is generally less than 30 percent and the content of rubbed fiber is less than 10 percent.

Some pedons have a C horizon. This horizon is sand that is various shades of gray and brown.

Dothan Series

The Dothan series consists of very deep, well drained, moderately slowly permeable soils that formed in loamy marine sediments. These soils are on nearly level to sloping uplands. The water table is perched at a depth of 36 to 60 inches after periods of heavy rainfall. Slopes range from 0 to 8 percent. The soils are fine-loamy, siliceous, thermic Plinthic Kandiudults.

Dothan soils are associated with Angie, Bonifay, Escambia, Fuquay, Leefield, Lucy, Notcher, Orangeburg, Pansey, Stilson, and Troup soils. Angie soils have more clay in the Bt horizon than the Dothan soils. Bonifay, Fuquay, Leefield, Lucy, Stilson, and Troup soils have a Bt horizon at a depth of more than 20 inches. Escambia soils are moderately well drained. Notcher soils have more than 5 percent ironstone in the A and E horizons and the upper part of the Bt horizon and do not have plinthite. Orangeburg soils do not have plinthite. Pansey soils are poorly drained and are ponded.

Typical pedon of Dothan loamy sand, 0 to 2 percent slopes, 1,300 feet east and 1,900 feet north of the southwest corner of sec. 31, T. 5 N., R. 22 W.

A—0 to 5 inches; very dark grayish brown (10YR 3/2) loamy sand; weak medium granular structure; loose; many fine, medium, and coarse roots; very strongly acid; clear wavy boundary.

BE—5 to 12 inches; yellowish brown (10YR 5/6) loamy sand; weak medium granular structure; loose; common fine and medium roots; strongly acid; clear wavy boundary.

Bt—12 to 38 inches; yellowish brown (10YR 5/6) sandy clay loam; weak medium subangular blocky structure; friable; common fine and medium roots; medium acid; clear wavy boundary.

Btv1—38 to 56 inches; yellowish brown (10YR 5/8) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; about 5 to 10 percent, by volume, plinthite nodules; very strongly acid; abrupt wavy boundary.

Btv2—56 to 63 inches; brownish yellow (10YR 6/8) and reddish yellow (7.5YR 7/8) sandy clay loam; few fine distinct white (10YR 8/2) mottles; moderate medium subangular blocky structure; firm; about 5 to 10 percent, by volume, plinthite nodules; few indurated ironstone pebbles; very strongly acid; abrupt wavy boundary.

Btv3—63 to 80 inches; brownish yellow (10YR 6/8) and reddish yellow (7.5YR 7/8) sandy clay loam; common medium distinct white (10YR 8/2) mottles; moderate medium subangular blocky structure; firm; about 1 to 5 percent, by volume, plinthite nodules; few indurated ironstone pebbles; very strongly acid.

The thickness of the solum ranges from 60 to more than 80 inches. The depth to horizons that contain more than 5 percent plinthite ranges from 24 to 60 inches. The content of ironstone pebbles is 0 to 5 percent, by volume, in the A and E horizons and in the upper part of the Bt horizon. Reaction ranges from medium acid to extremely acid throughout the profile.

The A or Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 2 or 3. It is 4 to 9 inches thick.

The BE horizon has hue of 10YR, value of 5 or 6, and chroma of 3 to 6. It is as much as 10 inches thick. It is loamy sand or sandy loam.

The Bt and Btv horizons have hue of 10YR or 7.5YR, value of 5 to 7, and chroma of 6 to 8. They have few to many mottles in shades of red, white, brown, and gray. The white or gray mottles are at a depth of more than 30 inches. The texture is generally sandy clay loam or sandy loam, but it ranges to sandy clay in the lower part of the Btv horizon.

Duckston Series

The Duckston series consists of very deep, very poorly drained, very rapidly permeable soils that formed in sandy sediments. These soils are in nearly level marshes bordering the Intracoastal Waterway and the Choctawhatchee Bay. The water table is within a depth of 10 inches during most of the year. The soils are frequently flooded by salt water. Slopes range from 0 to 2 percent. The soils are siliceous, thermic Typic Psammaquents.

Duckston soils are associated with Leon and Rutlege soils. These soils are not commonly flooded by salt water. Leon soils have a spodic horizon. Rutlege soils have an umbric epipedon.

Typical pedon of Duckston sand, frequently flooded, 2,200 feet east of the Santa Rosa County line, on Santa Rosa Island, on Eglin Air Force Base, 100 feet north of Eglin Road 242:

A—0 to 12 inches; light brownish gray (10YR 6/2) sand; grayish brown (10YR 5/2) root stains; single grained; nonsticky; common fine roots; moderately alkaline; gradual wavy boundary.

Cg1—12 to 38 inches; light gray (10YR 7/1) sand; single grained; nonsticky; moderately alkaline; gradual wavy boundary.

Cg2—38 to 50 inches; light gray (10YR 7/2) sand; single grained; nonsticky; moderately alkaline; gradual wavy boundary.

Cg3—50 to 80 inches; white (10YR 8/1) sand; single grained; nonsticky; moderately alkaline.

The soils are sand or fine sand to a depth of 80 inches or more. Reaction ranges from medium acid to moderately alkaline. In some pedons the soil contains a few black heavy minerals. Some pedons have a slight sulfur odor below the surface horizon. The content of sulfur is less than 0.7 percent.

The Oe horizon, if it occurs, has hue of 10YR, value of 2 or 3, and chroma of 1 or 2. The content of fiber is less than 5 percent. The Oe horizon is generally 4 to 8 inches thick.

The A horizon has hue of 10YR or 2.5Y or is neutral in hue. It has value of 2 to 6 and chroma of 0 to 2. It is 9 to 34 inches thick.

The Cg horizon has hue of 10YR, 2.5Y, or 5Y or is neutral in hue. It has value of 5 to 7 and chroma of 0 to 2. In some pedons, this horizon has few or common fine or medium, brown or dark grayish brown stains or mottles. Salinity varies, depending upon the amount of time that has passed since the area was flooded by salt water.

Escambia Series

The Escambia series consists of very deep, somewhat poorly drained, moderately permeable soils that formed in loamy marine sediments. These soils are on the lower side slopes in the uplands. A seasonal high water table is at a depth of 18 to 30 inches during the winter. Slopes range from 0 to 3 percent. The soils are coarse-loamy, siliceous, thermic Plinthaquic Paleudults.

Escambia soils are associated with Albany, Bibb, Bonifay, Dothan, Fuquay, Johnston, Kinston, Leefield, Notcher, and Stilson soils. Albany and Bonifay soils have an argillic horizon at a depth of more than 40 inches. Bibb soils are sandy throughout. Dothan and Notcher soils are better drained than the Escambia soils. Fuquay, Leefield, and Stilson soils have an argillic horizon at a depth of 20 to 40 inches. Johnston and Kinston soils are more poorly drained than the Escambia soils.

Typical pedon of Escambia fine sandy loam, 0 to 3 percent slopes, 500 feet east and 2,000 feet south of the northwest corner of sec. 29, T. 6 N., R. 24 W.

A—0 to 5 inches; very dark gray (10YR 3/1) fine sandy loam; weak fine granular structure; very friable; many fine, medium, and coarse roots; extremely acid; clear wavy boundary.

BE—5 to 8 inches; brownish yellow (10YR 6/6) fine sandy loam; dark gray (10YR 4/1) and gray (10YR 5/1) organic stains; weak fine granular structure; very friable; common fine and medium roots; extremely acid; clear wavy boundary.

Btv—8 to 25 inches; brownish yellow (10YR 6/6) fine sandy loam; common medium prominent strong brown (7.5YR 5/6) and few or common fine distinct light gray (10YR 7/1) mottles in the lower part; weak medium subangular blocky structure; friable; few fine roots; very strongly acid; clear wavy boundary.

Btg1—25 to 48 inches; loam that is reticulately mottled in shades of brown, gray, red, and yellow; moderate medium subangular blocky structure; firm; few fine roots; very strongly acid; gradual wavy boundary.

Btg2—48 to 80 inches; loam that is reticulately mottled in shades of brown, gray, red, and yellow; moderate medium subangular blocky structure; firm; very strongly acid.

The solum ranges from 60 to more than 80 inches in thickness. Reaction ranges from strongly acid to extremely acid throughout the profile. The depth to a horizon that has 5 percent or more plinthite is 20 to 42 inches. The content of ironstone pebbles ranges from 0 to 10 percent, by volume, in the A and E horizons and in the upper part of the Bt horizon. The lower part of the

Bt horizon contains less than 2 percent ironstone pebbles.

The A or Ap horizon has hue of 10YR or 2.5Y, value of 3 to 6, and chroma of 1 or 2. It is loamy sand, loamy fine sand, sandy loam, fine sandy loam, or sand.

Some pedons have an E horizon. This horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 to 4. It is loamy sand, loamy fine sand, sandy loam, fine sandy loam, or sand.

The Bt horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 4 to 8. It is mottled in shades of brown or red. Mottles that have chroma of 2 or less are within a depth of 30 inches. The texture is sandy clay loam or sandy loam.

The Btv horizon is mottled in shades of gray, yellow, brown, or red, or it is gray and is mottled in shades of yellow, brown, or red. The texture is sandy clay loam, sandy loam, or sandy clay. The particle-size control section has 5 to 15 percent silt.

Some pedons have a BC horizon. This horizon has colors and textures similar to those of the lower part of the Btv horizon.

Foxworth Series

The Foxworth series consists of very deep, moderately well drained, very rapidly permeable soils that formed in thick deposits of sandy marine or eolian sediments. These soils are on broad, nearly level and gently sloping uplands. They are saturated below a depth of about 42 inches in winter and early spring. Slopes range from 0 to 5 percent. The soils are thermic, coated Typic Quartzipsamments.

Foxworth soils are associated with Albany, Chipley, Dorovan, Hurricane, Kureb, Lakeland, Leon, Mandarin, Resota, and Troup soils. Albany and Troup soils have an A horizon that is 40 to 79 inches thick over an argillic horizon. Chipley soils have a water table that is higher during wet seasons than that of the Foxworth soils. Dorovan soils are very poorly drained and are organic. Hurricane, Leon, and Mandarin soils have a spodic horizon. Kureb and Lakeland soils are excessively drained. Resota soils have a B horizon.

Typical pedon of Foxworth sand, 0 to 5 percent slopes, 1,850 feet north and 600 feet west of the southeast corner of sec. 8, T. 2 N., R. 23 W.

A—0 to 4 inches; very dark gray (10YR 3/1) sand; single grained; loose; mixture of organic matter and uncoated sand grains; many fine, medium, and coarse roots; very strongly acid; gradual wavy boundary.

AC—4 to 9 inches; brown (10YR 5/3) sand; single grained; loose; many fine and medium roots; common uncoated sand grains; very strongly acid; gradual wavy boundary.

C1—9 to 33 inches; brownish yellow (10YR 6/6) sand; single grained; loose; many fine roots; common uncoated sand grains; strongly acid; gradual wavy boundary.

C2—33 to 45 inches; brownish yellow (10YR 6/6) sand; few medium prominent strong brown (7.5YR 5/8) mottles; single grained; loose; common fine roots; few uncoated sand grains; strongly acid; gradual wavy boundary.

C3—45 to 63 inches; light yellowish brown (10YR 6/4) sand; common medium prominent strong brown (7.5YR 5/8) and light gray (10YR 7/1) mottles; single grained; loose; few fine roots; few uncoated sand grains; strongly acid; gradual wavy boundary.

C4—63 to 80 inches; white (10YR 8/1) sand; single grained; loose; common uncoated sand grains; strongly acid.

The soils are sand to a depth of 80 inches or more. Reaction ranges from very strongly acid to medium acid, except in areas where lime has been applied. The content of silt and clay in the 10- to 40-inch control section is 5 to 10 percent.

The A or Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 1 to 3. It is generally 3 to 15 inches thick, but where value is 3, it is less than 6 inches thick.

The C horizon has hue of 10YR, value of 5 to 8, and chroma of 1 to 6. Generally, the upper part of the C horizon has chroma of 4 to 6 and the lower part has chroma of 1 to 3. In some pedons the upper part of this horizon has few or common fine to large masses of uncoated sand grains that are not indicative of wetness. In some pedons the lower part of the horizon has few or common fine or medium, strong brown or yellowish red, segregated iron mottles. The depth to mottles is commonly 45 to 60 inches but ranges from 40 to 70 inches. Few to many uncoated sand grains are in the lower part of the C horizon.

Fuquay Series

The Fuquay series consists of very deep, well drained, slowly permeable soils that formed in sandy and loamy marine sediments. These soils are on broad, nearly level to sloping ridges and side slopes in the uplands. The water table is perched at a depth of 48 to 60 inches during periods of high rainfall. Slopes range from 0 to 8 percent. The soils are loamy, siliceous, thermic Arenic Plinthic Kandiudults.

Fuquay soils are associated with Bonifay, Dothan, Leefield, Stilson, and Notcher soils. Bonifay soils have a Bt horizon at a depth of more than 40 inches. Dothan and Notcher soils have a Bt horizon within a depth of

20 inches. Leefield and Stilson soils have a water table that is higher than that of the Fuquay soils.

Typical pedon of Fuquay loamy fine sand, 0 to 5 percent slopes, 300 feet north and 150 feet west of the southeast corner of sec. 7, T. 5 N., R. 24 W.

A—0 to 5 inches; brown (10YR 5/3) loamy fine sand; single grained; loose; many fine, medium, and coarse roots; very strongly acid; clear smooth boundary.

E—5 to 22 inches; brownish yellow (10YR 6/6) loamy fine sand; single grained; loose; many fine and medium roots; very strongly acid; clear smooth boundary.

BE—22 to 28 inches; light yellowish brown (10YR 6/4) fine sandy loam; weak medium subangular blocky structure; friable; common fine roots; very strongly acid; clear smooth boundary.

Btv1—28 to 45 inches; yellowish brown (10YR 5/6) fine sandy loam; moderate medium subangular blocky structure; friable; few fine roots; few plinthite nodules; very strongly acid; clear smooth boundary.

Btv2—45 to 59 inches; yellowish brown (10YR 5/8) sandy clay loam; common medium distinct strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; friable; common plinthite nodules; very strongly acid; clear smooth boundary.

Btv3—59 to 67 inches; yellow (10YR 7/8) sandy clay loam; common medium prominent red (2.5YR 4/8) and yellowish red (5YR 5/8) mottles; moderate medium subangular blocky structure; friable; common plinthite nodules; strongly acid; clear smooth boundary.

C—67 to 80 inches; yellow (10YR 8/6) fine sandy loam; massive; very friable; very strongly acid.

The solum is more than 60 inches thick. The depth to plinthite ranges from 35 to 60 inches. The content of silt is less than 20 percent throughout the profile. Reaction is strongly acid or very strongly acid. Typically, a few rounded nodules of iron that have a rough or smooth surface are on the surface and throughout the A horizon and the upper part of the Bt horizon.

The A or Ap horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 1 to 3. It is sand, loamy sand, or loamy fine sand. It is 4 to 10 inches thick.

The E horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 3 to 6. It is sand, loamy sand, or loamy fine sand. It is 16 to 30 inches thick. The combined thickness of the A and E horizons ranges from 20 to 40 inches.

The BE horizon, if it occurs, has hue of 10YR, 2.5Y, or 7.5YR, value of 5 or 6, and chroma of 3 to 8. It is sandy loam or loamy sand.

The upper part of the Bt horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 8. The lower part has hue of 2.5YR to 10YR, value of 4 to 8, and chroma of 1 to 8. The Bt horizon is mottled in shades of red, yellow, and brown. Mottles that have chroma of 2 or less are at a depth of more than 40 inches. The texture is sandy loam or sandy clay loam. The reddish soil material is hard and is surrounded by soft, strong brown and yellowish brown soil material. The reddish and brownish parts are sandy loam or sandy clay loam. The gray parts are sandy clay loam or sandy clay. The content of soft masses of iron or hard, rough- or smooth-surfaced nodules of iron increases with increasing depth within a zone that extends from the upper part of the Bt horizon to a zone of discontinuous plinthite. Generally, the redder parts are oriented horizontally.

The C horizon is sandy loam, loamy sand, or sandy clay loam. It has variegated colors in shades of red, brown, yellow, and gray.

Garcon Series

The Garcon series consists of very deep, somewhat poorly drained, moderately permeable soils that formed in sandy and loamy fluvial sediments. In most years a seasonal high water table is at a depth of 18 to 36 inches for 4 to 6 months and is below a depth of 40 inches during the rest of the year. These soils are subject to flooding. Slopes range from 0 to 5 percent. The soils are loamy, siliceous, thermic Arenic Hapludults.

Garcon soils are associated with Bibb, Bigbee, Johnston, Kinston, Rutlege, and Yemassee soils. Bibb, Johnston, Kinston, and Rutlege soils are more poorly drained than the Garcon soils. Bigbee soils are sandy throughout. Yemassee soils have a surface layer and subsurface layer with a combined thickness of less than 20 inches.

Typical pedon of Garcon loamy fine sand, in an area of Yemassee, Garcon, and Bigbee soils, occasionally flooded; 3,000 feet east and 2,100 feet south of the northwest corner of sec. 11, T. 2 N., R. 24 W.

A—0 to 7 inches; very dark gray (10YR 3/1) loamy fine sand; weak medium granular structure; very friable; many fine, medium, and coarse roots; very strongly acid; clear wavy boundary.

E1—7 to 15 inches; pale brown (10YR 6/3) loamy fine sand; weak medium granular structure; very friable; many fine and medium roots; very strongly acid; clear wavy boundary.

E2—15 to 25 inches; pale brown (10YR 6/3) loamy fine sand; common medium faint light gray (10YR 7/2) mottles; weak medium granular structure; very friable; common fine roots; very strongly acid; clear wavy boundary.

E3—25 to 35 inches; pale brown (10YR 6/3) loamy fine sand; common medium distinct light gray (10YR 7/2) and few fine prominent brownish yellow (10YR 6/8) mottles; weak medium subangular blocky structure; very friable; few fine roots; very strongly acid; clear wavy boundary.

Bt1—35 to 50 inches; light brownish yellow (10YR 6/4) sandy clay loam; many coarse distinct light gray (10YR 7/2) and few fine distinct yellowish brown (10YR 5/4) mottles; moderate medium subangular blocky structure; friable; very strongly acid; clear wavy boundary.

Bt2—50 to 70 inches; light brownish gray (10YR 6/2) fine sandy loam; common medium distinct yellowish brown (10YR 5/4) and many coarse distinct light gray (10YR 7/2) mottles; moderate medium subangular blocky structure; sticky; very strongly acid; clear wavy boundary.

C—70 to 80 inches; light gray (10YR 7/2) fine sand; few fine distinct yellowish brown (10YR 5/4) and few medium distinct brownish yellow (10YR 6/6) mottles; single grained; nonsticky; very strongly acid.

Thickness of the solum ranges from 40 to 60 inches. Reaction is strongly acid or very strongly acid throughout the profile.

The E horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 3 to 6. It has mottles in shades of brown, yellow, and gray in the lower part. It is 5 to 15 inches thick. It is loamy fine sand or loamy sand. The combined thickness of the A and E horizons is 20 to 40 inches.

The B horizon, if it occurs, has colors similar to those of the Bt horizon. It is loamy sand or sandy loam. It is 0 to 6 inches thick.

The Bt horizon has hue of 10YR, value of 5 or 6, and chroma of 1 to 6. It has fine to coarse mottles in shades of gray, brown, red, or yellow. It is sandy loam, fine sandy loam, or sandy clay loam. It is 5 to 35 inches thick. The content of clay in the upper 20 inches of the argillic horizon is less than 18 percent, by weighted average.

The C horizon has hue of 10YR, value of 6 to 8, and chroma of 1 or 2. It has fine and medium mottles in shades of gray, yellow, and brown. It is sand or fine sand.

Hurricane Series

The Hurricane series consists of very deep, somewhat poorly drained, moderately rapidly permeable to very rapidly permeable soils that formed in thick beds of sandy marine sediments. These nearly level or gently sloping soils are in slightly elevated areas in the flatwoods. The water table is between depths of 24 and 42 inches for 3 to 6 months during most years. It is at a depth of 42 inches during the rest of the year. Slopes range from 0 to 5 percent. The soils are sandy, siliceous, thermic Grossarenic Entic Haplohumods.

Hurricane soils are associated with Chipley, Foxworth, Leon, Mandarin, and Rutlege soils. Chipley, Foxworth, and Rutlege soils do not have a spodic horizon. Leon and Mandarin soils have a spodic horizon within a depth of 30 inches.

Typical pedon of Hurricane sand, in an area of Chipley and Hurricane soils, 0 to 5 percent slopes; 2,600 feet east and 1,800 feet south of the northwest corner of sec. 18, T. 2 S., R. 25 W.

Ap—0 to 6 inches; very dark grayish brown (10YR 3/2) sand; single grained; loose; many fine and medium roots; mixture of uncoated sand grains and organic matter; very strongly acid; clear wavy boundary.

E1—6 to 33 inches; brownish yellow (10YR 6/6) sand; single grained; loose; common fine roots; few uncoated sand grains; strongly acid; clear wavy boundary.

E2—33 to 42 inches; brownish yellow (10YR 6/6) sand; common medium distinct pale brown (10YR 6/3) and prominent yellowish red (5YR 4/6) mottles; single grained; loose; few fine roots; strongly acid; clear wavy boundary.

E3—42 to 65 inches; light gray (10YR 7/1) sand; single grained; loose; medium acid; abrupt wavy boundary.

Bh1—65 to 70 inches; very dark gray (10YR 3/1) loamy sand; weak medium subangular blocky structure; friable; sand grains are coated with organic matter; very strongly acid; clear wavy boundary.

Bh2—70 to 80 inches; black (10YR 2/1) sand; weak medium subangular blocky structure; firm; sand grains are coated with organic matter; extremely acid.

Thickness of the solum ranges from 60 to more than 80 inches. Depth to the Bh horizon ranges from 51 to 79 inches. Low-chroma mottles are at a depth of more than 20 inches in some pedons. Reaction ranges from medium acid to extremely acid throughout the profile.

The Ap or A horizon has hue of 10YR, value of 3 to 5, and chroma of 1 to 3. It is sand or fine sand.

The upper part of the E horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 3 to 8. It has common mottles in shades of yellow, brown, or gray. The lower part of the E horizon, immediately above the Bh horizon, has hue of 10YR, value of 5 to 8, and chroma of 1 or 2. The E horizon is fine sand or sand.

The Bh horizon has hue of 5YR, 7.5YR, or 10YR, value of 2 to 5, and chroma of 1 to 4. Sand grains are well coated with organic matter. The texture is fine sand, sand, loamy fine sand, or loamy sand.

Some pedons have a C horizon. This horizon has hue of 10YR, value of 4 to 7, and chroma of 1 to 6. In some pedons the C horizon is mottled in shades of yellow, brown, or gray.

Johnston Series

The Johnston series consists of very deep, very poorly drained, moderately rapidly permeable soils that formed in highly variable sandy and loamy fluvial sediments. These soils are on the flood plains along creeks, streams, and rivers. They are commonly flooded and are saturated in the winter and early spring. Slopes generally range from 0 to 2 percent, but short, steep slopes that are as much as 3 to 5 feet high are along stream meanders. The soils are coarse-loamy, siliceous, acid, thermic Cumulic Humaquepts.

Johnston soils are associated with Bibb, Chipley, Dorovan, Escambia, Kinston, and Rutlege soils. Bibb soils are on flood plains. They are better drained than the Johnston soils and do not have an umbric epipedon. Chipley and Escambia soils are on adjacent uplands. They are better drained than the Johnston soils. Dorovan soils are on flood plains and in depressions. They are organic. Kinston soils are on flood plains. They have more than 18 percent clay in the control section. Rutlege soils do not have an umbric epipedon.

Typical pedon of Johnston fine sandy loam, in an area of Kinston, Johnston, and Bibb soils, frequently flooded; on the flood plain along the Shoal River, 4,100 feet north and 1,375 feet west of the southeast corner of sec. 23, T. 3 N., R. 23 W.

A—0 to 24 inches; black (10YR 2/1) fine sandy loam; weak fine granular structure; very friable; many fine, medium, and coarse roots; very strongly acid; abrupt wavy boundary.

Cg1—24 to 27 inches; dark grayish brown (10YR 4/2) fine sandy loam; few fine distinct strong brown (7.5YR 5/6) mottles; weak fine subangular blocky structure; very friable; common fine and medium roots; very strongly acid; clear wavy boundary.

Cg2—27 to 40 inches; dark gray (10YR 4/1) sand; massive; very friable; few fine roots; very strongly acid; clear wavy boundary.

Cg3—40 to 50 inches; dark grayish brown (10YR 4/2) sand; massive; very friable; very strongly acid; clear wavy boundary.

Cg4—50 to 80 inches; light brownish gray (10YR 6/2) sand; massive; very friable; very strongly acid.

The content of organic matter in the A horizon is 8 to 20 percent. In some pedons a few inches of recent alluvial sediment is deposited on the dark A horizon. Reaction is strongly acid or very strongly acid throughout the profile.

The A horizon has hue of 10YR to 5Y or is neutral in hue. It has value of 2 or 3 and chroma of 0 to 2. It is 24 to 48 inches thick.

The AC horizon, if it occurs, has hue of 10YR or 2.5Y, value of 4, and chroma of 1 or 2. It is 0 to 8 inches thick. The texture is loam, fine sandy loam, or sandy loam.

The Cg horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 1 or 2. It has brown or yellow mottles. It is fine sandy loam, sandy loam, loamy sand, or sand. Some pedons are stratified with textures ranging from sandy clay loam to sand.

Kinston Series

The Kinston series consists of very deep, poorly drained, moderately permeable soils that formed in highly variable sandy, loamy, and clayey fluvial sediments. These soils are on the nearly level flood plains along creeks, streams, and rivers on the Coastal Plain. They are saturated in winter and early spring. Slopes generally range from 0 to 5 percent, but short, steep slopes that are as much as 3 feet high are along stream meanders in old stream channels. The soils are fine-loamy, siliceous, acid, thermic Typic Fluvaquents.

Kinston soils are associated with Bibb, Chipley, Dorovan, Escambia, Johnston, and Rutlege soils. Bibb and Johnston soils are more poorly drained than the Kinston soils. Chipley and Escambia soils are on uplands. They are better drained than the Kinston soils. Dorovan soils are on flood plains and in depressions. They are organic. Rutlege soils do not have an umbric epipedon.

Typical pedon of Kinston silt loam, in an area of Kinston, Johnston, and Bibb soils, frequently flooded; 2,200 feet south and 1,950 feet east of the northwest corner of sec. 11, T. 2 N., R. 24 W.

A1—0 to 8 inches; very dark gray (10YR 4/1) silt loam; moderate medium granular structure; friable; very strongly acid; clear wavy boundary.

A2—8 to 17 inches; dark gray (10YR 4/1) silt loam; few fine faint very dark gray (10YR 3/1) and grayish brown (10YR 5/2) mottles; weak medium granular structure; slightly sticky; very strongly acid; clear wavy boundary.

Cg1—17 to 35 inches; gray (10YR 5/1) sandy clay loam; few fine distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; sticky; very strongly acid; gradual smooth boundary.

Cg2—35 to 48 inches; light brownish gray (10YR 6/2) sandy clay loam; common medium faint grayish brown (10YR 5/2) and few medium distinct light yellowish brown (10YR 6/4) mottles; weak medium subangular blocky structure; sticky; very strongly acid; gradual smooth boundary.

Cg3—48 to 80 inches; light gray (10YR 7/2) sandy clay loam; sticky; very strongly acid.

Dark concretions are common in some pedons. Reaction is strongly acid or very strongly acid.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 1 to 3. In areas where the A horizon has value of 3, it is less than 6 inches thick.

The Cg horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 or 2. It has few to many brownish yellow to strong brown mottles. It is loam, clay loam, sandy clay loam, or silty clay loam. It is 60 to 76 inches thick. The 10- to 40-inch control section contains an average of 20 to 35 percent clay and 15 percent or more fine sand or coarser textured material.

Some pedons have a 2C and a 3C horizon. These horizons have hue of 10YR, value of 5 to 7, and chroma of 1 or 2. They range from sand to loam. In some pedons they have few or common mottles in shades of gray, brown, and yellow. Stratification is generally evident in the Cg, 2Cg, and 3Cg horizons as well as in other parts of the pedon.

Kureb Series

The Kureb series consists of very deep, excessively drained, rapidly permeable soils that formed in thick marine or eolian sand deposits. These soils are on nearly level to gently rolling sandhills and dunelike ridges. They do not have a water table within a depth of 80 inches. Slopes range from 0 to 8 percent. The soils are thermic, uncoated Spodic Quartzipsamments.

Kureb soils are associated with Chipley, Corolla, Dorovan, Foxworth, Lakeland, Leon, Newhan, Resota, and Rutlege soils. Chipley, Corolla, Dorovan, Foxworth, Leon, Resota, and Rutlege soils are less well drained than the Kureb soils. Lakeland and Newhan soils do not have an E or B horizon.

Typical pedon of Kureb sand, 0 to 8 percent slopes, in an area of sand pines, scrub oaks, and palmettos; 5,600 feet west of the Walton County line, 1,400 feet north of old U.S. Highway 98:

A—0 to 5 inches; dark gray (10YR 4/1) sand; single grained; loose; organic matter and quartz grains have a salt-and-pepper appearance; many fine and medium roots; strongly acid; clear smooth boundary.

E—5 to 17 inches; light gray (10YR 7/2) sand; single grained; loose; many fine and medium roots; strongly acid; abrupt irregular boundary.

C/Bh—17 to 33 inches; yellowish brown (10YR 5/6) sand; single grained; loose; common light gray (10YR 7/2) tongues extending from the E horizon; dark brown (7.5YR 4/4) bands are intermittent at horizon contact and extend vertically along the walls of tongues; few fine and common medium roots; many coated and uncoated sand grains; very strongly acid; clear wavy boundary.

C1—33 to 57 inches; brownish yellow (10YR 6/6) sand; single grained; loose; few fine roots; common coated and uncoated sand grains; strongly acid; clear wavy boundary.

C2—57 to 64 inches; yellow (10YR 7/6) sand; single grained; loose; common medium distinct dark brown (7.5YR 4/4) mottles; few fine roots; common coated and uncoated sand grains; strongly acid; clear wavy boundary.

C3—64 to 76 inches; very pale brown (10YR 7/4) sand; single grained; loose; common medium faint yellowish brown (10YR 5/8) mottles; many uncoated sand grains; strongly acid; clear wavy boundary.

C4—76 to 80 inches; very pale brown (10YR 8/3) sand; single grained; loose; many uncoated white (10YR 8/1) sand grains; strongly acid.

The soils are more than 80 inches thick. Reaction ranges from neutral to very strongly acid. The content of silt and clay is less than 5 percent.

The A horizon has hue of 10YR, value of 3 to 6, and chroma of 1. It is 2 to 5 inches thick.

The E horizon has hue of 10YR, value of 7 or 8, and chroma of 1 or 2. It is 4 to 37 inches thick. It is sand or coarse sand. Tongues of material from the E horizon fill old root channels in the C/Bh horizon.

The Bh part of the C/Bh horizon has hue of 5YR to 10YR, value of 2 to 6, and chroma of 2 to 4. The C/Bh horizon is 4 to 46 inches thick. It is sand or coarse sand.

The C horizon has hue of 10YR, value of 5 to 8, and chroma of 3 to 8. In some pedons it has chroma of 1 or 2 at a depth of more than 65 inches.

Lakeland Series

The Lakeland series consists of very deep, excessively drained, rapidly permeable soils that formed in thick, sandy sediments. These soils are on nearly level to steep uplands. They do not have a water table within a depth of 80 inches. Slopes range from 0 to 30 percent. The soils are thermic, coated Typic Quartzipsamments.

Lakeland soils are associated with Chipley, Dorovan, Foxworth, Lucy, and Troup soils. Chipley and Foxworth soils have a seasonal high water table within a depth of

72 inches. Dorovan soils are organic. Lucy and Troup soils have a Bt horizon.

Typical pedon of Lakeland sand, 0 to 5 percent slopes, 300 feet east of the northwest corner of sec. 21, T. 3 N., R. 22 W.

A—0 to 6 inches; dark grayish brown (10YR 4/2) sand; single grained; loose; many fine, medium, and coarse roots; neutral; clear wavy boundary.

C1—6 to 49 inches; brownish yellow (10YR 6/6) sand; single grained; loose; common fine and coarse roots; neutral; gradual wavy boundary.

C2—49 to 73 inches; yellowish brown (10YR 5/6) sand; single grained; loose; common uncoated sand grains; few fine and medium roots; neutral; gradual wavy boundary.

C3—73 to 80 inches; yellow (10YR 7/6) sand; common fine distinct reddish yellow (7.5YR 6/8) mottles; single grained; loose; common uncoated sand grains; neutral.

The soils are sand to a depth of 80 inches or more. All horizons are medium or fine sand that has 5 to 10 percent silt and clay in the 10- to 40-inch control section. Reaction generally ranges from very strongly acid to medium acid throughout the profile, but it is neutral in areas where lime has been applied. Some pedons are less than 5 percent, by volume, small quartz pebbles.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 1 to 3. It is 2 to 8 inches thick.

The C horizon has hue of 10YR or 7.5YR, value of 5 to 8, and chroma of 3 to 8. Most sand grains between depths of 10 and 40 inches are coated. In some pedons small pockets of light gray or white sand grains are at a depth of more than 40 inches. Some pedons have an AC horizon. This horizon is gray and yellowish brown sand.

Leefield Series

The Leefield series consists of very deep, somewhat poorly drained, moderately slowly permeable soils that formed in sandy and loamy marine sediments. These soils are on nearly level or gently sloping uplands. The water table is perched at a depth of 18 to 30 inches for about 4 months during most years. Slopes range from 0 to 5 percent. The soils are loamy, siliceous, thermic Arenic Plinthaquic Paleudults.

Leefield soils are associated with Albany, Bibb, Bonifay, Dothan, Escambia, Fuquay, Johnston, Kinston, Notcher, Pansey, Stilson, and Troup soils. Albany, Bonifay, and Troup soils have an argillic horizon at a depth of more than 40 inches. Bibb, Johnston, Kinston, and Pansey soils have a seasonal high water table that is closer to the surface than that of the Leefield soils. Also, Bibb, Johnston, and Kinston soils are frequently flooded, and Pansey soils are ponded. Dothan, Escambia, and Notcher soils have an argillic horizon within a depth of 20 inches. Fuquay and Stilson soils are better drained than the Leefield soils.

Typical pedon of Leefield loamy sand, in an area of Leefield-Stilson complex, 0 to 5 percent slopes; 400 feet south and 700 feet east of the northwest corner of sec. 8, T. 5 N., R. 24 W.

A—0 to 6 inches; black (10YR 2/1) loamy sand; single grained; loose; many fine and medium roots; very strongly acid; clear smooth boundary.

E1—6 to 12 inches; yellowish brown (10YR 5/4) sand; single grained; loose; common fine and medium roots; very strongly acid; clear smooth boundary.

E2—12 to 18 inches; light yellowish brown (10YR 6/4) sand; single grained; loose; common fine and medium roots; strongly acid; clear smooth boundary.

E3—18 to 25 inches; light yellowish brown (10YR 6/4) sand; few fine distinct yellow (10YR 7/8) and grayish brown (10YR 5/2) mottles; single grained; loose; few fine roots; strongly acid; clear smooth boundary.

Bt—25 to 33 inches; brownish yellow (10YR 6/8) sandy clay loam; common fine distinct light brownish gray (10YR 6/2) and prominent reddish yellow (7.5YR 6/8) mottles; weak medium subangular blocky structure; friable; strongly acid; clear smooth boundary.

Btv1—33 to 40 inches; yellow (10YR 7/8) sandy clay loam; common fine faint white (10YR 8/1) and prominent reddish yellow (7.5YR 6/8 and 5YR 6/8) mottles; weak medium subangular blocky structure; friable; approximately 5 percent, by volume, plinthite nodules; strongly acid; clear smooth boundary.

Btv2—40 to 55 inches; brownish yellow (10YR 6/8) sandy clay loam; common fine faint white (10YR 8/1) and prominent reddish yellow (7.5YR 6/8 and 5YR 6/8) mottles; weak medium subangular blocky structure; friable; approximately 5 percent, by volume, plinthite nodules; strongly acid; clear smooth boundary.

B′t—55 to 80 inches; yellow (10YR 7/8) sandy clay loam; common fine faint white (10YR 8/1), common fine prominent reddish yellow (7.5YR 6/8), and common fine prominent reddish yellow (5YR 6/8) mottles; weak medium subangular blocky structure; strongly acid.

Thickness of the solum ranges from 60 to more than 80 inches. The depth to horizons that are 5 to 20 percent plinthite ranges from 30 to 60 inches. Reaction is strongly acid or very strongly acid throughout the profile.

The A or Ap horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 1 or 2. It is generally 7 to 12 inches thick.

The E horizon has hue of 10YR or 2.5Y, value of 5 to 8, and chroma of 2 to 6. It has common mottles in shades of gray, brown, and yellow. It is loamy sand or sand. It is 13 to 33 inches thick.

Some pedons have a BE horizon. This horizon has hue of 10YR or 2.5Y, value of 6 or 7, and chroma of 3 to 8. It has few or common gray, brown, and yellow mottles. It is sandy loam or fine sandy loam. It is as much as 6 inches thick.

The Bt horizon has hue of 10YR or 2.5Y or is neutral in hue. It has value of 5 to 8 and chroma of 0 to 8. It has common or many gray, brown, and red mottles. The Btv horizon is reticulately mottled in shades of gray, brown, yellow, and red, or it has hue of 10YR or 2.5Y, value of 5 to 8, and chroma of 1 to 8 and has common or many mottles in shades of red, brown, yellow, and gray. The Bt and Btv horizons are fine sandy loam, sandy loam, or sandy clay loam. The upper 20 inches of the argillic horizon is 15 to 25 percent clay.

Leon Series

The Leon series consists of very deep, poorly drained, moderately permeable or moderately rapidly permeable soils that formed in thick, sandy marine sediments. These soils are in broad, nearly level areas in the flatwoods. The water table is at a depth of 10 to 40 inches for more than 9 months during most years. It is within a depth of 10 inches during periods of high rainfall and is at a depth of more than 40 inches during very dry periods. Slopes range from 0 to 2 percent. The soils are sandy, siliceous, thermic Aeric Haplaquods.

Leon soils are associated with Chipley, Dorovan, Foxworth, Hurricane, Kureb, Lakeland, Mandarin, Pickney, Resota, and Rutlege soils. Chipley, Foxworth, Hurricane, Kureb, Lakeland, Mandarin, and Resota soils are better drained than the Leon soils. Dorovan, Pickney, and Rutlege soils are very poorly drained. Dorovan soils are organic.

Typical pedon of Leon sand, 5,000 feet west of the Walton County line and 2,400 feet south of the Choctawhatchee Bay:

A—0 to 6 inches; dark gray (10YR 4/1) sand; mixture of organic matter and uncoated sand grains have a salt-and-pepper appearance; single grained; loose; many fine, medium, and coarse roots; very strongly acid; clear wavy boundary.

E—6 to 16 inches; light gray (10YR 7/1) sand; single grained; loose; common fine and medium roots; very strongly acid; abrupt irregular boundary.

Bh—16 to 24 inches; dark reddish brown (5YR 3/2) sand; weakly cemented; massive; friable; sand grains coated with organic matter; few fine roots; extremely acid; gradual wavy boundary.

BC—24 to 34 inches; dark yellowish brown (10YR 4/4) sand; massive; friable; very strongly acid; gradual wavy boundary.

C1—34 to 56 inches; light yellowish brown (10YR 6/2) sand; single grained; loose, nonplastic; very strongly acid; gradual wavy boundary.

C2—56 to 80 inches; light gray (10YR 7/2) sand; single grained; loose, nonplastic; very strongly acid.

Reaction ranges from extremely acid to strongly acid, except in areas where lime has been applied.

The A or Ap horizon has hue of 10YR or is neutral in hue. It has value of 2 to 4 and chroma of 0 or 1. When dry, this horizon has a salt-and-pepper appearance caused by the mixing of organic matter and white sand grains. The horizon is 2 to 9 inches thick. It is sand or fine sand.

The E horizon has hue of 10YR or 2.5Y or is neutral in hue. It has value of 5 to 7 and chroma of 0 to 2. In some pedons it has mottles with higher chroma and vertical, black or very dark gray streaks. The texture is sand or fine sand. The E horizon is 4 to 22 inches thick. The combined thickness of the A and E horizons is less than 30 inches.

Some pedons have a BE horizon. This horizon has hue of 10YR or 7.5YR, value of 1 to 4, and chroma of 1 or 2. Uncoated sand grains are common. The texture is sand or fine sand. The BE horizon is as much as 2 inches thick.

The Bh horizon has hue of 10YR, 7.5YR, or 5YR, value of 2 or 3, and chroma of 1 to 3. This horizon burns white. It is compact and brittle when dry. In some pedons it has vertical or horizontal tongues or masses of gray or light gray sand. In some pedons it is weakly cemented or moderately cemented and is firm or very firm. It is 6 to 20 inches thick.

The BC horizon has hue of 10YR or 7.5YR, value of 3 to 5, and chroma of 2 to 6. It is sand, fine sand, loamy fine sand, or loamy sand. It is as much as 12 inches thick. It generally contains material from the Bh horizon. Some pedons do not have a BC horizon.

Some pedons have an E′ horizon. This horizon has hue of 10YR or 2.5Y, value of 5 to 8, and chroma of 1 or 2. It is sand or fine sand. It is as much as 36 inches thick.

Some pedons have a B′h horizon. This horizon has colors similar to those of the Bh horizon, but it occurs below the E′ or BC horizon. It is sand or fine sand.

In pedons that do not have an E′ or a B′h horizon, the BC horizon is underlain by a C horizon that extends to a depth of more than 80 inches. The C horizon has hue of 10YR, value of 6 to 8, and chroma of 1 to 4. It is sand or fine sand.

Lucy Series

The Lucy series consists of very deep, nearly level or gently sloping, well drained soils that formed in sandy and loamy marine sediments. These soils are on ridgetops and side slopes in the uplands. They do not have a water table within a depth of 80 inches. Slopes range from 0 to 5 percent. The soils are loamy, siliceous, thermic Arenic Kandiudults.

Lucy soils are associated with Albany, Bonifay, Chipley, Dothan, Escambia, Foxworth, Fuquay, Leefield, Notcher, Orangeburg, Pansey, Stilson, and Troup soils. Albany, Bonifay, and Troup soils have a Bt horizon at a depth of more than 40 inches. Chipley and Foxworth soils do not have a Bt horizon. Dothan, Notcher, Pansey, and Orangeburg soils have a Bt horizon within a depth of 20 inches. Escambia, Fuquay, Leefield, and Stilson soils have a Bt horizon that is browner than that of the Lucy soils. Also, they contain plinthite and are less well drained than the Lucy soils.

Typical pedon of Lucy loamy sand, 0 to 5 percent slopes, 1,400 feet west and 1,900 feet south of the northeast corner of sec. 21, T. 3 N., R. 25 W.

A—0 to 6 inches; very dark brown (10YR 3/2) loamy sand; weak fine granular structure; very friable; common fine and medium roots; very strongly acid; clear smooth boundary.

E1—6 to 15 inches; yellowish brown (10YR 5/6) loamy sand; weak fine granular structure; very friable; common fine roots; very strongly acid; clear smooth boundary.

E2—15 to 23 inches; yellowish brown (10YR 5/8) loamy sand; weak fine granular structure; very friable; few fine roots; strongly acid; gradual smooth boundary.

E3—23 to 28 inches; strong brown (7.5YR 5/6) loamy sand; weak fine granular structure; very friable; few fine roots; strongly acid; clear smooth boundary.

B—28 to 32 inches; yellowish red (5YR 4/6) sandy loam; weak medium subangular blocky structure; very friable; strongly acid; gradual smooth boundary.

Bt1—32 to 45 inches; red (2.5YR 4/6) sandy clay loam; weak medium subangular blocky structure; friable; strongly acid; gradual smooth boundary.

Bt2—45 to 80 inches; red (2.5YR 4/8) sandy clay loam; weak medium subangular blocky structure; friable; strongly acid.

The solum is more than 80 inches thick. Reaction is strongly acid in the A horizon, except in areas where lime has been applied. It is very strongly acid in the B horizon.

The A or Ap horizon has hue of 10YR or 7.5YR, value of 3 to 5, and chroma of 2 or 3. It is generally 3 to 15 inches thick, but in areas where value is 3, it is less than 10 inches thick.

The E horizon has hue of 10YR, 7.5YR, or 5YR, value of 4 to 6, and chroma of 4 to 8. It is loamy sand. It is 14 to 28 inches thick.

The Bt horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 6 to 8. The texture is dominantly sandy clay loam, but it ranges from sandy loam to clay loam. The content of clay is 20 to 35 percent. A few plinthite nodules are in some pedons, but they constitute less than 5 percent of any subhorizon within a depth of 60 inches. Mottles in shades of yellow or brown are at a depth of more than 36 inches in some pedons. The content of rounded quartz pebbles, iron concretions, or both is generally less than 5 percent. The pebbles and concretions are less than 15 millimeters in diameter.

Some pedons have a BC horizon. This horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 to 8. It is sandy loam or loamy sand.

Mandarin Series

The Mandarin series consists of very deep, somewhat poorly drained, moderately permeable soils that formed in thick, sandy marine sediments. These soils are in broad, nearly level, slightly elevated flatwoods. A seasonal high water table is at a depth of 20 to 40 inches for 4 to 6 months in most years. Slopes range from 0 to 3 percent. The soils are sandy, siliceous, thermic Typic Haplohumods.

Mandarin soils are associated with Chipley, Dorovan, Foxworth, Hurricane, Lakeland, Leon, Kureb, Pickney, Resota, and Rutlege soils. Chipley soils do not have a Bh horizon. Dorovan soils are very poorly drained and are organic. Foxworth, Lakeland, Kureb, and Resota soils are better drained than the Mandarin soils. Hurricane soils have a spodic horizon at a depth of more than 50 inches. Leon soils are poorly drained. Pickney and Rutlege soils are very poorly drained and do not have a Bh horizon.

Typical pedon of Mandarin sand, 0 to 3 percent slopes, 5,600 feet west of the Walton County line and 600 feet south of the Choctawhatchee Bay:

A—0 to 5 inches; dark gray (10YR 4/1) sand; single grained; loose; many fine, medium, and coarse roots; many uncoated sand grains; extremely acid; clear wavy boundary.

E—5 to 26 inches; gray (10YR 6/1) sand; single grained; loose; many fine, medium, and coarse roots; very strongly acid; abrupt irregular boundary.

Bh—26 to 32 inches; dark reddish brown (5YR 3/2) sand; grayish brown (10YR 5/2) sand at contact with E horizon; massive; friable; common fine roots; sand grains well coated with colloidal organic matter; very strongly acid; abrupt wavy boundary.

Bw—32 to 46 inches; dark brown (10YR 3/3) sand; single grained; friable; common fine roots; sand grains coated with colloidal organic matter; strongly acid; clear wavy boundary.

BC—46 to 54 inches; yellowish brown (10YR 5/4) sand; single grained; loose; few fine roots; many uncoated sand grains; very strongly acid; clear wavy boundary.

C—54 to 80 inches; light gray (10YR 7/2) sand; single grained; loose; many uncoated sand grains; strongly acid.

The soils are sand or fine sand throughout. Reaction ranges from extremely acid to medium acid.

The A horizon has hue of 10YR or is neutral in hue. It has value of 2 to 6 and chroma of 0 or 1. It is 2 to 8 inches thick.

The E horizon has hue of 10YR, value of 5 to 8, and chroma of 1 or 2. It is 13 to 24 inches thick. The combined thickness of the A and E horizons is less than 30 inches.

The Bh horizon has hue of 10YR, 7.5YR, or 5YR, value of 2 or 3, and chroma of 1 to 4. It has sand grains that are well coated with organic matter.

The BC horizon has hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 2 to 4.

The C horizon has hue of 10YR, value of 6 to 8, and chroma of 1 to 3.

Some pedons have a bisequum of E′ and B′h horizons. The E′ horizon has hue of 10YR, value of 5 to 8, and chroma of 1 or 2. The B′h horizon has the same characteristics as the Bh horizon.

Newhan Series

The Newhan series consists of excessively drained, very rapidly permeable soils. These soils formed in thick deposits of marine sands that have been reworked by wind and wave action. They are gently sloping to steep and are on dunelike, undulating ridges adjacent to the coast. Slopes range from 2 to 30 percent. The depth to the seasonal high water table is more than 72 inches. The soils are thermic, uncoated Typic Quartzipsamments.

Newhan soils are associated with Corolla, Foxworth, Kureb, Lakeland, Mandarin, and Resota soils. Corolla soils are less well drained than the Newhan soils. Foxworth and Lakeland soils have a yellow substratum. Kureb and Resota soils have a yellow subsoil. Mandarin soils have a spodic horizon.

Typical pedon of Newhan sand, in an area of Newhan-Corolla complex, rolling; 5,000 feet west of the entrance to the U.S. Coast Guard office building on U.S. Highway 98 and 300 feet south of U.S. Highway 98:

C1—0 to 45 inches; white (10YR 8/1) sand; single grained; loose; very strongly acid; gradual wavy boundary.

C2—45 to 80 inches; light gray (10YR 7/1) sand; single grained; loose; sand grains are uncoated; very strongly acid.

The soils are sand or fine sand. No diagnostic horizon is within a depth of 7 feet. The content of silt and clay is less than 5 percent. Reaction is strongly acid or very strongly acid.

The A horizon, if it occurs, has hue of 10YR, value of 4 to 7, and chroma of 1 or 2. It is as much as 6 inches thick.

The C horizon has hue of 10YR, value of 6 to 8, and chroma of 1 or 2. In some pedons it also has a few gray lenses. These lenses appear to be former A horizons that have been buried by blowing and drifting sand.

Notcher Series

The Notcher series consists of very deep, moderately well drained, moderately slowly permeable soils that formed in loamy marine sediments. These soils are on nearly level to sloping uplands. The water table is perched at a depth of 36 to 48 inches during the winter. Slopes range from 0 to 5 percent. The soils are fine-loamy, siliceous, thermic Plinthic Paleudults.

Notcher soils are associated with Dothan, Fuquay, Lucy, Orangeburg, and Troup soils. These associated soils have less than 5 percent ironstone pebbles in all horizons. Fuquay and Lucy soils have a Bt horizon at a depth of 20 to 40 inches. Troup soils have a Bt horizon at a depth of 40 to 80 inches.

Typical pedon of Notcher gravelly sandy loam, 0 to 2 percent slopes, 2,000 feet north and 2,000 feet west of the southeast corner of sec. 3, T. 3 N., R. 25 W.

Ac—0 to 4 inches; very dark gray (10YR 3/1) gravelly sandy loam; weak fine granular structure; loose; common fine roots; about 16 percent ironstone nodules that are 5 to 15 millimeters in size; very strongly acid; clear wavy boundary.

Bc—4 to 10 inches; yellowish brown (10YR 5/4) gravelly sandy loam; weak fine subangular blocky structure; very friable; common fine roots; about 20 percent ironstone nodules that are 5 to 15 millimeters in size; about 5 percent plinthite; very strongly acid; clear wavy boundary.

Btcv1—10 to 27 inches; yellowish brown (10YR 5/6) gravelly sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; about 20 percent ironstone nodules that are 5 to 15 millimeters in size; about 5 percent plinthite; strongly acid; clear wavy boundary.

Btcv2—27 to 43 inches; brownish yellow (10YR 6/8) gravelly sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; about 20 percent ironstone nodules that are 5 to 15 millimeters in size; about 10 percent plinthite; strongly acid; clear wavy boundary.

Btcv3—43 to 80 inches; brownish yellow (10YR 6/8) gravelly sandy clay loam; many medium distinct grayish brown (10YR 5/2) and many coarse prominent dark red (2.5YR 3/6) mottles; weak medium subangular blocky structure; friable; 20 to 30 percent ironstone nodules that are 5 to 15 millimeters in size; about 15 percent plinthite; strongly acid.

The solum is 60 or more inches thick. Reaction is strongly acid or very strongly acid throughout the profile, except in areas where lime has been applied. Horizons that have 5 to 30 percent plinthite are at a depth of 10 to 55 inches. The content of ironstone nodules ranges from 10 to 20 percent in the A and Bc horizons and from 20 to 30 percent in the Btcv horizon.

The Ap, Apc, or Ac horizon has hue of 10YR, value of 3 to 5, and chroma of 1 to 3. It is 4 to 9 inches thick. It is sandy loam, gravelly sandy loam, or loam.

The Bc horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 4 to 8. It is gravelly sandy loam, loam, or sandy clay loam.

The Btcv horizon has hue of 10YR to 5YR, value of 5 or 6, and chroma of 6 to 8. It has few to many mottles in shades of red, yellow, or brown. Mottles that have chroma of 2 or less are at a depth of more than 30 inches. The texture ranges from sandy clay loam to clay loam. The content of clay in the upper 20 inches of the Btcv horizon ranges from 18 to 35 percent, and the content of silt is 20 percent or more.

Some pedons have a Btc horizon. This horizon is reticulately mottled and has hue of 10YR to 2.5YR, value of 5 or 6, and chroma of 6 to 8. The texture is clay loam or sandy clay loam. The gray, mottled layers are commonly more clayey than the brown, red, and yellow, mottled layers.

Orangeburg Series

The Orangeburg series consists of very deep, well drained, moderately permeable soils that formed in thick, sandy and loamy marine sediments. These soils are on nearly level to strongly sloping uplands. They do not have a water table within a depth of 80 inches. Slopes range from 0 to 12 percent. The soils are fine-loamy, siliceous, thermic Typic Kandiudults.

Orangeburg soils are associated with Dothan, Fuquay, Lucy, Notcher, Pansey, and Troup soils. Dothan and Notcher soils have hue of 10YR or 7.5YR in the Bt horizon. Fuquay and Lucy soils have a Bt horizon at a depth of 20 to 40 inches. Troup soils have a Bt horizon at a depth of 40 to 80 inches. Pansey soils are poorly drained or very poorly drained.

Typical pedon of Orangeburg sandy loam, 0 to 2 percent slopes, 2,500 feet north and 1,100 feet west of the southeast corner of sec. 36, T. 4 N., R. 25 W.

Ap—0 to 5 inches; dark brown (7.5YR 4/4) sandy loam; weak fine granular structure; friable; common fine, medium, and large roots; strongly acid; clear wavy boundary.

BE—5 to 9 inches; reddish brown (5YR 4/4) sandy loam; weak fine subangular blocky structure; friable; few fine and medium roots; strongly acid; gradual wavy boundary.

Bt1—9 to 41 inches; red (2.5YR 4/6) sandy clay loam; weak medium subangular blocky structure; friable; few fine roots; strongly acid; gradual wavy boundary.

Bt2—41 to 80 inches; red (2.5YR 4/6) sandy clay loam; weak medium subangular blocky structure; firm; strongly acid.

The solum typically is more than 80 inches thick. Reaction is strongly acid or very strongly acid throughout the profile, except in areas where lime has been applied.

The A or Ap horizon has hue of 10YR or 7.5YR, value of 3 to 5, and chroma of 2 to 4. It is sandy loam or loamy sand. It is 5 to 10 inches thick.

Some pedons have an E horizon. This horizon has hue of 10YR, value of 5 or 6, and chroma of 3 to 6. It is loamy sand. It is as much as 10 inches thick. The combined thickness of the A and E horizons is less than 20 inches.

The BE or BA horizon has hue of 7.5YR or 5YR, value of 4 or 5, and chroma of 4 to 6. It is as much as 14 inches thick.

The Bt horizon has hue of 5YR or 2.5YR, value of 4 to 6, and chroma of 6 to 8. It is sandy loam or sandy clay loam. The content of clay in the upper 20 inches of the Bt horizon ranges from 20 to 35 percent, and the content of silt is less than 15 percent. The lower part of the Bt horizon is sandy clay loam or sandy clay that has less than 45 percent clay. The Bt horizon is 45 to 63 inches thick.

Some pedons have a BC horizon. This horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 to 8. It has common or many mottles in shades of brown, red, and gray. It is sandy clay loam, sandy clay, or sandy loam.

Pansey Series

The Pansey series consists of very deep, poorly drained and very poorly drained, slowly permeable soils that formed in loamy marine sediments. These soils are in depressions and nearly level areas in the uplands. The water table is at or near the surface for long periods, and the soils are ponded for 3 to 6 months in most years. The soils are fine-loamy, siliceous, thermic Plinthic Paleaquults.

Pansey soils are associated with Bonifay, Dothan, Escambia, Fuquay, Leefield, Lucy, Orangeburg, Stilson, and Troup soils. These associated soils are better drained than the Pansey soils.

Typical pedon of Pansey sandy loam, depressional, 1,700 feet west and 1,550 feet south of the northeast corner of sec. 25, T. 4 N., R. 25 W.

A—0 to 6 inches; very dark gray (10YR 3/1) sandy loam; weak fine granular structure; slightly sticky; many fine and medium roots; strongly acid; clear wavy boundary.

Bg—6 to 10 inches; dark gray (10YR 4/1) sandy loam; weak medium subangular blocky structure; slightly sticky; common fine roots; strongly acid; clear wavy boundary.

Bt—10 to 17 inches; gray (10YR 6/1) sandy loam; weak medium subangular blocky structure; sticky; few fine roots; strongly acid; clear wavy boundary.

Btv1—17 to 25 inches; gray (10YR 6/1) sandy clay loam; common medium prominent strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; sticky; 10 to 15 percent, by volume, plinthite nodules; strongly acid; clear wavy boundary.

Btv2—25 to 40 inches; light brownish gray (10YR 6/2) sandy clay loam; many coarse prominent strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; sticky; 10 to 15 percent, by volume, plinthite nodules; strongly acid; clear wavy boundary.

B't1—40 to 50 inches; light gray (10YR 7/2) sandy clay loam; many coarse prominent gray (10YR 6/1), strong brown (7.5YR 5/6), and red (2.5YR 4/6) mottles; moderate medium subangular blocky structure; sticky; strongly acid; clear wavy boundary.

B't2—50 to 80 inches; light gray (10YR 7/1) sandy clay loam; many coarse prominent brownish yellow (10YR 6/6 and 6/8) and red (2.5YR 4/6) mottles; moderate medium subangular blocky structure; sticky; strongly acid.

Thickness of the solum ranges from 60 to more than 80 inches. Reaction is strongly acid or very strongly acid throughout the profile.

The A horizon has hue of 10YR, value of 2 to 4, and chroma of 1 or 2. It is sandy loam or loamy sand. It is 2 to 8 inches thick.

Some pedons have an E horizon. This horizon has hue of 10YR, value of 4 to 6, and chroma of 1 or 2. It is sandy loam or loamy sand and is as much as 14 inches thick. The combined thickness of the A and E horizons is less than 20 inches.

The Bg horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2. It is sandy loam or sandy clay loam.

The Bt horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2. It has common or many mottles in shades of yellow, brown, and red. The texture is sandy clay loam or sandy clay. Depth to a horizon that has more than 5 percent plinthite is 10 to 50 inches. Thickness of the Bt horizon is 40 inches or more.

Pickney Series

The Pickney series consists of very deep, very poorly drained, rapidly permeable soils that formed in sandy marine sediments. These soils are in nearly level drainageways and depressions in the flatwoods. They are ponded for about 4 to 6 months annually. Slopes are concave and are less than 2 percent. The soils are sandy, siliceous, thermic Cumulic Humaquepts.

Pickney soils are associated with Chipley, Dorovan, Hurricane, Leon, Mandarin, and Rutlege soils. Chipley, Hurricane, Leon, and Mandarin soils are better drained than the Pickney soils. Dorovan soils are organic. Rutlege soils have an umbric epipedon.

Typical pedon of Pickney loamy sand, depressional, 1,700 feet west and 700 feet south of the northeast corner of sec. 8, T. 2 S., R. 25 W.

A1—0 to 27 inches; black (10YR 2/1) loamy sand; single grained; nonsticky; many fine, medium, and coarse roots; strongly acid; gradual wavy boundary.

A2—27 to 45 inches; black (10YR 2/1) sand; single grained; nonsticky; common fine, medium, and coarse roots; strongly acid; clear wavy boundary.

Cg1—45 to 56 inches; dark gray (10YR 4/1) sand; single grained; nonsticky; few fine and medium roots; strongly acid; gradual wavy boundary.

Cg2—56 to 80 inches; gray (10YR 5/1) fine sand; single grained; nonsticky; strongly acid.

Reaction ranges from strongly acid to extremely acid throughout the profile.

The A horizon has hue of 10YR or 2.5Y or is neutral in hue. It has value of 2 or 3 and chroma of 0 to 2. It is 24 to 60 inches thick.

The C horizon has hue of 10YR, 2.5Y, or 5Y or is neutral in hue. It has value of 3 to 7 and chroma of 0 to 2. It is loamy fine sand, loamy sand, or fine sand.

Resota Series

The Resota series consists of very deep, moderately well drained, very rapidly permeable soils that formed in thick beds of sandy marine deposits. These soils are on broad, nearly level or gently sloping, moderately elevated ridges in the flatwoods. A high water table is at a depth of 40 to 60 inches for 6 months or longer in most years. The soils are thermic, uncoated Spodic Quartzipsamments.

Resota soils are associated with Chipley, Foxworth, Hurricane, Kureb, and Mandarin soils. Chipley and Foxworth soils do not have a spodic horizon. Hurricane and Mandarin soils have a spodic horizon. Kureb soils are better drained than the Resota soils.

Typical pedon of Resota sand, 0 to 5 percent slopes, 3,700 feet west and 2,100 feet north of the south entrance to a KOA campground, in Destin:

A—0 to 3 inches; dark grayish brown (10YR 4/2) sand; single grained; loose; common fine and medium roots; very strongly acid; clear smooth boundary.

E—3 to 18 inches; white (10YR 8/1) sand; single grained; loose; few fine roots; very strongly acid; abrupt irregular boundary.

Bh—18 to 22 inches; dark brown (7.5YR 3/4) sand; weak medium subangular blocky structure; friable; strongly acid; clear smooth boundary.

Bw1—22 to 25 inches; yellowish brown (10YR 5/6) sand; single grained; loose; strongly acid; gradual wavy boundary.

Bw2—25 to 47 inches; brownish yellow (10YR 6/6) sand; few fine faint light gray (10YR 7/2) and few fine prominent strong brown (7.5YR 5/6) mottles; single grained; loose; strongly acid; gradual wavy boundary.

C—47 to 80 inches; white (10YR 8/2) sand; single grained; loose; strongly acid.

The solum is 40 or more inches thick. Reaction ranges from slightly acid to extremely acid throughout the profile. The texture is sand or fine sand.

The A horizon has hue of 10YR, value of 4 to 6, and chroma of 1 or 2. It is 2 to 5 inches thick. A mixture of dark organic matter and light gray, uncoated sand grains gives the surface a salt-and-pepper appearance.

The E horizon has hue of 10YR, value of 6 to 8, and chroma of 1 or 2. It is 6 to 34 inches thick.

The Bw horizon has hue of 10YR or 7.5YR, value of 5 to 7, and chroma of 4 to 8. It has few or common yellowish or reddish mottles at a depth of more than 40 inches. It is 10 to 50 inches thick. In some pedons the Bw horizon has thin, discontinuous masses from the Bh horizon.

The C horizon has hue of 10YR, value of 6 to 8, and chroma of 1 to 4. In some pedons it has few or common yellow, brown, or red mottles.

Rutlege Series

The Rutlege series consists of very deep, poorly drained and very poorly drained, rapidly permeable soils that formed in thick, sandy sediments. These soils are on marine terraces. They are saturated in the winter and early spring. The water table is at or near the surface for long periods, and shallow ponding is common. Slopes are less than 1 percent. The soils are sandy, siliceous, thermic Typic Humaquepts.

Rutlege soils are associated with Chipley, Dorovan, Foxworth, Hurricane, Kureb, Leon, Pickney, and Resota soils. Chipley, Foxworth, Hurricane, Kureb, Leon, and Resota soils are better drained than the Rutlege soils. Dorovan and Pickney soils are very poorly drained. Dorovan soils are organic. Pickney soils have an umbric epipedon that is more than 24 inches thick.

Typical pedon of Rutlege sand, depressional, 1,000 feet south and 600 feet east of the northwest corner of sec. 21, T. 1 S., R. 24 W.

A1—0 to 8 inches; black (10YR 2/1) sand; singled grained; nonsticky; many fine, medium, and coarse roots; very strongly acid; gradual wavy boundary.

A2—8 to 13 inches; very dark gray (10YR 3/1) sand; single grained; nonsticky; many fine, medium, and coarse roots; very strongly acid; clear wavy boundary.

Cg1—13 to 38 inches; dark gray (10YR 4/1) sand; common medium distinct pale brown (10YR 6/3) mottles; single grained; nonsticky; common fine and medium roots; very strongly acid; gradual wavy boundary.

Cg2—38 to 58 inches; gray (10YR 5/1) sand; common medium distinct pale brown (10YR 6/3) mottles; single grained; nonsticky; very strongly acid; gradual wavy boundary.

Cg3—58 to 80 inches; light brownish gray (10YR 6/2) sand; single grained; nonsticky; very strongly acid.

The content of silt and clay in the 10- to 40-inch control section is 5 to 15 percent. Reaction is very strongly acid or extremely acid throughout the profile.

The A horizon has hue of 10YR to 5Y, value of 2 or 3, and chroma of 1 or 2. It is 10 to 24 inches thick. The upper 6 to 12 inches of the A horizon contains 3 to 10 percent organic matter. The content of organic matter is somewhat lower at a depth of more than 12 inches.

The Cg horizon has hue of 10YR to 5Y or is neutral in hue. It has value of 4 to 7 and chroma of 0 to 2. It has faint to prominent mottles that have value of 5 to 8 and chroma of 1 to 6. In some pedons high-chroma mottles are so numerous that the matrix color is hard to distinguish. The Cg horizon is sand, fine sand, loamy sand, or loamy fine sand.

Stilson Series

The Stilson series consists of very deep, moderately well drained, moderately permeable soils that formed in sandy and loamy marine sediments. These soils are on nearly level or gently sloping toe slopes. The water table is perched at a depth of about 30 to 36 inches for about 6 months during most years. Slopes range from 0 to 5 percent. The soils are loamy, siliceous, thermic Arenic Plinthic Paleudults.

Stilson soils are associated with Albany, Bibb, Bonifay, Dothan, Escambia, Fuquay, Johnston, Kinston, Leefield, Notcher, Pansey, and Troup soils. Albany, Bonifay, and Troup soils have an argillic horizon at a depth of more than 40 inches. Bibb, Johnston, and Kinston soils are frequently flooded. Dothan, Escambia, and Notcher soils have an argillic horizon within a depth of 20 inches. Fuquay soils do not have mottles with chroma of 2 or less within a depth of 40 inches. Leefield soils have mottles with chroma of 2 or less within a depth of 30 inches. Pansey soils are poorly drained or very poorly drained.

Typical pedon of Stilson loamy sand, in an area of Leefield-Stilson complex, 0 to 5 percent slopes; 400 feet south and 800 feet east of the northwest corner of sec. 8, T. 5 N., R. 24 W.

A—0 to 5 inches; very dark grayish brown (10YR 3/2) loamy sand; weak fine granular structure; very friable; many fine, medium, and coarse roots; strongly acid; clear smooth boundary.

E—5 to 22 inches; yellowish brown (10YR 5/4) sand; single grained; loose; common fine and medium roots; very strongly acid; gradual wavy boundary.

Bt1—22 to 28 inches; yellowish brown (10YR 5/6) sandy loam; few fine distinct strong brown (7.5YR 5/8) mottles; weak medium subangular blocky structure; friable; strongly acid; gradual wavy boundary.

Bt2—28 to 35 inches; brownish yellow (10YR 6/6) sandy clay loam; few fine faint strong brown mottles; weak medium subangular blocky structure; friable; strongly acid; gradual wavy boundary.

Bt3—35 to 45 inches; brownish yellow (10YR 6/8) sandy clay loam; few fine faint strong brown and light gray mottles; moderate medium subangular blocky structure; friable; strongly acid; gradual wavy boundary.

Btv1—45 to 53 inches; reticulately mottled light gray (10YR 7/2), very pale brown (10YR 7/4), and red (2.5YR 4/8) sandy clay loam; moderate medium subangular blocky structure; firm; about 10 percent, by volume, plinthite; strongly acid; gradual wavy boundary.

Btv2—53 to 70 inches; reticulately mottled light gray (10YR 7/1), brownish yellow (10YR 6/6 and 6/8), and red (2.5YR 4/8) sandy clay loam; moderate medium subangular blocky structure; firm; about 10 percent, by volume, plinthite; strongly acid; gradual wavy boundary.

B't—70 to 80 inches; yellow (10YR 7/8) sandy clay loam; common medium distinct red (2.5YR 4/8) mottles; moderate medium subangular blocky structure; strongly acid.

The A or Ap horizon has hue of 10YR or 2.5YR, value of 3 or 4, and chroma of 1 or 2.

The E horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 2 to 4. It is loamy sand or sand.

The Bt horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 4 to 8. It has few or common mottles in shades of gray and brown at a depth of 10 to 18 inches. It is sandy loam or sandy clay loam. The content of silt is less than 20 percent.

The Btv horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 4 to 8. It has distinct or prominent mottles in shades of gray, brown, or red. The Btv horizon is sandy clay loam and contains 5 to 15 percent plinthite.

Troup Series

The Troup series consists of well drained, moderately permeable soils that formed in sandy and loamy marine sediments. These soils are on nearly level to steep uplands. They do not have a water table within a depth of 80 inches. Slopes range from 0 to 25 percent. The soils are loamy, siliceous, thermic Grossarenic Kandiudults.

Troup soils are associated with Albany, Bonifay, Chipley, Dorovan, Dothan, Foxworth, Fuquay, Lakeland, Lucy, and Notcher soils. Albany soils have mottles with chroma of 2 or less in the E and Bt horizons. Bonifay soils have a Bt horizon that is yellower than that of the Troup soils. Also, they have more than 5 percent plinthite within a depth of 60 inches. Chipley and Foxworth soils do not have a Bt horizon. Also, they have a seasonal high water table. Dorovan soils are organic. Dothan and Notcher soils have a Bt horizon at a depth of less than 20 inches. Fuquay and Lucy soils have a Bt horizon at a depth of 20 to 40 inches. Lakeland soils do not have a Bt horizon.

Typical pedon of Troup sand, 0 to 5 percent slopes, 1,800 feet north and 800 feet east of the southwest corner of sec. 18, T. 3 N., R. 24 W.

A—0 to 5 inches; dark brown (10YR 4/3) sand; weak fine granular structure; very friable; common fine roots; strongly acid; abrupt wavy boundary.

AE—5 to 14 inches; dark yellowish brown (10YR 4/4) loamy sand; weak fine granular structure; very friable; few fine roots; medium acid; clear wavy boundary.

E1—14 to 32 inches; strong brown (7.5YR 5/6) loamy sand; weak medium subangular blocky structure; very friable; few fine roots; medium acid; clear smooth boundary.

E2—32 to 48 inches; yellowish red (5YR 5/6) loamy sand; weak medium subangular blocky structure; very friable; few fine roots; medium acid; clear wavy boundary.

Bt—48 to 80 inches; red (2.5YR 4/6) sandy clay loam; weak medium subangular blocky structure; friable; strongly acid.

The thickness of the solum is 80 inches or more. Reaction ranges from medium acid to very strongly acid throughout the profile, except in areas where lime has been applied. In some pedons a few plinthite nodules are at a depth of more than 70 inches. A few quartzite pebbles are in some pedons.

The Ap or A horizon has hue of 10YR, value of 3 or 4, and chroma of 2 or 3. It is 4 to 8 inches thick.

The E horizon has hue of 10YR, 7.5YR, or 5YR, value of 4 to 7, and chroma of 5 to 8. It is sand or loamy sand. It is 36 to 72 inches thick.

Some pedons have a BE horizon. This horizon has hue of 5YR or 7.5YR, value of 5 or 6, and chroma of 6 to 8. It is fine sandy loam or sandy loam. It is as much as 6 inches thick.

The Bt horizon has hue of 7.5YR, 10YR, 5YR, or 2.5YR, value of 5 or 6, and chroma of 6 to 8. In pedons where hue is 7.5YR or 10YR, this horizon has less than 5 percent plinthite. The texture is sandy loam, fine sandy loam, or sandy clay loam. Thickness of the Bt horizon ranges from 20 to more than 40 inches.

Some pedons have a BC horizon. This horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 6 to 8. It is sandy loam.

Some pedons have a C horizon. Commonly, this horizon is thinly bedded, varicolored, sandy and loamy material.

Yemassee Series

The Yemassee series consists of very deep, somewhat poorly drained, moderately permeable soils that formed in loamy fluvial sediments. These soils are on stream terraces. They are occasionally flooded. The water table is at a depth of 12 to 18 inches for about 2 to 4 months during winter and in early spring. Slopes range from 0 to 2 percent. The soils are fine-loamy, siliceous, thermic Aeric Ochraquults.

Yemassee soils are associated with Bibb, Bigbee, Garcon, Johnston, Kinston, Leefield, Rutlege, and Stilson soils. Bibb, Johnston, Kinston, and Rutlege soils are wetter than the Yemassee soils. Bigbee soils are sandy throughout. Garcon, Leefield, and Stilson soils have a surface layer and subsurface layer with a combined thickness of 20 to 40 inches.

Typical pedon of Yemassee fine sandy loam, in an area of Yemassee, Garcon, and Bigbee soils, occasionally flooded; 1,900 feet south and 1,450 feet east of the northwest corner of sec. 3, T. 4 N., R. 25 W.

A—0 to 5 inches; very dark gray (10YR 3/1) fine sandy loam; weak medium subangular blocky structure; loose; many fine and medium roots; very strongly acid; clear smooth boundary.

E—5 to 8 inches; yellowish brown (10YR 5/4) fine sandy loam; few medium distinct grayish brown (10YR 5/2) and many coarse prominent strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; very friable; common fine roots; very strongly acid; clear smooth boundary.

Bt—8 to 20 inches; yellowish brown (10YR 5/4) sandy clay loam; many coarse prominent strong brown (7.5YR 5/6) and grayish brown (10YR 5/2) mottles; moderate medium subangular blocky structure; friable; common fine roots; very strongly acid; clear smooth boundary.

Btg—20 to 50 inches; gray (10YR 5/1) sandy clay loam; many coarse prominent strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; friable; few fine roots; very strongly acid; clear smooth boundary.

Cg1—50 to 75 inches; gray (10YR 5/1) fine sandy loam; common medium prominent strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; very friable; very strongly acid; clear smooth boundary.

Cg2—75 to 80 inches; light gray (10YR 6/1) sand; common medium prominent brownish yellow (10YR 6/6) mottles; single grained; loose; very strongly acid.

The solum is generally 40 to 60 inches thick, but in places it is 40 to 75 inches thick. Reaction ranges from strongly acid to extremely acid throughout the profile.

The Ap or A horizon has hue of 10YR or 2.5Y, value of 2 to 5, and chroma of 1 or 2. It is fine sandy loam or loamy sand. It is 4 to 9 inches thick.

The E horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 2 to 4. It is mottled in shades of red, yellow, brown, and gray. It is loamy fine sand, loamy sand, fine sandy loam, or sandy loam. It is as much as 11 inches thick.

Some pedons have a BA horizon. This horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 3 to 6. It is mottled in shades of red, yellow, brown, or gray. It is sandy loam or fine sandy loam. It is as much as 5 inches thick.

The Bt horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 to 4. In pedons that do not have a BA horizon, the upper part of the Bt horizon has value of 5 or 6 and chroma of 3 to 6. The Bt horizon has common mottles in shades of yellow, brown, or red. The texture is commonly sandy clay loam, but it ranges to clay loam or fine sandy loam in some pedons. Some pedons have subhorizons of sandy clay that are less than 6 inches thick. The content of silt in the control section is less than 30 percent.

Some pedons have a BC horizon. This horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 or 2. Mottles in shades of olive, yellow, brown, or red are common. The texture is dominantly sandy loam or sandy clay loam, but it ranges to clay loam or sandy clay. Some pedons have strata or pockets of contrasting material.

The C horizon has the same colors as the BC horizon, or it is coarsely mottled in shades of gray, yellow, brown, or red. The texture is variable and ranges from sandy to clayey. Some pedons are stratified, and some have pockets of contrasting material.

Formation of the Soils

In this section the factors of soil formation are discussed and related to the soils in Okaloosa County. In addition, the processes of soil formation are described.

Factors of Soil Formation

Soil forms through weathering and other processes that act on deposited or accumulated geologic material. The kind of soil that forms depends on the climate under which soil material has existed since accumulation; the plant and animal life in and on the soil; relief, or lay of the land; the type of parent material; and the length of time the forces of soil formation have acted on the soil material.

The five soil-forming factors are interdependent; each modifies the effects of the others. Any one of the five factors can have more influence than the others on the formation of a soil and can account for most of its properties. For example, if the parent material is quartz sand, the soil generally has only weakly expressed horizons. In some places the effect of the parent material is modified greatly by the effects of climate, relief, and plants and animals in and on the soil. As a soil forms, it is influenced by more than one of the five factors, but in some places one factor can have a dominant effect. A modification or variation in any of the factors results in the formation of a different soil.

Climate

Precipitation, temperature, humidity, and wind are the climatic forces that act on the parent material of soils. These forces also cause some variation in the plant and animal life on and in the soils and thus influence changes in the parent material.

Okaloosa County has a warm and humid climate. The Gulf of Mexico and the Choctawhatchee Bay have a moderating effect on both summer and winter temperatures in the southern part of Okaloosa County and, to a lesser extent, in the northern part of the county. In the northern part of the county, the ground rarely freezes to a depth of more than a few inches. Summers are long and hot, and temperatures are fairly uniform from year to year and show little day-to-day variation. Winters are short and mild, but temperatures can vary considerably from day to day. Rainfall averages about 62 inches a year.

Because of the warm temperatures and abundant rainfall, chemical and biological actions are rapid. The abundant rainfall leaches soluble bases, plant nutrients, and colloidal material downward. Consequently, most of the soils in this climate have a low content of organic matter and low natural fertility and high acidity.

Plants and Animals

Plants and animals have an important role in the formation of soils. The kinds and numbers of plants and animals that live in and on the soil are governed largely by climate and, to a lesser degree, by each of the other soil-forming factors.

Plants and animals furnish organic matter, mix and stir the soil, and move plant nutrients from the lower to the upper horizons. They also help to change soil structure and porosity.

Micro-organisms, including bacteria and fungi, help to weather and break down minerals and decompose organic matter. They are most numerous in the upper few inches of the soil. Earthworms and small animals that live in the soil alter the chemical composition and mix the different layers of the soil. Plants also act on the soil chemically and churn it by root penetration.

Relief

Relief has affected the formation of soils in Okaloosa County mainly by its influence on soil-water relationships and on erosion in the northern part of the county. Soils in large, flat areas and depressions are generally poorly drained. Their formation is retarded by accumulated water, much of which is received as runoff from adjacent areas. As slope increases, runoff increases in intensity, less water is absorbed to become available to plants, and the hazard of erosion increases. In places, erosion nearly keeps pace with soil formation. Consequently, steep soils are generally shallow and weakly developed. Other factors of soil formation normally associated with relief, such as temperature and plant cover, are of minor importance in the county.

The four general relief areas in the county are flatwoods, sandhills, rolling uplands, and flood plains. Differences in the soils in these areas are directly related to relief. The soils in the flatwoods have a high water table and are periodically wet at the surface. These soils are not as highly leached as those in the sandhills and the rolling uplands. The soils in the sandhills are deep and sandy, and they are subject to droughtiness. The soils in the rolling uplands are mostly loamy and clayey and are subject to erosion. The soils on flood plains are subject to flooding and prolonged wetness.

Parent Material

The parent material of the soils in Okaloosa County consists of beds of sandy and clayey material that was transported by floodwater from the major streams and by ocean current. The ocean covered the survey area a number of times during the Pleistocene Epoch. During these periods of inundation, the Mio-Pliocene sediments were eroded from the land and redeposited or reworked on the shallow sea bottom to form marine terraces. Flood-plain sediments from the higher uplands were deposited on the marine terraces, forming a landmass, or they were reworked and mixed with the marine-terrace sediments.

From the surface downward, the county is underlain by Pleistocene and Recent lower marine and estuarine terrace deposits; the Plio-Pleistocene Citronelle Formation; the Miocene Chipola, Shoal River, and Red Bay Formations; the Oligocene Duncan Church and Marianna Limestone Formations; and the Eocene Crystal River Formation.

The various kinds of parent material in the survey area differ widely in mineral and chemical composition and in physical properties. The main physical differences, such as those between sand, silt, and clay, can be observed in the field. Differences in mineralogical and chemical composition are important to soil formation and to physical and chemical characteristics of the soils. Many differences among soils in the county appear to reflect differences in the parent material.

Time

Time is an important factor in soil formation. The physical and chemical changes brought about by climate, living organisms, and relief are slow. The length of time needed to convert raw geologic material into soil varies according to the nature of the material and the interaction of the other soil-forming factors. Some basic minerals in which soils form weather fairly rapidly, but others are chemically inert and show little change over long periods of time. The rate at which fine particles within the soil form horizons through the process of translocation varies under different conditions, but the process always involves relatively long periods of time.

In Okaloosa County, the dominant geologic material is inert. The sand is almost pure quartz and is highly resistant to weathering. The finer textured silts and clays are the product of earlier weathering.

In terms of geologic time, relatively little time has elapsed since the material in which the soils formed was laid down or emerged from the sea. The loamy and clayey horizons formed in place through the process of clay translocation.

Processes of Soil Formation

The main processes involved in the formation of soil horizons are accumulation of organic matter, leaching of calcium carbonate bases, reduction and transfer of iron, and formation and translocation of silicate clay material. These processes can occur in combination or singularly, depending on the integration of the factors of soil formation.

Most of the soils in Okaloosa County have four main horizons. These are the A, E, B, and C horizons. Organic matter has accumulated in the surface layer of all of the soils in the county to form an A horizon. The content of organic matter varies in different soils. It ranges from very low to high because of differences in relief and wetness. The E horizon, or subsurface layer, has the maximum loss of soluble or suspended material. Some soils do not have an E horizon.

The B horizon, or subsoil, lies immediately below the A and E horizons. It has the maximum accumulation of dissolved or suspended material, such as organic matter, iron, or clay. In some soils, such as Lakeland sand, the B horizon has not yet developed.

The C horizon is the substratum. It has been affected very little by the soil-forming processes, but it may be somewhat modified by weathering.

The chemical reduction and transfer of iron, called gleying, is evident in the wet soils of the county. Gleying, shown by gray color in the subsoil and gray mottles in other horizons, indicates the reduction and loss of iron. In some sandy soils, the clean sand grains are gray and the color has no relation to gleying. Some soils, such as Notcher soils, have reddish brown mottles and concretions. These mottles and concretions indicate a segregation of iron.

Leaching of carbonates and bases has occurred in all of the productive soils of the county. This leaching process contributes to the formation of horizons and to the inherent poor fertility of these soils.

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Glossary

ABC soil. A soil having an A, a B, and a C horizon.

AC soil. A soil having only an A and a C horizon. Commonly, such soil formed in recent alluvium or on steep, rocky slopes.

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

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

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

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:

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.

Bisequum. Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

Blowout. A shallow depression from which all or most of the soil material has been removed by the wind. A blowout has a flat or irregular floor formed by a resistant layer or by an accumulation of pebbles or cobbles. In some blowouts the water table is exposed.

Bottom land. The normal flood plain of a stream, subject to flooding.

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Catena. A sequence, or "chain," of soils on a landscape that formed in similar kinds of parent material but have different characteristics as a result of differences in relief and drainage.

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.

Coarse fragments. If round, mineral or rock particles 2 millimeters to 25 centimeters (10 inches) in diameter; if flat, mineral or rock particles (flagstone) 15 to 38 centimeters (6 to 15 inches) long.

Cobblestone (or cobble). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Colluvium. Soil material or rock fragments, or both, moved by creep, slide, or local wash and deposited at the base of steep slopes.

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.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are:

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—When wet, adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Cemented.—Hard; little affected by moistening.

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

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.

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.

Decreasers. The most heavily grazed climax range plants. Because they are the most palatable, they are the first to be destroyed by overgrazing.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

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.

Eolian soil material. Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.

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 human or animal activities 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.

Fallow. Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grains are grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

Fast intake (in tables). The rapid movement of water into the soil.

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.

Fibric soil material (peat). The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

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.*

Fine textured soil. Sandy clay, silty clay, or clay.

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Foot slope. The inclined surface at the base of a hill.

Forb. Any herbaceous plant not a grass or a sedge.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

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 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that is 15 to 50 percent, by volume, rounded or angular rock fragments, not prominently flattened, up to 3 inches (7.6 centimeters) in diameter.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water (geology). Water filling all the unblocked pores of the material below the water table.

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.

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric and the more decomposed sapric material.

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 uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. The major horizons are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

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, any plowed or disturbed surface layer.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, 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) granular, prismatic, or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

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 overlying 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, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Hard, consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon but can be directly below an A or a B horizon.

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

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.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Increasers. Species in the climax vegetation that increase in amount as the more desirable plants are reduced by close grazing. Increasers commonly are the shorter plants and the less palatable to livestock.

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 capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

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.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are:
Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.
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.
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.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

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).

Muck. Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, 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, such as 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.

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

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poor filter (in tables). Because of rapid permeability, the soil may not adequately filter effluent from a waste disposal system.

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.

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 degrees of acidity or alkalinity, expressed as pH values, are:

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.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Rooting depth (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

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.

Saline soil. A soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium.

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.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Sequum. A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

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 substratum. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

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.

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

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 ensure satisfactory performance of the soil for a specific use.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Small stones (in tables). Rock fragments less than 3 inches (7.6 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.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

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, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the substratum. The living roots and plant and animal activities are largely confined to the solum.

Stripcropping. Growing crops in a systematic arrangement of strips or bands which provide vegetative barriers to soil blowing and water erosion.

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).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from soil blowing and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Breaking up a compact subsoil by pulling a special chisel through the soil.

Substratum. The part of the soil below the solum.

Subsurface layer. Technically, the E horizon. Generally refers to a leached horizon lighter in color and lower in organic matter content than the overlying surface layer.

Summer fallow. The tillage of uncropped land during the summer to control weeds and allow storage of moisture in the soil for the growth of a later crop. A practice common in semiarid regions, where annual precipitation is not enough to produce a crop every year. Summer fallow is frequently practiced before planting winter grain.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from about 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

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.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

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."

Thin layer (in tables). Otherwise suitable soil material that is too thin for the specified use.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toe slope. The outermost inclined surface at the base of a hill; part of a foot slope.

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.

Variegation. Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

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.

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

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Tables

TABLE 1.--TEMPERATURE AND PRECIPITATION

(Recorded in the period November 1939 to February 1981 at Eglin Air Force Base, Florida. The symbol > means more than; < means less than)

Month	Temperature					Precipitation				Average number of days						
	Average			Extreme						Precipitation			Temperature			
													Maximum		Minimum	
	Daily max.	Daily min.	Monthly	Max.	Min.	Average	Maximum monthly	Minimum monthly	Maximum in 24 hrs.	>0.01 in.	>0.5 in.	Thunder-storms	>95°	>90°	<40°	<32°
	°F	°F	°F	°F	°F	In	In	In	In							
Jan.	60	42	51	78	9	4.3	9.9	0.2	5.5	9	3	2	0	0	15	7
Feb.	63	44	54	80	12	4.2	12.7	.3	5.4	9	3	3	0	0	10	5
Mar.	68	50	60	89	19	6.0	14.4	.4	4.9	10	3	5	0	0	5	1
Apr.	76	58	67	94	29	4.5	12.1	.3	6.1	6	3	4	0	0	1	0
May	83	65	74	102	40	3.7	11.8	.0	5.2	7	2	6	0	2	0	0
June	88	72	80	103	52	5.2	12.3	.9	5.8	10	3	11	2	10	0	0
July	89	74	82	106	60	7.9	19.9	1.0	5.9	14	5	17	2	15	0	0
Aug.	90	74	82	104	62	6.9	14.2	2.0	5.6	13	4	16	2	16	0	0
Sept.	86	70	79	97	43	7.3	23.3	1.3	8.6	9	4	7	0	8	0	0
Oct.	79	59	69	95	33	3.3	15.0	.0	6.7	5	2	2	0	1	0	0
Nov.	69	49	59	89	17	3.6	11.9	.2	3.2	7	2	2	0	0	6	1
Dec.	63	44	53	79	9	4.7	16.6	.6	7.7	9	3	2	0	0	12	5

TABLE 2.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
2	Arents, 2 to 8 percent slopes	917	0.2
3	Beaches	1,096	0.2
4	Chipley and Hurricane soils, 0 to 5 percent slopes	5,961	1.0
6	Dorovan muck, frequently flooded	42,500	7.1
7	Duckston sand, frequently flooded	723	0.1
8	Foxworth sand, 0 to 5 percent slopes	14,152	2.4
10	Kureb sand, 0 to 8 percent slopes	4,187	0.7
12	Lakeland sand, 0 to 5 percent slopes	184,512	30.8
13	Lakeland sand, 5 to 12 percent slopes	23,008	3.8
14	Lakeland sand, 12 to 30 percent slopes	3,662	0.6
15	Leon sand	2,895	0.5
16	Lucy loamy sand, 0 to 5 percent slopes	5,929	1.0
17	Mandarin sand, 0 to 3 percent slopes	518	0.1
18	Newhan-Corolla complex, rolling	5,349	0.9
20	Udorthents, nearly level	1,130	0.2
21	Resota sand, 0 to 5 percent slopes	1,034	0.2
22	Rutlege sand, depressional	5,499	0.9
23	Troup sand, 0 to 5 percent slopes	29,904	5.0
24	Troup sand, 5 to 8 percent slopes	8,381	1.4
25	Troup sand, 8 to 12 percent slopes	7,351	1.2
26	Troup sand, 12 to 25 percent slopes	1,952	0.3
27	Urban land	2,887	0.5
34	Albany loamy sand, 0 to 5 percent slopes	3,218	0.5
35	Angie sandy loam, 2 to 5 percent slopes	1,779	0.3
36	Bonifay sand, 0 to 5 percent slopes	31,173	5.2
37	Bonifay sand, 5 to 8 percent slopes	2,405	0.4
38	Dothan loamy sand, 0 to 2 percent slopes	1,421	0.2
39	Dothan loamy sand, 2 to 5 percent slopes	39,280	6.5
40	Dothan loamy sand, 5 to 8 percent slopes	13,976	2.3
41	Fuquay loamy fine sand, 0 to 5 percent slopes	25,353	4.2
42	Fuquay loamy fine sand, 5 to 8 percent slopes	4,748	0.8
43	Kinston, Johnston, and Bibb soils, frequently flooded	30,350	5.1
44	Leefield-Stilson complex, 0 to 5 percent slopes	13,664	2.3
45	Orangeburg sandy loam, 0 to 2 percent slopes	10,038	1.7
46	Orangeburg sandy loam, 2 to 5 percent slopes	8,717	1.5
47	Orangeburg sandy loam, 5 to 8 percent slopes	5,112	0.9
48	Pickney loamy sand, depressional	1,613	0.3
49	Bonifay-Dothan-Angie complex, 5 to 12 percent slopes	17,608	2.9
50	Yemassee, Garcon, and Bigbee soils, occasionally flooded	10,026	1.7
51	Troup-Orangeburg-Cowarts complex, 5 to 12 percent slopes	10,885	1.8
52	Escambia fine sandy loam, 0 to 3 percent slopes	5,875	1.0
53	Notcher gravelly sandy loam, 0 to 2 percent slopes	252	*
54	Notcher gravelly sandy loam, 2 to 5 percent slopes	1,459	0.2
55	Pansey sandy loam, depressional	1,183	0.2
56	Pansey sandy loam, 1 to 3 percent slopes	2,915	0.5
	Water areas less than 40 acres in size	2,321	0.4
	Total	598,918	100.0

* Less than 0.1 percent.

TABLE 3.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE

(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)

Soil name and map symbol	Land capability	Corn	Cotton lint	Soybeans	Improved bermuda-grass	Peanuts	Wheat	Bahiagrass
		Bu	Lbs	Bu	AUM*	Lbs	Bu	AUM*
2. Arents								
3. Beaches								
4-------------- Chipley and Hurricane	IIIs	50	400	20	8.0	1,700	23	7.3
6-------------- Dorovan	VIIw	---	---	---	---	---	---	---
7-------------- Duckston	VIIw	---	---	---	---	---	---	---
8-------------- Foxworth	IIIs	60	500	25	---	1,700	27	7.2
10-------------- Kureb	VIIs	---	---	---	---	---	---	3.5
12-------------- Lakeland	IVs	55	450	20	7.0	1,600	25	7.0
13-------------- Lakeland	VIs	---	---	---	6.5	---	---	6.5
14-------------- Lakeland	VIIs	---	---	---	6.0	---	---	6.0
15-------------- Leon	IVw	50	400	---	---	1,400	23	7.5
16-------------- Lucy	IIs	85	650	34	8.0	2,600	34	8.0
17-------------- Mandarin	VIs	---	---	---	---	---	---	6.0
18-------------- Newhan-Corolla	VIIs	---	---	---	---	---	---	---
20. Udorthents								
21-------------- Resota	VIs	---	---	---	---	---	---	5.0
22-------------- Rutlege	VIIw	---	---	---	---	---	---	4.5
23-------------- Troup	IIIs	60	500	25	7.5	1,700	27	7.2
24-------------- Troup	IVs	55	450	22	7.3	1,600	25	7.0

See footnote at end of table.

TABLE 3.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn	Cotton lint	Soybeans	Improved bermuda-grass	Peanuts	Wheat	Bahiagrass
		Bu	Lbs	Bu	AUM*	Lbs	Bu	AUM*
25-------------- Troup	VIs	---	---	---	6.5	---	---	5.0
26-------------- Troup	VIIe	---	---	---	6.0	---	---	5.0
27. Urban land								
34-------------- Albany	IIIe	60	400	25	7.0	1,900	23	7.2
35-------------- Angie	IIIe	80	650	30	12.0	2,300	34	8.0
36-------------- Bonifay	IIIs	60	500	25	7.5	1,700	27	7.2
37-------------- Bonifay	IVs	55	450	24	7.5	1,200	25	7.2
38-------------- Dothan	I	120	950	48	---	3,500	50	9
39-------------- Dothan	IIe	120	950	48	---	3,400	50	9
40-------------- Dothan	IIIe	100	800	38	---	2,900	42	8
41-------------- Fuquay	IIs	80	650	34	---	2,500	34	8.0
42-------------- Fuquay	IIIs	75	600	30	---	2,100	31	7.5
43-------------- Kinston, Johnston, and Bibb	VIIw	---	---	---	---	---	---	---
44-------------- Leefield-Stilson	IIw	85	600	35	9.0	2,900	34	9.0
45-------------- Orangeburg	I	120	1,000	50	10.5	4,000	50	9.0
46-------------- Orangeburg	IIe	120	950	48	10.5	3,500	50	9.0
47-------------- Orangeburg	IIIe	100	800	38	10.0	2,900	42	8.0
48-------------- Pickney	VIw	---	---	---	---	---	---	7.0
49-------------- Bonifay-Dothan-Angie	IVe	45	350	15	---	1,200	20	6.5

See footnote at end of table.

TABLE 3.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn	Cotton lint	Soybeans	Improved bermuda-grass	Peanuts	Wheat	Bahiagrass
		Bu	Lbs	Bu	AUM*	Lbs	Bu	AUM*
50-------------- Yemassee, Garcon, and Bigbee	IIw	75	650	30	---	2,100	34	8.0
51-------------- Troup-Orangeburg-Cowarts	VIs	---	---	---	7.2	---	---	6.5
52-------------- Escambia	IIw	100	800	40	9.0	3,000	42	10.0
53-------------- Notcher	I	115	900	46	---	3,400	45	8.5
54-------------- Notcher	IIe	115	900	46	---	3,300	45	8.5
55-------------- Pansey	VIIw	---	---	---	---	---	---	---
56-------------- Pansey	IVw	---	---	---	7.0	---	---	6.5

* 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 4.--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)

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	
4:										
Chipley	11S	Slight	Moderate	Moderate	Moderate	Moderate	Slash pine	90	11	Slash pine, loblolly pine.
							Loblolly pine	90	9	
							Longleaf pine	80	7	
							Post oak	---	---	
							Turkey oak	---	---	
							Blackjack oak	---	---	
Hurricane	11W	Slight	Moderate	Moderate	Moderate	Moderate	Slash pine	90	11	Slash pine, loblolly pine, longleaf pine.
							Longleaf pine	75	6	
							Loblolly pine	90	9	
							Blackjack oak	---	---	
							Post oak	---	---	
							Turkey oak	---	---	
6: Dorovan	7W	Slight	Severe	Severe	Severe	Severe	Blackgum	70	7	Baldcypress.
							Sweetbay	---	---	
							Baldcypress	---	---	
							Swamp tupelo	---	---	
							Green ash	---	---	
							Red maple	---	---	
							Water tupelo	---	---	
8: Foxworth	10S	Slight	Moderate	Moderate	Slight	Slight	Slash pine	80	10	Slash pine.
							Longleaf pine	65	5	
							Turkey oak	---	---	
							Live oak	---	---	
							Post oak	---	---	
							Bluejack oak	---	---	
							Flowering dogwood	---	---	
10: Kureb	6S	Slight	Moderate	Severe	Slight	Slight	Loblolly pine	64	6	Longleaf pine, loblolly pine, slash pine.
							Longleaf pine	53	3	
							Slash pine	---	---	

See footnote at end of table.

TABLE 4.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
12, 13, 14 Lakeland	10S	Slight	Moderate	Moderate	Slight	Slight	Slash pine	80	10	Slash pine, loblolly pine.
							Loblolly pine	80	8	
							Longleaf pine	65	5	
							Turkey oak	---	---	
							Blackjack oak	---	---	
							Post oak	---	---	
15 Leon	8W	Slight	Moderate	Severe	Severe	Severe	Slash pine	70	8	Slash pine.
							Longleaf pine	65	5	
16 Lucy	8S	Slight	Moderate	Moderate	Slight	Moderate	Loblolly pine	80	8	Slash pine, longleaf pine, loblolly pine.
							Longleaf pine	70	6	
							Slash pine	84	11	
17 Mandarin	8S	Slight	Moderate	Moderate	Moderate	Slight	Slash pine	70	8	Slash pine.
							Longleaf pine	60	4	
							Live oak	---	---	
21 Resota	8S	Slight	Moderate	Moderate	Slight	Moderate	Slash pine	70	8	Slash pine, longleaf pine.
							Longleaf pine	65	5	
							Sand pine	60	3	
							Sand live oak	---	---	
22 Rutlege	9W	Slight	Severe	Severe	Severe	Severe	Loblolly pine	90	9	Loblolly pine, baldcypress, slash pine.
							Sweetgum	90	7	
							Pin oak	85	4	
23, 24, 25 Troup	8S	Slight	Moderate	Severe	Slight	Slight	Loblolly pine	80	8	Loblolly pine, longleaf pine, slash pine.
							Longleaf pine	70	6	
							Slash pine	84	11	
26 Troup	8R	Moderate	Moderate	Severe	Slight	Slight	Loblolly pine	80	8	---
							Longleaf pine	70	6	
34 Albany	9W	Slight	Moderate	Moderate	Moderate	Moderate	Loblolly pine	95	9	Loblolly pine, slash pine.
							Slash pine	85	11	
							Longleaf pine	80	7	
35 Angie	10W	Slight	Moderate	Slight	Slight	Severe	Loblolly pine	92	10	Loblolly pine, slash pine.
							Slash pine	---	---	
							Longleaf pine	---	---	
							Sweetgum	---	---	

See footnote at end of table.

TABLE 4.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
36, 37 Bonifay	10S	Slight	Moderate	Severe	Slight	Slight	Slash pine	80	10	Slash pine, loblolly pine, longleaf pine.
							Longleaf pine	65	5	
							Loblolly pine	80	8	
							Post oak	---	---	
							Blackjack oak	---	---	
							Turkey oak	---	---	
38, 39, 40 Dothan	9A	Slight	Slight	Slight	Slight	Severe	Loblolly pine	88	9	Loblolly pine, slash pine, longleaf pine.
							Slash pine	92	12	
							Longleaf pine	84	8	
							Hickory	---	---	
							Water oak	---	---	
41, 42 Fuquay	8S	Slight	Moderate	Moderate	Slight	Moderate	Loblolly pine	85	8	Loblolly pine, longleaf pine.
							Longleaf pine	77	7	
							Slash pine	93	12	
43:										
Kinston	9W	Slight	Severe	Severe	Severe	Severe	Loblolly pine	100	9	Loblolly pine, slash pine, American sycamore, yellow-poplar, eastern cottonwood, cherrybark oak, green ash, sweetgum.
							Sweetgum	95	8	
							White oak	90	4	
							Eastern cottonwood	100	---	
							Cherrybark oak	95	4	
Johnston	7W	Slight	Severe	Severe	Severe	Severe	Yellow-poplar	94	7	Green ash, loblolly pine, sweetgum, baldcypress.
							Loblolly pine	106	12	
							Sweetgum	94	8	
							Water oak	103	7	
							Water tupelo	---	---	
							Swamp tupelo	---	---	
							Baldcypress	---	---	
Bibb	9W	Slight	Severe	Severe	Severe	Severe	Loblolly pine	90	9	Eastern cottonwood, loblolly pine, sweetgum, yellow-poplar.
							Sweetgum	90	7	
							Water oak	90	6	
							Blackgum	---	---	
							Yellow-poplar	---	---	
							Atlantic white-cedar	---	---	

See footnote at end of table.

TABLE 4.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	
44:										
Leefield	8W	Slight	Moderate	Moderate	Moderate	Severe	Loblolly pine	84	8	Loblolly pine, slash pine.
							Slash pine	84	11	
							Longleaf pine	70	6	
Stilson	9W	Slight	Moderate	Slight	Slight	Severe	Loblolly pine	95	9	Slash pine, loblolly pine, longleaf pine.
							Slash pine	95	12	
							Longleaf pine	80	7	
							Sweetgum	---	---	
45, 46, 47 Orangeburg	8A	Slight	Slight	Slight	Slight	Severe	Loblolly pine	80	8	Slash pine, loblolly pine.
							Slash pine	86	11	
							Longleaf pine	77	7	
48 Pickney	7W	Slight	Severe	Severe	Severe	Moderate	Sweetgum	90	7	Baldcypress.
							Baldcypress	---	---	
							Water tupelo	---	---	
49:										
Bonifay	9S	Slight	Moderate	Moderate	Slight	Slight	Loblolly pine	86	9	Loblolly pine, longleaf pine.
							Longleaf pine	75	6	
							White oak	---	---	
							Hickory	---	---	
Dothan	9A	Slight	Slight	Slight	Slight	Moderate	Loblolly pine	88	9	Loblolly pine, slash pine, longleaf pine.
							Slash pine	92	12	
							Longleaf pine	84	8	
							Hickory	---	---	
							Water oak	---	---	
Angie	10W	Slight	Moderate	Slight	Slight	Severe	Loblolly pine	92	10	Loblolly pine, slash pine.
							Slash pine	---	---	
							Longleaf pine	---	---	
							Sweetgum	---	---	

See footnote at end of table.

TABLE 4.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	
50:										
Yemassee	9W	Slight	Moderate	Moderate	Severe	Moderate	Loblolly pine	90	9	Slash pine, loblolly pine, American sycamore, yellow-poplar.
							Slash pine	88	11	
							Sweetgum	95	8	
							Southern red oak	---	---	
							White oak	---	---	
							Yellow-poplar	100	8	
							Longleaf pine	80	7	
							Blackgum	---	---	
							Hickory	---	---	
Garcon	10W	Slight	Moderate	Moderate	Moderate	Moderate	Slash pine	80	10	Slash pine.
							Longleaf pine	70	6	
Bigbee	9S	Slight	Moderate	Severe	Slight	Slight	Loblolly pine	88	9	Loblolly pine.
51:										
Troup	8S	Slight	Moderate	Moderate	Slight	Slight	Loblolly pine	80	8	Loblolly pine, longleaf pine, slash pine.
							Longleaf pine	70	6	
							Slash pine	84	11	
Orangeburg	8A	Slight	Slight	Slight	Slight	Severe	Loblolly pine	80	8	Slash pine, loblolly pine.
							Slash pine	86	11	
							Longleaf pine	77	7	
51:										
Cowarts	9A	Slight	Slight	Slight	Slight	Severe	Loblolly pine	86	9	Loblolly pine, longleaf pine, slash pine.
							Slash pine	86	11	
							Longleaf pine	67	5	
52 Escambia	9W	Slight	Moderate	Slight	Moderate	Severe	Loblolly pine	90	9	Loblolly pine, slash pine.
							Longleaf pine	80	7	
							Slash pine	90	11	
							Sweetgum	90	7	
53, 54 Notcher	9A	Slight	Slight	Slight	Slight	Severe	Loblolly pine	90	9	Loblolly pine, slash pine, longleaf pine.
							Slash pine	90	11	
							Longleaf pine	80	7	

See footnote at end of table.

TABLE 4.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Potential productivity: Common trees	Site index	Productivity class*	Trees to plant
55----------------- Pansey	9A	Slight	Severe	Severe	Slight	Severe	Loblolly pine------- Longleaf pine------- Shortleaf pine------ Sweetgum------------ Water oak----------- Southern red oak----	90 75 80 90 90 80	9 6 9 7 6 4	Loblolly pine, longleaf pine, slash pine.
56----------------- Pansey	10W	Slight	Severe	Severe	Moderate	Severe	Slash pine---------- Loblolly pine------- Sweetgum------------ Water oak-----------	83 83 80 80	10 8 6 ---	Slash pine, loblolly pine, sweetgum, water oak.

* Productivity class is the yield in cubic meters per hectare per year calculated at the age of culmination of mean annual increment for fully stocked natural stands.

TABLE 5.--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)

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
2-------------------- Arents	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
3-------------------- Beaches	Severe: flooding, wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness, flooding.	Severe: wetness, too sandy.	Severe: wetness, droughty, flooding.
4:					
Chipley--------------	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
Hurricane------------	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
6-------------------- Dorovan	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding, flooding.	Severe: ponding, excess humus.	Severe: ponding, flooding, excess humus.
7-------------------- Duckston	Severe: flooding, wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness, flooding.	Severe: wetness, too sandy.	Severe: wetness, droughty, flooding.
8-------------------- Foxworth	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty.
10------------------- Kureb	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
12------------------- Lakeland	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty, too sandy.
13------------------- Lakeland	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Moderate: droughty, slope, too sandy.
14------------------- Lakeland	Severe: slope, too sandy.	Severe: slope, too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Severe: slope.
15------------------- Leon	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness, droughty.
16------------------- Lucy	Slight----------	Slight----------	Moderate: slope.	Slight----------	Moderate: droughty.
17------------------- Mandarin	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: wetness, droughty, too sandy.

TABLE 5.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
18:					
Newhan	Severe: slope, too sandy.	Severe: slope, too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Severe: droughty, slope.
Corolla	Severe: flooding, too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
20 Udorthents	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: percs slowly.	Slight	Moderate: droughty.
21 Resota	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
22 Rutlege	Severe: too sandy, ponding.	Severe: too sandy, ponding.	Severe: too sandy, ponding.	Severe: too sandy, ponding.	Severe: ponding.
23 Troup	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty.
24 Troup	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Moderate: droughty.
25 Troup	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Moderate: droughty, slope.
26 Troup	Severe: slope, too sandy.	Severe: slope, too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Severe: slope.
27. Urban land					
34 Albany	Severe: wetness.	Moderate: wetness, too sandy.	Severe: wetness.	Moderate: wetness, too sandy.	Severe: droughty.
35 Angie	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, percs slowly.	Slight	Slight.
36 Bonifay	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
37 Bonifay	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Severe: droughty.
38 Dothan	Slight	Slight	Slight	Slight	Moderate: droughty.
39 Dothan	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
40 Dothan	Slight	Slight	Severe: slope.	Slight	Moderate: droughty.

TABLE 5.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
41 Fuquay	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.	Moderate: droughty.
42 Fuquay	Moderate: too sandy.	Moderate: too sandy.	Severe: slope.	Moderate: too sandy.	Moderate: droughty.
43:					
Kinston	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
Johnston	Severe: flooding, ponding.	Severe: ponding.	Severe: ponding, flooding.	Severe: ponding.	Severe: ponding, flooding.
Bibb	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding, too sandy.	Severe: wetness.	Severe: wetness, flooding.
44:					
Leefield	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness.	Moderate: wetness.	Moderate: wetness, droughty.
Stilson	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
45 Orangeburg	Slight	Slight	Slight	Slight	Slight.
46 Orangeburg	Slight	Slight	Moderate: slope.	Slight	Slight.
47 Orangeburg	Slight	Slight	Severe: slope.	Slight	Slight.
48 Pickney	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
49:					
Bonifay	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Moderate: droughty, slope, too sandy.
Dothan	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: droughty, slope.
Angie	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight	Moderate: slope.
50:					
Yemassee	Severe: flooding, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: flooding, wetness.

TABLE 5.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
50:					
Garcon	Severe: flooding.	Moderate: wetness.	Moderate: wetness, flooding.	Moderate: wetness.	Moderate: wetness, droughty, flooding.
Bigbee	Severe: flooding, too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty, flooding.
51:					
Troup	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Moderate: droughty, slope.
Orangeburg	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
Cowarts	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight	Moderate: slope.
52 Escambia	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.
53, 54 Notcher	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight	Moderate: small stones.
55 Pansey	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
56 Pansey	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.

TABLE 6.--WILDLIFE HABITAT

(See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated)

Soil name and map symbol	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
2----------------- Arents	Poor	Poor	Fair	Very poor.	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
3----------------- Beaches	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
4:										
Chipley-----------	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Hurricane---------	Poor	Poor	Fair	Fair	Fair	Poor	Very poor.	Poor	Fair	Very poor.
6----------------- Dorovan	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good.
7----------------- Duckston	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Poor	Very poor.	Very poor.	Poor.
8----------------- Foxworth	Fair	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
10---------------- Kureb	Very poor.	Poor	Poor	Very poor.	Poor	Very poor.	Very poor.	Poor	Very poor.	Very poor.
12, 13, 14--------- Lakeland	Poor	Fair	Fair	Poor	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
15---------------- Leon	Poor	Fair	Good	Poor	Fair	Fair	Poor	Fair	Fair	Poor.
16---------------- Lucy	Poor	Fair	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
17---------------- Mandarin	Very poor.	Poor	Poor	Poor	Fair	Very poor.	Very poor.	Poor	Poor	Very poor.
18:										
Newhan------------	Very poor.	Poor	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.
Corolla-----------	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Very poor.
20---------------- Udorthents	Fair	Fair	Fair	Good	Good	Poor	Poor	Fair	Good	Poor.
21---------------- Resota	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
22---------------- Rutlege	Very poor.	Poor	Poor	Poor	Poor	Fair	Good	Poor	Poor	Fair.
23, 24, 25, 26----- Troup	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.

TABLE 6.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hardwood trees	Conif- erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
27. Urban land										
34----------------- Albany	Fair	Fair	Fair	Fair	Fair	Fair	Poor	Fair	Fair	Poor.
35----------------- Angie	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
36, 37------------- Bonifay	Poor	Fair	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
38, 39, 40--------- Dothan	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
41----------------- Fuquay	Fair	Fair	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
42----------------- Fuquay	Poor	Fair	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
43:										
Kinston-----------	Very poor.	Poor	Poor	Poor	Poor	Good	Fair	Poor	Poor	Fair.
Johnston----------	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Bibb--------------	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
44:										
Leefield----------	Fair	Fair	Good	Fair	Fair	Fair	Fair	Fair	Fair	Fair.
Stilson-----------	Fair	Fair	Good	Fair	Fair	Poor	Poor	Fair	Fair	Poor.
45, 46------------- Orangeburg	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
47----------------- Orangeburg	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
48----------------- Pickney	Very poor.	Very poor.	Very poor.	Poor	Poor	Good	Good	Very poor.	Poor	Good.
49:										
Bonifay-----------	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Dothan------------	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Angie-------------	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
50:										
Yemassee----------	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Garcon------------	Poor	Fair	Good	Poor	Fair	Poor	Poor	Fair	Fair	Poor.
Bigbee------------	Poor	Fair	Fair	Poor	Fair	Very poor.	Very poor.	Fair	Poor	Very poor.

TABLE 6.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba-ceous plants	Hardwood trees	Conif-erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
51:										
Troup	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
Orangeburg	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Cowarts	Poor	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
52 Escambia	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
53 Notcher	Good	Good	Good	---	Good	Poor	Very poor.	Good	Good	Very poor.
54 Notcher	Good	Good	Good	---	Good	Poor	Very poor.	Good	Good	Very poor.
55 Pansey	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Fair.
56 Pansey	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.

TABLE 7.--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 but does not eliminate the need for onsite investigation)

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
2----------------- Arents	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Slight---------	Severe: droughty.
3----------------- Beaches	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: wetness, droughty, flooding.
4:						
Chipley----------	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Severe: droughty.
Hurricane--------	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Severe: droughty.
6----------------- Dorovan	Severe: excess humus, ponding.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding.	Severe: subsides, ponding.	Severe: subsides, ponding, flooding.	Severe: ponding, flooding, excess humus.
7----------------- Duckston	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: wetness, droughty, flooding.
8----------------- Foxworth	Severe: cutbanks cave.	Slight---------	Moderate: wetness.	Slight---------	Slight---------	Moderate: droughty.
10---------------- Kureb	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Slight---------	Severe: droughty.
12---------------- Lakeland	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Slight---------	Moderate: droughty, too sandy.
13---------------- Lakeland	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope, too sandy.
14---------------- Lakeland	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
15---------------- Leon	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, droughty.
16---------------- Lucy	Moderate: cutbanks cave.	Slight---------	Slight---------	Slight---------	Slight---------	Moderate: droughty.

TABLE 7.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
17 Mandarin	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness, droughty, too sandy.
18:						
Newhan	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: droughty, slope.
Corolla	Severe: cutbanks cave, wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Moderate: flooding, wetness.	Severe: droughty.
20 Udorthents	Moderate: wetness.	Moderate: shrink-swell.	Moderate: wetness, shrink-swell.	Moderate: shrink-swell.	Moderate: low strength, shrink-swell.	Moderate: droughty.
21 Resota	Severe: cutbanks cave.	Slight	Moderate: wetness.	Slight	Slight	Severe: droughty.
22 Rutlege	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
23 Troup	Severe: cutbanks cave.	Slight	Slight	Slight	Slight	Moderate: droughty.
24 Troup	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
25 Troup	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
26 Troup	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
27. Urban land						
34 Albany	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness, flooding.	Severe: droughty.
35 Angie	Moderate: too clayey, wetness.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: low strength, shrink-swell.	Slight.
36 Bonifay	Severe: cutbanks cave.	Slight	Moderate: wetness.	Slight	Slight	Severe: droughty.
37 Bonifay	Severe: cutbanks cave.	Slight	Moderate: wetness.	Moderate: slope.	Slight	Severe: droughty.
38, 39 Dothan	Moderate: wetness.	Slight	Moderate: wetness.	Slight	Slight	Moderate: droughty.
40 Dothan	Moderate: wetness.	Slight	Moderate: wetness.	Moderate: slope.	Slight	Moderate: droughty.

TABLE 7.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
41----------------- Fuquay	Slight----------	Slight----------	Moderate: wetness.	Slight----------	Slight----------	Moderate: droughty.
42----------------- Fuquay	Slight----------	Slight----------	Moderate: wetness.	Moderate: slope.	Slight----------	Moderate: droughty.
43: Kinston-----------	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding, low strength.	Severe: wetness, flooding.
Johnston----------	Severe: cutbanks cave, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: ponding, flooding.	Severe: ponding, flooding.
Bibb--------------	Severe: wetness, cutbanks cave.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: wetness, flooding.
44: Leefield----------	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness, droughty.
Stilson-----------	Severe: cutbanks cave.	Slight----------	Moderate: wetness.	Slight----------	Slight----------	Moderate: droughty.
45, 46------------- Orangeburg	Slight----------	Slight----------	Slight----------	Slight----------	Slight----------	Slight.
47----------------- Orangeburg	Slight----------	Slight----------	Slight----------	Moderate: slope.	Slight----------	Slight.
48----------------- Pickney	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
49: Bonifay-----------	Severe: cutbanks cave.	Moderate: slope.	Moderate: wetness, slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope, too sandy.
Dothan------------	Moderate: wetness, slope.	Moderate: slope.	Moderate: wetness, slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
Angie-------------	Moderate: too clayey, wetness, slope.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, slope.	Severe: low strength, shrink-swell.	Moderate: slope.
50: Yemassee----------	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding.	Moderate: flooding, wetness.

TABLE 7.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
50:						
Garcon	Severe: cutbanks cave, wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding.	Moderate: wetness, droughty, flooding.
Bigbee	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: droughty, flooding.
51:						
Troup	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
Orangeburg	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
Cowarts	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
52 Escambia	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.
53, 54 Notcher	Moderate: wetness.	Slight	Moderate: wetness.	Slight	Slight	Moderate: small stones.
55 Pansey	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
56 Pansey	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.

TABLE 8.--SANITARY FACILITIES

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "slight," "good," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
2: Arents	Slight	Severe: seepage.	Severe: too sandy.	Severe: seepage.	Poor: seepage, too sandy.
3: Beaches	Severe: flooding, wetness, poor filter.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: seepage, too sandy, wetness.
4:					
Chipley	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: too sandy, seepage.
Hurricane	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: wetness, seepage, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy.
6: Dorovan	Severe: subsides, flooding, ponding.	Severe: subsides, flooding, ponding.	Severe: flooding, seepage, ponding.	Severe: flooding, seepage, ponding.	Poor: ponding, excess humus.
7: Duckston	Severe: flooding, wetness, poor filter.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: seepage, too sandy, wetness.
8: Foxworth	Moderate: wetness.	Severe: seepage.	Severe: seepage, wetness, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
10: Kureb	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
12: Lakeland	Slight	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
13: Lakeland	Moderate: slope.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
14: Lakeland	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, slope.

TABLE 8.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
15------------------ Leon	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
16------------------ Lucy	Slight-----------	Severe: seepage.	Slight-----------	Severe: seepage.	Fair: too clayey.
17------------------ Mandarin	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: wetness, too sandy.	Severe: wetness, seepage.	Poor: seepage, too sandy.
18:					
Newhan-------------	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, slope.
Corolla------------	Severe: wetness, poor filter.	Severe: seepage, flooding, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy.
20------------------ Udorthents	Severe: wetness, percs slowly, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: hard to pack.
21------------------ Resota	Moderate: wetness.	Severe: seepage.	Severe: seepage, wetness.	Severe: seepage.	Poor: seepage, too sandy.
22------------------ Rutlege	Severe: ponding, poor filter.	Severe: seepage, ponding.	Severe: seepage, ponding, too sandy.	Severe: seepage, ponding.	Poor: too sandy, ponding.
23, 24-------------- Troup	Slight-----------	Severe: seepage.	Severe: too sandy.	Severe: seepage.	Poor: seepage, too sandy.
25------------------ Troup	Moderate: slope.	Severe: seepage, slope.	Severe: too sandy.	Severe: seepage.	Poor: seepage, too sandy.
26------------------ Troup	Severe: slope.	Severe: seepage, slope.	Severe: slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, slope.
27. Urban land					
34------------------ Albany	Severe: wetness.	Severe: seepage, wetness.	Severe: wetness.	Severe: seepage, wetness.	Poor: wetness.
35------------------ Angie	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack.

TABLE 8.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
36, 37 Bonifay	Moderate: wetness, percs slowly.	Severe: seepage.	Severe: too sandy.	Severe: seepage.	Poor: too sandy.
38 Dothan	Moderate: wetness, percs slowly.	Moderate: seepage.	Moderate: wetness.	Slight	Good.
39, 40 Dothan	Moderate: wetness, percs slowly.	Moderate: seepage, slope.	Moderate: wetness.	Slight	Good.
41, 42 Fuquay	Severe: percs slowly, poor filter.	Severe: seepage.	Moderate: too sandy.	Severe: seepage.	Poor: seepage.
43:					
Kinston	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
Johnston	Severe: flooding, ponding, poor filter.	Severe: seepage, flooding, ponding.	Severe: flooding, seepage, ponding.	Severe: flooding, seepage, ponding.	Poor: ponding.
Bibb	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
44:					
Leefield	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: wetness.	Severe: seepage, wetness.	Fair: wetness.
Stilson	Severe: wetness.	Severe: seepage, wetness.	Moderate: wetness.	Severe: seepage.	Fair: wetness.
45 Orangeburg	Slight	Moderate: seepage.	Slight	Slight	Good.
46, 47 Orangeburg	Slight	Moderate: seepage, slope.	Slight	Slight	Good.
48 Pickney	Severe: ponding, poor filter.	Severe: ponding, seepage.	Severe: ponding, seepage, too sandy.	Severe: ponding, seepage.	Poor: too sandy, seepage, ponding.
49:					
Bonifay	Severe: wetness.	Severe: seepage, slope.	Severe: wetness.	Severe: seepage.	Fair: slope.
Dothan	Severe: wetness, percs slowly.	Severe: slope.	Moderate: wetness, slope.	Moderate: slope.	Fair: slope.

TABLE 8.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
49:					
Angie	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack.
50:					
Yemassee	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, seepage, wetness.	Poor: wetness.
Garcon	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Fair: too sandy.
Bigbee	Severe: flooding, wetness, poor filter.	Severe: seepage, flooding.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage.	Poor: seepage, too sandy.
51:					
Troup	Moderate: slope.	Severe: seepage, slope.	Severe: too sandy.	Severe: seepage.	Poor: seepage, too sandy.
Orangeburg	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
Cowarts	Severe: percs slowly.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: slope, too clayey.
52 Escambia	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: wetness.
53, 54 Notcher	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey, small stones, wetness.
55 Pansey	Severe: ponding.	Severe: ponding.	Severe: ponding, seepage.	Severe: ponding, seepage.	Poor: ponding.
56 Pansey	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.

TABLE 9.--CONSTRUCTION MATERIALS

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "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 but does not eliminate the need for onsite investigation)

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
2: Arents	Good	Probable	Improbable: too sandy.	Poor: too sandy.
3: Beaches	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness.
4:				
Chipley	Fair: wetness.	Probable	Improbable: too sandy.	Poor: too sandy.
Hurricane	Fair: wetness.	Probable	Improbable: too sandy.	Poor: too sandy.
6: Dorovan	Poor: wetness.	Probable	Improbable: too sandy.	Poor: excess humus, wetness.
7: Duckston	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness.
8: Foxworth	Good	Probable	Improbable: too sandy.	Poor: too sandy.
10: Kureb	Good	Probable	Improbable: too sandy.	Poor: too sandy.
12, 13: Lakeland	Good	Probable	Improbable: too sandy.	Poor: too sandy.
14: Lakeland	Fair: slope.	Probable	Improbable: too sandy.	Poor: too sandy, slope.
15: Leon	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness.
16: Lucy	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
17: Mandarin	Fair: wetness.	Probable	Improbable: too sandy.	Poor: too sandy.
18:				
Newhan	Fair: slope.	Probable	Improbable: too sandy.	Poor: too sandy, slope.
Corolla	Fair: wetness.	Probable	Improbable: too sandy.	Poor: too sandy.
20: Udorthents	Good	Probable	Improbable: too sandy.	Fair: small stones.

TABLE 9.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
21: Resota	Good	Probable	Improbable: too sandy.	Poor: too sandy.
22: Rutlege	Poor: wetness.	Improbable: excess fines.	Improbable: too sandy.	Poor: too sandy, wetness.
23, 24, 25: Troup	Good	Probable	Improbable: too sandy.	Poor: too sandy.
26: Troup	Fair: slope.	Probable	Improbable: too sandy.	Poor: too sandy, slope.
27. Urban land				
34: Albany	Fair: wetness.	Improbable: thin layer.	Improbable: excess fines.	Fair: too sandy.
35: Angie	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
36, 37: Bonifay	Good	Probable	Improbable: too sandy.	Poor: too sandy.
38, 39, 40: Dothan	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer.
41, 42: Fuquay	Good	Improbable: thin layer.	Improbable: too sandy.	Fair: too sandy, small stones.
43:				
Kinston	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Johnston	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Bibb	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness, small stones.
44:				
Leefield	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
Stilson	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
45, 46, 47: Orangeburg	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
48: Pickney	Poor: wetness.	Probable	Improbable: too sandy.	Poor: wetness.
49:				
Bonifay	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy.

TABLE 9.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
49:				
Dothan	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer.
Angie	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
50:				
Yemassee	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
Garcon	Fair: wetness.	Probable	Improbable: too sandy.	Fair: too sandy.
Bigbee	Good	Probable	Improbable: too sandy.	Poor: too sandy.
51:				
Troup	Good	Probable	Improbable: too sandy.	Poor: too sandy.
Orangeburg	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: slope, too clayey.
Cowarts	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: slope, too clayey, thin layer.
52 Escambia	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
53, 54 Notcher	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
55 Pansey	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
56 Pansey	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.

TABLE 10.--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 but does not eliminate the need for onsite investigation)

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
2-----------------Arents	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
3-----------------Beaches	Severe: seepage.	Severe: seepage, wetness.	Severe: cutbanks cave.	Flooding, cutbanks cave.	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Wetness, droughty.
4:							
Chipley-----------	Severe: seepage.	Severe: seepage.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Droughty.
Hurricane---------	Severe: seepage.	Severe: seepage, piping.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Droughty.
6-----------------Dorovan	Moderate: seepage.	Severe: excess humus, ponding.	Severe: cutbanks cave.	Ponding, flooding, subsides.	Ponding, soil blowing, flooding.	Ponding, soil blowing.	Wetness.
7-----------------Duckston	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Flooding, cutbanks cave.	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Wetness, droughty.
8-----------------Foxworth	Severe: seepage.	Severe: seepage.	Severe: cutbanks cave.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
10----------------Kureb	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake, slope.	Too sandy, soil blowing.	Droughty, rooting depth.
12----------------Lakeland	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
13, 14------------Lakeland	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Slope, too sandy, soil blowing.	Slope, droughty.

TABLE 10.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Limitations for-- Embankments, dikes, and levees	Limitations for-- Aquifer-fed excavated ponds	Features affecting-- Drainage	Features affecting-- Irrigation	Features affecting-- Terraces and diversions	Features affecting-- Grassed waterways
15----------------- Leon	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Wetness, droughty.
16----------------- Lucy	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Droughty, fast intake.	Too sandy, soil blowing.	Droughty.
17----------------- Mandarin	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Too sandy, soil blowing, wetness.	Droughty.
18:							
Newhan-----------	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake, slope.	Slope, too sandy.	Slope, droughty.
Corolla----------	Severe: seepage.	Severe: seepage, wetness, piping.	Severe: cutbanks cave.	Slope, cutbanks cave.	Slope, wetness, droughty.	Wetness, too sandy, soil blowing.	Droughty.
20----------------- Udorthents	Severe: seepage.	Severe: seepage, piping, hard to pack.	Severe: slow refill, cutbanks cave.	Deep to water	Droughty, percs slowly.	Percs slowly---	Droughty, percs slowly.
21----------------- Resota	Severe: seepage.	Severe: seepage, piping.	Severe: cutbanks cave.	Deep to water	Droughty, fast intake.	Too sandy, soil blowing.	Droughty.
22----------------- Rutlege	Severe: seepage.	Severe: seepage, piping, ponding.	Severe: cutbanks cave.	Ponding, cutbanks cave.	Ponding, droughty.	Too sandy, ponding.	Wetness, droughty.
23----------------- Troup	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake.	Too sandy, soil blowing.	Droughty.
24----------------- Troup	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake, slope.	Too sandy, soil blowing.	Droughty.
25, 26------------ Troup	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake, slope.	Slope, too sandy, soil blowing.	Slope, droughty.

TABLE 10.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
27. Urban land							
34: Albany	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy.	Wetness, droughty.
35: Angie	Moderate: slope.	Moderate: hard to pack, wetness.	Severe: slow refill.	Deep to water	Slope, soil blowing, percs slowly.	Percs slowly	Percs slowly.
36: Bonifay	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Droughty, fast intake.	Too sandy, soil blowing.	Droughty.
37: Bonifay	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Too sandy, soil blowing.	Droughty.
38: Dothan	Moderate: seepage.	Moderate: piping.	Severe: no water.	Deep to water	Fast intake, droughty.	Favorable	Droughty.
39, 40: Dothan	Moderate: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water	Fast intake, slope, droughty.	Favorable	Droughty.
41: Fuquay	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
42: Fuquay	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Too sandy, soil blowing.	Droughty.
43:							
Kinston	Moderate: seepage.	Severe: wetness.	Slight	Flooding	Wetness, flooding.	Wetness	Wetness.
Johnston	Severe: seepage.	Severe: piping, ponding.	Severe: cutbanks cave.	Ponding, flooding.	Ponding, droughty, flooding.	Ponding	Wetness, droughty.
Bibb	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Flooding	Wetness, flooding.	Erodes easily, wetness.	Erodes easily, wetness.

TABLE 10.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Limitations for-- Embankments, dikes, and levees	Limitations for-- Aquifer-fed excavated ponds	Features affecting-- Drainage	Features affecting-- Irrigation	Features affecting-- Terraces and diversions	Features affecting-- Grassed waterways
44:							
Leefield	Moderate: seepage.	Severe: piping, wetness.	Severe: slow refill, cutbanks cave.	Favorable	Wetness, droughty, fast intake.	Wetness	Droughty.
Stilson	Moderate: seepage.	Severe: piping.	Severe: no water.	Favorable	Wetness, droughty.	Wetness	Droughty.
45 Orangeburg	Moderate: seepage.	Moderate: piping.	Severe: no water.	Deep to water	Favorable	Favorable	Favorable.
46, 47 Orangeburg	Moderate: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope	Favorable	Favorable.
48 Pickney	Severe: seepage.	Severe: seepage, piping, ponding.	Severe: cutbanks cave.	Cutbanks cave, ponding.	Droughty, fast intake, ponding.	Too sandy, soil blowing, ponding.	Wetness, droughty.
49:							
Bonifay	Severe: slope, seepage.	Severe: thin layer.	Severe: cutbanks cave.	Deep to water	Droughty, fast intake, soil blowing.	Slope, soil blowing.	Slope, droughty.
Dothan	Severe: slope.	Moderate: piping.	Severe: no water.	Deep to water	Fast intake, slope, droughty.	Slope	Slope, droughty.
Angie	Severe: slope.	Moderate: hard to pack, wetness.	Severe: slow refill.	Deep to water	Slope, soil blowing, percs slowly.	Slope, percs slowly.	Slope, percs slowly.
50:							
Yemassee	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Flooding	Wetness	Wetness, soil blowing.	Wetness.
Garcon	Severe: seepage.	Severe: seepage, piping.	Severe: cutbanks cave.	Flooding	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Droughty.
Bigbee	Severe: seepage.	Severe: seepage, piping.	Severe: cutbanks cave.	Deep to water	Droughty, fast intake.	Too sandy	Droughty.

TABLE 10.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
51:							
Troup	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake, slope.	Slope, too sandy, soil blowing.	Slope, droughty.
Orangeburg	Severe: slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope	Slope	Slope.
Cowarts	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Fast intake, percs slowly, slope.	Slope, percs slowly.	Slope, percs slowly, rooting depth.
52 Escambia	Moderate: seepage.	Severe: wetness.	Severe: slow refill.	Percs slowly	Wetness, percs slowly.	Wetness, percs slowly.	Percs slowly.
53 Notcher	Moderate: seepage.	Moderate: thin layer, piping, wetness.	Severe: slow refill.	Deep to water	Favorable	Favorable	Favorable.
54 Notcher	Moderate: seepage, slope.	Moderate: thin layer, piping, wetness.	Severe: slow refill.	Deep to water	Slope	Favorable	Favorable.
55 Pansey	Slight	Severe: ponding.	Slight	Ponding	Ponding, percs slowly.	Ponding, percs slowly.	Wetness, percs slowly.
56 Pansey	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Percs slowly	Wetness, percs slowly.	Wetness, percs slowly.	Wetness, percs slowly.

TABLE 11.--ENGINEERING INDEX PROPERTIES

(The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated)

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
2. Arents											
3. Beaches											
4: 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
Hurricane	0-6	Sand	SP, SP-SM	A-3	0	100	100	78-100	4-8	---	NP
	6-65	Sand, fine sand	SP, SP-SM	A-3	0	100	100	78-100	4-8	---	NP
	65-70	Sand, fine sand, loamy sand.	SP-SM, SM	A-3, A-2-4	0	100	100	80-100	5-15	---	NP
	70-80	Sand, fine sand	SP, SP-SM, SM	A-3, A-2-4	0	100	100	90-100	4-15	---	NP
6 Dorovan	0-4	Muck	PT	---	0	---	---	---	---	---	---
	4-80	Muck	PT	---	0	---	---	---	---	---	---
7 Duckston	0-12	Sand	SP-SM, SP	A-2, A-3	0	100	95-100	60-75	3-12	---	NP
	12-80	Sand, fine sand	SP-SM, SP	A-2, A-3	0	100	95-100	60-75	3-12	---	NP
8 Foxworth	0-45	Sand	SP-SM	A-3, A-2-4	0	100	100	60-100	5-12	---	NP
	45-80	Sand, fine sand	SP, SP-SM	A-3, A-2-4	0	100	100	50-100	1-12	---	NP
10 Kureb	0-80	Sand	SP, SP-SM	A-3	0	100	100	60-100	0-7	---	NP
12, 13, 14 Lakeland	0-49	Sand	SP-SM	A-3, A-2-4	0	90-100	90-100	60-100	5-12	---	NP
	49-80	Sand, fine sand	SP, SP-SM	A-3, A-2-4	0	90-100	90-100	50-100	1-12	---	NP
15 Leon	0-16	Sand	SP, SP-SM	A-3, A-2-4	0	100	100	80-100	2-12	---	NP
	16-24	Sand, fine sand, loamy sand.	SM, SP-SM, SP	A-3, A-2-4	0	100	100	80-100	3-20	---	NP
	24-80	Sand, fine sand	SP, SP-SM	A-3, A-2-4	0	100	100	80-100	2-12	---	NP
16 Lucy	0-28	Loamy sand	SM, SP-SM	A-2, A-4	0	98-100	95-100	50-90	10-40	---	NP
	28-32	Sandy loam, fine sandy loam, sandy clay loam.	SM, SC, SC-SM	A-2, A-4, A-6	0	97-100	95-100	55-95	15-50	10-30	NP-15
	32-80	Sandy clay loam, clay loam, sandy clay.	SC, SC-SM, SM	A-2, A-6, A-4	0	100	95-100	60-95	20-50	20-40	3-20

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
17--------------- Mandarin	0-26	Sand-------------	SP, SP-SM	A-3	0	100	100	90-100	2-10	---	NP
	26-32	Fine sand, sand, loamy fine sand.	SP-SM, SM	A-3, A-2-4	0	100	100	90-100	5-15	---	NP
	32-54	Fine sand, sand	SP, SP-SM	A-3	0	100	100	90-100	2-7	---	NP
	54-80	Fine sand, sand, loamy fine sand.	SP, SP-SM	A-3, A-2-4	0	100	100	90-100	3-12	---	NP
18: Newhan----------	0-80	Sand-------------	SP, SP-SM	A-3	0	95-100	95-100	60-75	0-5	---	NP
Corolla---------	0-80	Sand-------------	SW, SP-SM, SP	A-2, A-3	0	80-100	75-100	60-95	1-12	---	NP
20. Udorthents											
21--------------- Resota	0-80	Sand-------------	SP, SM, SP-SM	A-3, A-2-4	0	100	100	85-99	1-15	---	NP
22--------------- Rutlege	0-13	Sand-------------	SP-SM, SM	A-2, A-3	0	95-100	95-100	70-100	5-10	---	NP
	13-80	Sand, loamy sand, loamy fine sand.	SP-SM	A-2, A-3	0	95-100	95-100	50-80	2-25	<20	NP
23, 24, 25, 26--- Troup	0-48	Sand-------------	SM, SP-SM	A-2	0	95-100	90-100	50-75	10-30	---	NP
	48-80	Sandy clay loam, sandy loam, fine sandy loam.	SC, SC-SM, CL-ML, CL	A-4, A-2, A-6	0	95-100	90-100	60-90	24-55	19-40	4-20
27. Urban land											
34--------------- Albany	0-43	Loamy sand-------	SM	A-2	0	100	100	75-90	13-23	---	NP
	43-66	Sandy loam-------	SM	A-2	0	100	100	75-92	22-30	---	NP
	66-80	Sandy clay loam, sandy loam, fine sandy loam.	SC, SM, SC-SM	A-2, A-4, A-6	0	97-100	95-100	70-100	20-50	<40	NP-17
35--------------- Angie	0-6	Sandy loam-------	SM, ML, CL-ML, SC-SM	A-4, A-2	0	95-100	90-100	60-85	30-65	10-28	NP-10
	6-80	Silty clay loam, silty clay, clay.	CH, CL	A-7-6	0	95-100	90-100	85-100	75-95	41-55	18-29
36, 37----------- Bonifay	0-44	Sand-------------	SP-SM	A-3, A-2-4	0	98-100	98-100	60-95	5-12	---	NP
	44-59	Sandy loam, sandy clay loam, fine sandy loam.	SC-SM, SC, SM	A-2-4, A-4, A-2-6, A-6	0	95-100	90-100	63-95	23-50	<30	NP-12
	59-80	Sandy clay loam, sandy clay.	SC-SM, SC	A-2, A-4, A-6, A-7	0	95-100	90-100	60-95	30-50	25-45	5-22
38, 39, 40------- Dothan	0-12	Loamy sand-------	SM	A-2	0	95-100	92-100	60-80	13-30	---	NP
	12-80	Sandy clay loam, sandy clay.	SC-SM, SC, CL-ML, CL	A-2, A-4, A-6, A-7	0	95-100	92-100	70-95	30-53	25-45	4-23
41, 42----------- Fuquay	0-22	Loamy fine sand	SP-SM, SM	A-2, A-3	0	95-100	90-100	50-83	5-35	---	NP
	22-80	Sandy loam, fine sandy loam, sandy clay loam.	SM, SC, SC-SM	A-2, A-4, A-6	0	85-100	85-100	70-90	23-45	<45	NP-13

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments 3-10 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
43:											
Kinston	0-17	Silt loam	ML, CL, CL-ML	A-4, A-6	0	100	98-100	85-100	50-97	17-40	4-15
	17-80	Loam, clay loam, sandy clay loam.	CL	A-4, A-6, A-7	0	100	95-100	75-100	60-95	20-45	8-22
Johnston	0-27	Fine sandy loam	ML, SM	A-2, A-4	0	100	100	60-100	18-65	<35	NP-10
	27-80	Stratified loamy sand to sand.	SM, SP-SM	A-2, A-3	0	100	100	50-100	5-30	---	NP
Bibb	0-6	Loam	ML, CL-ML	A-4	0-5	95-100	90-100	80-90	50-80	<25	NP-7
	6-80	Sandy loam, loam, silt loam.	SM, SC-SM, ML, CL-ML	A-2, A-4	0-10	60-100	50-100	40-100	30-90	<30	NP-7
44:											
Leefield	0-25	Loamy sand	SM, SW-SM, SP-SM	A-2	0	98-100	95-100	65-95	10-20	---	NP
	25-33	Sandy loam, sandy clay loam.	SC, SM, SC-SM	A-2, A-4, A-6	0	95-100	93-100	65-95	20-40	<40	NP-16
	33-80	Sandy loam, sandy clay loam.	SC, SM, SC-SM	A-2, A-4, A-6	0	95-100	95-100	65-90	20-40	<40	NP-20
Stilson	0-22	Loamy sand	SM	A-2	0	94-100	94-100	74-92	15-24	---	NP
	22-45	Sandy loam, sandy clay loam.	SM, SC, SC-SM	A-2, A-6, A-4	0	89-100	86-100	77-94	25-41	<29	NP-13
	45-80	Sandy loam, sandy clay loam.	SM, SC, SC-SM	A-2, A-6, A-4	0	96-100	95-100	70-99	25-50	<40	NP-20
45, 46, 47 Orangeburg	0-5	Sandy loam	SM	A-2	0	98-100	95-100	75-95	20-35	---	NP
	5-9	Sandy loam	SM	A-2	0	98-100	95-100	70-96	25-35	<30	NP-4
	9-80	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
48 Pickney	0-27	Loamy sand	SM, SP-SM	A-2	0	100	100	50-90	15-25	---	NP
	27-80	Loamy fine sand, loamy sand, fine sand.	SP, SP-SM, SM	A-2, A-3	0	100	100	50-90	3-25	---	NP
49:											
Bonifay	0-44	Sand	SM, SP-SM	A-2, A-3	0	100	100	60-95	8-20	---	NP
	44-59	Sandy loam, sandy clay loam, fine sandy loam.	SC, SC-SM	A-2, A-6, A-4	0	100	100	60-100	30-50	21-40	4-21
	59-80	Sandy loam, sandy clay loam, sandy clay.	CL, SC, SC-SM, CL-ML	A-4, A-6, A-2	0	100	100	60-95	25-60	20-40	4-18
Dothan	0-12	Loamy sand	SM	A-2	0	95-100	92-100	60-80	13-30	---	NP
	12-80	Sandy clay loam, sandy clay.	SC-SM, SC, CL-ML, CL	A-2, A-4, A-6, A-7	0	95-100	92-100	70-95	30-53	25-45	4-23
Angie	0-6	Sandy loam	SM, ML, CL-ML, SC-SM	A-4, A-2	0	95-100	90-100	60-85	30-65	10-28	NP-10
	6-80	Silty clay loam, silty clay, clay.	CH, CL	A-7-6	0	95-100	90-100	85-100	75-95	41-55	18-29

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
50:											
Yemassee--------	0-8	Fine sandy loam	SM	A-2, A-4	0	100	100	75-100	25-50	<30	NP-7
	8-50	Sandy clay loam, clay loam, fine sandy loam.	CL, SC, CL-ML, SC-SM	A-2, A-4, A-6	0	100	100	75-100	30-70	16-38	4-18
	50-75	Sandy clay loam, fine sandy loam, sandy clay.	SC, SM, CL-ML, SC-SM	A-2, A-4, A-6	0	100	100	75-100	25-55	<35	NP-15
	75-80	Variable---------	---	---	---	---	---	---	---	---	---
Garcon----------	0-7	Loamy fine sand	SP-SM, SM	A-3, A-2-4	0	100	95-100	80-95	8-20	---	NP
	7-35	Loamy fine sand, loamy sand, fine sand.	SP-SM, SM	A-2-4, A-3	0	100	95-100	80-95	8-20	---	NP
	35-70	Sandy loam, fine sandy loam, sandy clay loam.	SM, SC-SM	A-2-4	0	100	85-100	80-95	18-35	<25	NP-7
	70-80	Fine sand, sand	SP-SM, SP	A-3	0	100	98-100	75-95	4-10	---	NP
Bigbee----------	0-22	Fine sand--------	SM, SP-SM	A-2-4, A-3	0	100	95-100	50-75	5-20	---	NP
	22-80	Sand, fine sand	SP-SM, SM	A-2-4, A-3	0	85-100	85-100	50-75	5-20	---	NP
51:											
Troup-----------	0-48	Sand-------------	SM, SP-SM	A-2	0	95-100	90-100	50-75	10-30	---	NP
	48-80	Sandy clay loam, sandy loam, fine sandy loam.	SC, SC-SM, CL-ML, CL	A-4, A-2, A-6	0	95-100	90-100	60-90	24-55	19-40	4-20
Orangeburg------	0-5	Sandy loam-------	SM	A-2	0	98-100	95-100	75-95	20-35	---	NP
	5-9	Sandy loam-------	SM	A-2	0	98-100	95-100	70-96	25-35	<30	NP-4
	9-80	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
Cowarts---------	0-15	Loamy sand-------	SM	A-2	0	90-100	85-100	50-80	13-30	---	NP
	15-26	Fine sandy loam, sandy loam, sandy clay loam.	SC-SM, SC, SM	A-2, A-4, A-6	0	95-100	90-100	60-95	23-45	20-40	NP-15
	26-38	Sandy clay loam, sandy clay, clay loam.	SM, SC	A-6, A-7, A-2-6, A-2-7	0	95-100	90-100	60-95	25-50	30-54	11-25
	38-80	Sandy loam, sandy clay loam, clay loam.	SC-SM, SC, CL-ML, CL	A-2, A-4, A-6, A-7	0	85-100	80-100	60-95	25-58	25-53	5-20
52--------------- Escambia	0-8	Fine sandy loam	SM, SC-SM, ML, CL-ML	A-4	0	95-100	95-100	70-90	40-65	<25	NP-7
	8-25	Fine sandy loam, loam, silt loam.	SC, SC-SM, CL, CL-ML	A-4, A-6	0	95-100	95-100	70-95	40-75	16-30	4-15
	25-80	Fine sandy loam, loam, silt loam.	SC, CL, SC-SM, CL-ML	A-4, A-6	0	87-95	87-95	60-95	35-80	20-40	4-20
53, 54----------- Notcher	0-10	Gravelly sandy loam.	SM	A-2, A-4	0	70-88	60-78	55-75	20-40	---	NP
	10-80	Sandy clay loam, clay loam.	CH, CL, SC, SM	A-6, A-7	0	85-100	85-100	70-98	36-75	30-55	11-23

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
55---------------- Pansey	0-10	Sandy loam--------	SM	A-2	0	98-100	95-100	75-85	20-35	---	NP
	10-17	Sandy loam, fine sandy loam.	SM	A-2	0	98-100	95-100	70-96	25-35	<30	NP-4
	17-40	Sandy loam, sandy clay loam.	SC, CL, SC-SM	A-6, A-4	0	98-100	95-100	70-96	40-65	22-46	8-21
	40-80	Loamy sand, sandy loam.	SM, SC-SM	A-2, A-4	0	98-100	95-100	70-96	15-45	<30	3-16
56---------------- Pansey	0-10	Sandy loam--------	SM, ML	A-2, A-4	0	100	95-100	55-85	30-55	<30	NP-4
	10-17	Sandy loam, sandy clay loam.	SM	A-2, A-4	0	100	95-100	80-100	25-40	<30	NP-6
	17-40	Sandy clay loam	SC-SM, SM, SC	A-2, A-4, A-6	0	100	95-100	70-95	30-50	<34	NP-14
	40-80	Sandy clay loam, sandy clay.	SC-SM, SM, SC	A-2, A-4, A-6	0	100	95-100	70-95	25-50	<30	NP-14

TABLE 12.--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 "Wind erodibility group" and "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated)

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH	mmhos/cm					Pct
2----------------- Arents	0-80	1-5	1.30-1.70	>20	0.02-0.05	3.6-6.5	<2	Low--------	0.10	5	1	<1
3----------------- Beaches	0-6	0-1	---	>6.0	0.03-0.05	---	<2	Low--------	0.05	5	1	<.1
	6-60	0-1	---	>6.0	0.03-0.05	---	<2	Low--------	0.05			
4:												
Chipley----------	0-6	1-5	1.35-1.45	6.0-20	0.05-0.10	3.6-6.0	<2	Low--------	0.10	5	2	2-5
	6-80	1-7	1.45-1.60	6.0-20	0.03-0.08	4.5-6.5	<2	Low--------	0.10			
Hurricane--------	0-6	1-4	1.40-1.60	>6.0	0.03-0.07	3.6-6.0	<2	Low--------	0.10	5	2	<2
	6-65	1-4	1.40-1.60	>6.0	0.03-0.07	3.6-6.0	<2	Low--------	0.10			
	65-70	2-8	1.55-1.65	2.0-6.0	0.10-0.15	3.6-6.0	<2	Low--------	0.15			
	70-80	1-4	1.40-1.60	2.0-20	0.03-0.10	3.6-6.0	<2	Low--------	0.10			
6----------------- Dorovan	0-4	---	0.25-0.40	0.6-2.0	0.20-0.25	3.6-4.4	<2	-----------	----	---	2	20-80
	4-80	---	0.35-0.55	0.6-2.0	0.20-0.25	3.6-4.4	<2	-----------	----			
7----------------- Duckston	0-12	0-4	1.60-1.70	>20	0.02-0.08	3.6-8.4	<2	Low--------	0.10	5	1	.5-3
	12-80	0-4	1.60-1.70	>20	0.02-0.05	3.6-8.4	<2	Low--------	0.10			
8----------------- Foxworth	0-45	1-8	1.25-1.55	>20	0.02-0.10	4.5-6.0	<2	Low--------	0.10	5	2	<1
	45-80	1-6	1.40-1.60	>20	0.02-0.08	4.5-6.0	<2	Low--------	0.10			
10---------------- Kureb	0-80	0-3	1.60-1.80	6.0-20	<0.05	3.6-7.3	<2	Low--------	0.10	5	1	<2
12, 13, 14-------- Lakeland	0-49	2-8	1.35-1.65	6.0-20	0.05-0.09	4.5-6.0	<2	Low--------	0.10	5	2	<1
	49-80	1-6	1.50-1.60	6.0-20	0.02-0.08	4.5-6.0	<2	Low--------	0.10			
15---------------- Leon	0-16	1-6	1.40-1.65	6.0-20	0.02-0.05	3.6-6.5	<2	Low--------	0.10	5	2	.5-4
	16-24	2-8	1.50-1.70	0.6-6.0	0.05-0.10	3.6-6.5	<2	Low--------	0.15			
	24-80	1-6	1.40-1.65	0.6-6.0	0.02-0.05	3.6-6.5	<2	Low--------	0.10			
16---------------- Lucy	0-28	1-12	1.30-1.70	6.0-20	0.08-0.12	5.1-6.0	<2	Low--------	0.10	5	2	.5-1
	28-32	10-30	1.40-1.60	2.0-6.0	0.10-0.12	4.5-5.5	<2	Low--------	0.24			
	32-80	20-45	1.40-1.60	0.6-2.0	0.12-0.14	4.5-5.5	<2	Low--------	0.28			
17---------------- Mandarin	0-26	0-3	1.35-1.45	6.0-20	0.03-0.07	3.6-6.0	<2	Low--------	0.10	5	2	<3
	26-32	2-9	1.45-1.60	0.6-2.0	0.10-0.15	3.6-6.0	<2	Low--------	0.15			
	32-54	0-3	1.35-1.45	6.0-20	0.03-0.07	3.6-7.3	<2	Low--------	0.10			
	54-80	2-9	1.45-1.60	0.6-2.0	0.10-0.15	3.6-7.3	<2	Low--------	0.15			
18:												
Newhan-----------	0-80	---	1.60-1.75	>20	<0.05	3.6-7.8	<2	Low--------	0.10	5	---	---
Corolla----------	0-80	0-3	1.60-1.70	>20	0.01-0.03	5.6-7.8	<2	Low--------	0.10	5	1	<.5
20---------------- Udorthents	0-80	2-72	1.35-1.70	0.06-20.0	0.05-0.20	5.1-7.3	<2	Moderate	0.20	4	7	.5-2
21---------------- Resota	0-80	0-3	1.30-1.60	>20	0.02-0.05	3.6-6.5	<2	Low--------	0.10	5	1	<1
22---------------- Rutlege	0-13	2-10	1.30-1.50	6.0-20	0.04-0.06	3.6-5.5	<2	Low--------	0.10	5	---	3-9
	13-80	2-10	1.40-1.60	6.0-20	0.04-0.08	3.6-5.5	<2	Low--------	0.17			

TABLE 12.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Erosion factors K	Erosion factors T	Wind erodi- bility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH	mmhos/cm					Pct
23, 24, 25, 26--- Troup	0-48	1-10	1.30-1.70	6.0-20	0.05-0.10	4.5-6.0	<2	Very low	0.10	5	1	<1
	48-80	15-35	1.40-1.60	0.6-2.0	0.10-0.13	4.5-5.5	<2	Low--------	0.20			
27. Urban land												
34--------------- Albany	0-43	1-10	1.40-1.55	6.0-20	0.02-0.04	3.6-6.5	<2	Low--------	0.10	5	2	1-2
	43-66	1-20	1.50-1.70	2.0-6.0	0.08-0.10	4.5-6.0	<2	Low--------	0.20			
	66-80	13-35	1.55-1.65	0.6-2.0	0.10-0.16	4.5-6.0	<2	Low--------	0.24			
35--------------- Angie	0-6	4-14	1.35-1.65	0.6-6.0	0.10-0.15	4.5-6.5	<2	Low--------	0.32	5	3	.5-2
	6-80	35-60	1.20-1.60	0.06-0.2	0.16-0.22	3.6-6.0	<2	High-------	0.32			
36, 37----------- Bonifay	0-44	3-9	1.35-1.60	6.0-20	0.03-0.08	4.5-6.5	<2	Low--------	0.10	5	2	1-3
	44-59	15-35	1.60-1.70	0.6-2.0	0.10-0.15	4.5-6.5	<2	Low--------	0.24			
	59-80	20-45	1.60-1.70	0.2-0.6	0.10-0.15	4.5-6.5	<2	Low--------	0.24			
38, 39, 40------- Dothan	0-12	5-15	1.30-1.60	2.0-6.0	0.06-0.10	4.5-6.0	<2	Very low	0.15	5	2	<.5
	12-80	18-40	1.45-1.70	0.2-0.6	0.08-0.12	4.5-6.0	<2	Low--------	0.28			
41, 42----------- Fuquay	0-22	2-10	1.60-1.70	>6.0	0.04-0.09	4.5-6.0	<2	Low--------	0.15	5	2	.5-2
	22-80	10-35	1.40-1.60	0.6-2.0	0.12-0.15	4.5-6.0	<2	Low--------	0.20			
43:												
Kinston---------	0-17	5-27	1.30-1.50	0.6-2.0	0.14-0.20	4.5-6.0	<2	Low--------	0.37	5	---	2-5
	17-80	18-35	1.30-1.50	0.6-2.0	0.14-0.18	4.5-5.5	<2	Low--------	0.32			
Johnston--------	0-27	5-18	1.30-1.55	2.0-6.0	0.10-0.20	4.5-5.5	<2	Low--------	0.20	5	5	3-8
	27-80	2-12	1.55-1.65	6.0-20	0.02-0.07	4.5-5.5	<2	Low--------	0.17			
Bibb------------	0-6	2-18	1.20-1.55	0.6-2.0	0.15-0.20	4.5-5.5	<2	Low--------	0.28	5	5	.5-2
	6-80	2-18	1.30-1.60	0.6-2.0	0.12-0.20	4.5-5.5	<2	Low--------	0.37			
44:												
Leefield--------	0-25	5-10	1.45-1.60	6.0-20	0.04-0.07	4.5-6.0	<2	Low--------	0.10	5	---	1-2
	25-33	15-25	1.50-1.65	0.6-2.0	0.10-0.13	4.5-5.5	<2	Low--------	0.15			
	33-80	15-30	1.50-1.70	0.2-0.6	0.08-0.12	4.5-5.5	<2	Low--------	0.10			
Stilson---------	0-22	3-8	1.35-1.60	6.0-20	0.06-0.09	4.5-5.5	<2	Low--------	0.10	5	---	.5-1
	22-45	15-30	1.40-1.60	0.6-2.0	0.09-0.12	4.5-5.5	<2	Low--------	0.24			
	45-80	15-35	1.40-1.60	0.6-2.0	0.08-0.10	4.5-5.5	<2	Low--------	0.17			
45, 46, 47------- Orangeburg	0-5	7-15	1.30-1.50	2.0-6.0	0.07-0.10	4.5-6.0	<2	Low--------	0.20	5	---	.5-2
	5-9	7-18	1.50-1.65	2.0-6.0	0.09-0.12	4.5-6.0	<2	Low--------	0.20			
	9-80	20-45	1.60-1.75	0.6-2.0	0.11-0.14	4.5-5.5	<2	Low--------	0.24			
48--------------- Pickney	0-27	2-10	1.20-1.40	6.0-20	0.10-0.20	3.6-5.5	<2	Low--------	0.10	5	2	3-15
	27-80	1-10	1.40-1.60	6.0-20	0.03-0.11	3.6-6.0	<2	Low--------	0.10			
49:												
Bonifay---------	0-44	2-8	1.30-1.70	6.0-20	0.04-0.08	4.5-6.0	<2	Low--------	0.15	5	1	.5-2
	44-59	18-35	1.40-1.60	0.6-2.0	0.10-0.15	4.5-5.5	<2	Low--------	0.20			
	59-80	15-40	1.40-1.60	0.6-2.0	0.10-0.16	4.5-5.5	<2	Low--------	0.20			
Dothan----------	0-12	5-15	1.30-1.60	2.0-6.0	0.06-0.10	4.5-6.0	<2	Very low	0.15	5	2	<.5
	12-80	18-40	1.45-1.70	0.2-0.6	0.08-0.12	4.5-6.0	<2	Low--------	0.28			
Angie-----------	0-6	4-14	1.35-1.65	0.6-6.0	0.10-0.15	4.5-6.5	<2	Low--------	0.32	5	3	.5-2
	6-80	35-60	1.20-1.60	0.06-0.2	0.16-0.22	3.6-6.0	<2	High-------	0.32			

TABLE 12.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Erosion factors K	Erosion factors T	Wind erodi- bility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH	mmhos/cm					Pct
50:												
Yemassee--------	0-8	10-20	1.30-1.60	2.0-6.0	0.10-0.15	3.6-6.0	<2	Low-------	0.20	5	3	.5-4
	8-50	18-35	1.30-1.50	0.6-2.0	0.11-0.18	3.6-5.5	<2	Low-------	0.20			
	50-75	12-40	1.30-1.50	0.6-2.0	0.11-0.17	3.6-5.5	<2	Low-------	0.20			
	75-80	---	---	---	---	---	---	----------	----			
Garcon----------	0-7	3-8	1.25-1.50	6.0-20	0.10-0.15	4.5-5.5	<2	Low-------	0.10	5	2	1-3
	7-35	3-8	1.40-1.65	6.0-20	0.05-0.10	4.5-5.5	<2	Low-------	0.10			
	35-70	12-30	1.55-1.70	0.6-2.0	0.10-0.15	4.5-5.5	<2	Low-------	0.24			
	70-80	3-6	1.50-1.70	6.0-20	0.05-0.08	4.5-5.5	<2	Low-------	0.10			
Bigbee----------	0-22	1-10	1.40-1.50	6.0-20	0.05-0.10	4.5-6.0	<2	Low-------	0.10	5	---	.5-2
	22-80	1-10	1.40-1.50	6.0-20	0.05-0.08	4.5-6.0	<2	Low-------	0.17			
51:												
Troup-----------	0-48	1-10	1.30-1.70	6.0-20	0.05-0.10	4.5-6.0	<2	Very low	0.10	5	1	<1
	48-80	15-35	1.40-1.60	0.6-2.0	0.10-0.13	4.5-5.5	<2	Low-------	0.20			
Orangeburg------	0-5	7-15	1.30-1.50	2.0-6.0	0.07-0.10	4.5-6.0	<2	Low-------	0.20	5	---	.5-2
	5-9	7-18	1.50-1.65	2.0-6.0	0.09-0.12	4.5-6.0	<2	Low-------	0.20			
	9-80	20-45	1.60-1.75	0.6-2.0	0.11-0.14	4.5-5.5	<2	Low-------	0.24			
Cowarts---------	0-15	3-10	1.30-1.70	2.0-6.0	0.06-0.10	4.5-5.5	<2	Low-------	0.15	4	2	<1
	15-26	10-30	1.30-1.50	0.6-2.0	0.10-0.16	4.5-5.5	<2	Low-------	0.28			
	26-38	25-40	1.30-1.50	0.2-2.0	0.10-0.16	4.5-5.5	<2	Low-------	0.28			
	38-80	18-35	1.45-1.75	0.06-0.6	0.10-0.14	4.5-5.5	<2	Low-------	0.24			
52--------------- Escambia	0-8	5-14	1.35-1.55	2.0-6.0	0.11-0.15	3.6-5.5	<2	Low-------	0.24	5	3	.5-2
	8-25	8-18	1.35-1.55	0.6-2.0	0.15-0.20	3.6-5.5	<2	Low-------	0.24			
	25-80	8-35	1.45-1.65	0.06-0.6	0.10-0.18	3.6-5.5	<2	Low-------	0.28			
53, 54----------- Notcher	0-10	6-16	1.30-1.55	0.6-2.0	0.09-0.15	5.1-7.3	<2	Low-------	0.17	5	3	.5-2
	10-80	20-40	1.45-1.65	0.2-0.6	0.12-0.16	4.5-5.5	<2	Low-------	0.28			
55--------------- Pansey	0-10	7-15	1.30-1.50	2.0-6.0	0.09-0.12	4.5-5.5	<2	Low-------	0.20	5	3	.5-2
	10-17	7-18	1.30-1.50	2.0-6.0	0.07-0.12	4.5-5.5	<2	Low-------	0.20			
	17-40	18-35	1.40-1.60	0.6-2.0	0.11-0.14	4.5-5.5	<2	Low-------	0.24			
	40-80	5-25	1.40-1.65	2.0-6.0	0.07-0.12	4.5-5.5	<2	Low-------	0.20			
56--------------- Pansey	0-10	4-20	1.25-1.35	2.0-6.0	0.10-0.15	4.5-5.5	<2	Low-------	0.20	5	3	.5-2
	10-17	14-25	1.35-1.60	2.0-6.0	0.10-0.14	4.5-5.5	<2	Low-------	0.24			
	17-40	20-35	1.35-1.60	0.6-2.0	0.12-0.16	4.5-5.5	<2	Low-------	0.28			
	40-80	20-40	1.35-1.60	0.06-0.2	0.12-0.17	4.5-5.5	<2	Low-------	0.28			

TABLE 13.--SOIL AND WATER FEATURES

("Flooding" and "water table" and terms such as "rare," "brief," "apparent," and "perched" are explained in the text. The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Subsidence		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Initial	Total	Uncoated steel	Concrete
					Ft			In	In		
2-------------- Arents	A	None--------	---	---	>6.0	---	---	---	---	Low-------	High.
3-------------- Beaches	D	Frequent----	Very brief to long.	Jan-Dec	0-6.0	Apparent	Jan-Dec	---	---	---	---
4:											
Chipley-------	C	None--------	---	---	2.0-3.0	Apparent	Dec-Apr	---	---	Low-------	High.
Hurricane-----	C	None--------	---	---	2.0-3.5	Apparent	Nov-Apr	---	---	Low-------	Moderate.
6-------------- Dorovan	D	Frequent----	Very long.	Jan-Dec	+2-0	Apparent	Jan-Dec	6-12	51-80	High------	High.
7-------------- Duckston	A/D	Frequent----	Brief	Jan-Dec	0-1.0	Apparent	Jan-Dec	---	---	Low-------	Low.
8-------------- Foxworth	A	None--------	---	---	3.5-6.0	Apparent	Jun-Oct	---	---	Low-------	High.
10------------- Kureb	A	None--------	---	---	>6.0	---	---	---	---	Low-------	Low.
12, 13, 14----- Lakeland	A	None--------	---	---	>6.0	---	---	---	---	Low-------	Moderate.
15------------- Leon	B/D	None--------	---	---	0.5-1.5	Apparent	Jun-Feb	---	---	High------	High.
16------------- Lucy	A	None--------	---	---	>6.0	---	---	---	---	Low-------	High.
17------------- Mandarin	C	None--------	---	---	1.5-3.5	Apparent	Jun-Dec	---	---	Moderate	High.
18:											
Newhan--------	A	None--------	---	---	>6.0	---	---	---	---	High------	Low.
Corolla-------	D	Rare--------	---	---	1.5-3.0	Apparent	Nov-May	---	---	Low-------	Low.
20------------- Udorthents	C	None--------	---	---	3.0-6.0	Apparent	Jun-Oct	---	---	High------	Moderate.
21------------- Resota	A	None--------	---	---	3.5-5.0	Apparent	Dec-Apr	---	---	Low-------	High.
22------------- Rutlege	B/D	None--------	---	---	+2-0.5	Apparent	Dec-May	---	---	High------	High.
23, 24, 25, 26- Troup	A	None--------	---	---	>6.0	---	---	---	---	Low-------	Moderate.
27. Urban land											

TABLE 13.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	High water table: Depth	High water table: Kind	High water table: Months	Subsidence: Initial	Subsidence: Total	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
					Ft			In	In		
34------------- Albany	C	Rare--------	---	---	1.0-2.5	Apparent	Dec-Mar	---	---	High-----	High.
35------------- Angie	D	None--------	---	---	3.0-5.0	Apparent	Dec-Apr	---	---	High-----	Moderate.
36, 37--------- Bonifay	A	None--------	---	---	4.0-5.0	Perched	Jan-Feb	---	---	Low------	High.
38, 39, 40----- Dothan	B	None--------	---	---	3.0-5.0	Perched	Jan-Apr	---	---	Moderate	Moderate.
41, 42--------- Fuquay	B	None--------	---	---	4.0-6.0	Perched	Jan-Mar	---	---	Low------	High.
43:											
Kinston--------	B/D	Frequent---	Brief	Nov-Jun	0.5-0	Apparent	Nov-Jun	---	---	High-----	High.
Johnston-------	D	Frequent---	Brief or long.	Nov-Jul	+2-0	Apparent	Nov-Jun	---	---	High-----	High.
Bibb-----------	D	Frequent---	Brief or long.	Dec-May	0.5-1.5	Apparent	Dec-Apr	---	---	High-----	Moderate.
44:											
Leefield-------	C	None--------	---	---	1.5-2.5	Apparent	Dec-Mar	---	---	Moderate	High.
Stilson--------	B	None--------	---	---	2.5-3.0	Apparent	Dec-Apr	---	---	Moderate	High.
45, 46, 47----- Orangeburg	B	None--------	---	---	>6.0	---	---	---	---	Moderate	Moderate.
48------------- Pickney	A/D	None--------	---	---	+2-0	Apparent	Nov-Apr	---	---	High-----	High.
49:											
Bonifay--------	A	None--------	---	---	3.5-5.0	Apparent	Dec-Mar	---	---	Low------	High.
Dothan---------	B	None--------	---	---	3.0-5.0	Perched	Jan-Apr	---	---	Moderate	Moderate.
Angie----------	D	None--------	---	---	3.0-5.0	Apparent	Dec-Apr	---	---	High-----	Moderate.
50:											
Yemassee-------	C	Occasional	Brief	Dec-Apr	1.0-1.5	Apparent	Dec-Mar	---	---	High-----	High.
Garcon---------	C	Occasional	Brief	Dec-Apr	1.5-3.0	Apparent	Jan-Apr	---	---	High-----	High.
Bigbee---------	A	Occasional	Brief	Jan-Mar	3.5-6.0	Apparent	Jan-Mar	---	---	Low------	Moderate.
51:											
Troup----------	A	None--------	---	---	>6.0	---	---	---	---	Low------	Moderate.
Orangeburg-----	B	None--------	---	---	>6.0	---	---	---	---	Moderate	Moderate.
Cowarts--------	C	None--------	---	---	>6.0	---	---	---	---	Moderate	Moderate.
52------------- Escambia	C	None--------	---	---	1.5-2.5	Apparent	Dec-Mar	---	---	Moderate	High.

TABLE 13.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Subsidence		Risk of corrosion	
		Frequency	Dura-tion	Months	Depth	Kind	Months	Initial	Total	Uncoated steel	Concrete
					Ft			In	In		
53, 54----------- Notcher	B	None--------	---	---	3.0-4.0	Apparent	Dec-Apr	---	---	Moderate	High.
55------------- Pansey	D	None--------	---	---	+2-1.0	Apparent	Dec-Mar	---	---	High------	Moderate.
56------------- Pansey	D	None--------	---	---	0-1.5	Apparent	Dec-Mar	---	---	Moderate	Moderate.

TABLE 14.--PHYSICAL ANALYSES OF SELECTED SOILS

(The symbol < means less than; > means more than. Absence of an entry indicates that data were not available)

Soil name and sample number	Depth	Horizon	Particle-size distribution: Sand: Very coarse (2-1 mm)	Sand: Coarse (1-0.5 mm)	Sand: Medium (0.5-0.25 mm)	Sand: Fine (0.25-0.1 mm)	Sand: Very fine (0.1-0.05 mm)	Sand: Total (2-0.05 mm)	Silt (0.05-0.002 mm)	Clay (<0.002 mm)	Hydraulic conductivity	Bulk density (field moist)*	Water content: 1/10 bar	Water content: 1/3 bar	Water content: 15 bar
	Cm		Pct								Cm/hr	g/cm^3	Pct (wt)		
Bigbee fine sand:															
S46-11-1	0-15	A	0.0	1.0	6.1	54.1	25.9	87.1	11.1	1.8	26.3	1.25	16.6	8.4	1.6
-2	15-23	AC	0.0	1.0	6.2	55.0	24.0	86.2	12.0	1.8	85.5	1.47	13.6	5.6	0.9
-3	23-56	C1	0.0	0.8	5.5	52.1	26.3	84.7	13.1	2.2	13.6	1.40	12.4	5.4	0.8
-4	56-102	C2	0.0	0.7	4.9	54.1	26.1	85.8	12.3	1.9	17.9	1.40	9.5	3.9	0.6
-5	102-129	C3	0.0	0.3	3.4	53.3	29.9	86.9	11.7	1.4	12.2	1.44	11.8	4.3	0.4
-6	129-203	C4	0.0	0.2	2.1	55.4	32.4	90.1	8.5	1.4	13.8	1.43	16.2	3.9	0.3
Bonifay sand:															
S46-20-1	0-18	Ap	0.0	13.3	40.0	29.0	6.0	88.3	8.5	3.2	8.2	1.65	8.1	5.3	1.4
-2	18-71	E1	1.8	16.1	33.6	27.9	6.0	85.4	9.3	5.3	10.5	1.72	6.0	4.2	1.7
-3	71-112	E2	2.3	16.2	31.9	28.7	6.1	85.2	9.6	5.2	11.2	1.61	7.7	5.3	1.9
-4	112-150	Btv1	3.4	21.1	29.8	21.1	3.6	79.0	6.2	14.8	2.5	1.77	10.3	7.5	3.4
-5	150-203	Btv2	13.8	23.5	18.1	12.2	2.6	70.2	6.4	23.4	0.6	1.79	17.4	13.6	9.4
Chipley sand:															
S46-13-1	0-15	A	0.0	11.2	60.9	18.3	1.5	91.9	5.6	2.5	54.2	1.17	14.0	9.6	2.2
-2	15-38	AC	0.0	10.3	59.8	19.1	1.6	90.8	6.6	2.6	80.5	1.48	6.7	4.8	1.1
-3	38-51	C1	0.0	10.3	60.0	19.4	1.6	91.3	5.9	2.8	80.5	1.48	5.3	3.8	0.9
-4	51-86	C2	0.0	10.7	61.4	18.3	1.3	91.7	5.3	3.0	76.3	1.56	4.9	3.4	1.0
-5	86-122	C3	0.0	10.3	59.4	20.2	1.5	91.4	5.4	3.2	38.5	1.65	4.7	3.2	1.0
-6	122-155	C4	0.0	10.3	59.9	20.8	1.5	92.5	4.5	3.0	---	---	---	---	---
-7	155-203	C5	0.0	7.8	59.2	28.1	2.8	97.9	1.6	0.5	---	---	---	---	---
Dothan loamy sand:															
S46-22-1	0-13	A	0.8	8.7	24.8	33.8	14.3	82.4	13.6	4.0	8.6	1.50	12.8	8.1	1.9
-2	13-30	BE	0.3	6.4	21.8	35.6	15.4	79.5	15.3	5.2	1.2	1.80	9.6	6.9	1.9
-3	30-96	Bt	0.7	7.9	18.3	25.6	11.4	63.9	12.9	23.2	0.3	1.74	12.0	9.3	4.6
-4	96-142	Btv1	1.1	9.5	20.0	26.2	10.4	67.2	11.5	21.3	0.2	1.75	20.6	12.6	7.5
-5	142-160	Btv2	0.6	9.1	19.4	23.8	9.1	63.0	16.4	20.6	0.3	1.75	16.3	13.8	8.1
-6	160-203	Btv3	0.8	8.0	22.1	20.9	8.3	60.1	11.9	28.0	0.7	1.58	21.7	18.5	13.7

See footnote at end of table.

TABLE 14.--PHYSICAL ANALYSES OF SELECTED SOILS--Continued

Soil name and sample number	Depth	Horizon	Particle-size distribution: Sand: Very coarse (2-1 mm)	Sand: Coarse (1-0.5 mm)	Sand: Medium (0.5-0.25 mm)	Sand: Fine (0.25-0.1 mm)	Sand: Very fine (0.1-0.05 mm)	Sand: Total (2-0.05 mm)	Silt (0.05-0.002 mm)	Clay (<0.002 mm)	Hydraulic conductivity	Bulk density (field moist)*	Water content: 1/10 bar	Water content: 1/3 bar	Water content: 15 bar
	Cm		Pct								Cm/hr	g/cm^3	Pct (wt)		
Escambia fine sand:															
S46-19-1	0-15	A	0.7	5.8	18.1	43.1	20.8	88.6	6.4	5.0	10.2	1.36	18.1	11.3	2.5
-2	15-33	BE1	0.4	5.6	18.5	42.4	20.4	87.3	8.6	4.1	2.6	1.53	14.5	9.3	2.1
-3	33-58	BE2	0.4	4.6	15.5	42.0	19.8	82.3	8.7	9.0	2.6	1.56	13.4	8.7	2.5
-4	58-76	Btv1	0.0	2.7	14.9	42.7	19.4	79.7	7.0	13.3	1.4	1.67	16.9	14.3	5.1
-5	76-89	Btv2	0.3	4.2	12.9	41.1	17.6	76.1	6.2	17.7	0.4	1.63	19.2	16.6	6.8
-6	89-104	Btv3	0.3	2.5	7.9	41.5	20.7	72.9	6.0	21.1	0.3	1.60	21.6	17.5	7.6
-7	104-152	Bt1	0.1	1.0	3.6	44.7	23.3	72.7	5.1	22.2	0.3	1.59	22.6	18.2	7.5
-8	152-203	Bt2	0.0	0.3	1.7	50.6	23.7	76.3	18.3	5.4	0.5	1.56	23.7	19.6	7.0
Escambia fine sandy loam:															
S46-21-1	0-12	A	0.1	1.0	11.1	39.0	13.3	64.5	26.4	9.1	0.9	1.18	30.6	22.9	4.1
-2	12-20	BE	0.1	1.2	11.5	38.9	12.7	64.4	26.7	8.9	0.4	1.62	16.4	12.9	3.7
-3	20-64	Btv	0.1	1.3	11.0	34.8	11.7	58.9	26.1	15.0	0.6	1.66	15.3	12.0	4.8
-4	64-122	Btg1	0.1	0.8	7.2	22.2	12.8	43.1	31.5	25.4	0.4	1.68	19.5	15.5	8.0
-5	122-203	Btg2	0.0	0.3	4.6	16.0	19.3	40.2	32.9	26.9	0.1	1.70	21.1	18.0	10.8
Foxworth sand:															
S46-14-1	0-10	Ap	0.2	10.0	46.9	35.1	3.0	95.2	3.0	1.8	37.8	1.42	8.4	5.5	1.2
-2	10-23	AC	0.1	9.3	45.1	35.5	3.1	93.1	4.6	2.3	60.5	1.46	9.7	4.8	1.1
-3	23-84	C1	0.1	8.2	43.6	37.6	3.2	92.7	4.6	2.7	52.9	1.57	5.2	3.2	0.9
-4	84-114	C2	0.2	7.7	44.5	39.1	2.6	94.1	3.3	2.6	54.6	1.54	4.4	2.8	0.8
-5	114-160	C3	0.2	8.1	49.4	38.6	1.5	97.8	1.4	0.8	77.9	1.57	2.8	1.8	0.4
-6	160-203	C4	0.1	5.1	46.9	46.0	1.1	99.2	0.1	0.7	91.7	1.53	2.1	1.6	0.1
Fuquay loamy fine sand:															
S46-16-1	0-13	A	0.6	5.2	13.8	45.8	17.4	82.8	14.0	3.2	26.4	1.30	14.8	8.4	1.7
-2	13-56	E	0.7	4.5	12.6	45.4	18.4	81.6	15.7	2.7	7.6	1.54	11.1	5.5	1.2
-3	56-71	BE	0.9	5.1	10.9	41.6	17.0	75.5	15.9	8.6	2.1	1.69	13.9	10.6	5.6
-4	71-114	Btv1	1.2	5.0	10.7	36.5	14.1	67.5	13.1	19.4	0.6	1.73	15.3	12.4	7.5
-5	114-150	Btv2	0.2	1.6	7.8	46.2	10.4	66.2	8.9	24.9	1.2	1.66	18.0	15.0	10.0
-6	150-170	Btv3	0.1	0.6	6.4	54.9	6.9	68.9	7.1	24.0	0.9	1.66	19.3	15.6	10.2
-7	170-203	C	0.0	0.2	6.0	64.1	5.8	76.1	5.1	18.8	0.8	1.62	18.9	14.6	6.8

See footnote at end of table.

TABLE 14.--PHYSICAL ANALYSES OF SELECTED SOILS--Continued

Soil name and sample number	Depth	Horizon	Particle-size distribution: Sand: Very coarse (2-1 mm)	Coarse (1-0.5 mm)	Medium (0.5-0.25 mm)	Fine (0.25-0.1 mm)	Very fine (0.1-0.05 mm)	Total (2-0.05 mm)	Silt (0.05-0.002 mm)	Clay (<0.002 mm)	Hydraulic conductivity	Bulk density (field moist)*	Water content: 1/10 bar	1/3 bar	15 bar
	Cm		Pct								Cm/hr	g/cm^3	Pct (wt)		
Hurricane sand:															
S46-10-1	0-15	A	0.0	3.0	66.1	26.1	0.3	95.5	3.1	1.4	61.8	1.48	5.2	3.4	0.4
-2	15-84	E1	0.0	3.9	67.3	22.3	0.3	93.8	4.2	2.0	106.0	1.44	4.3	2.9	0.6
-3	84-107	E2	0.0	2.9	64.3	26.5	0.3	94.0	3.4	2.6	69.0	1.61	4.5	2.8	0.7
-4	107-165	E3	0.0	3.3	68.1	27.1	0.3	98.8	0.6	0.6	---	---	---	---	---
-5	165-178	Bh1	0.0	2.4	53.2	21.8	0.6	78.0	17.0	5.0	---	---	---	---	---
-6	178-203	Bh2	0.0	6.8	74.2	16.1	0.8	97.9	1.3	0.8	---	---	---	---	---
Kureb sand:															
S46-1-1	0-13	A	0.0	5.7	62.2	28.9	0.8	97.7	1.1	1.2	98.0	1.43	4.7	3.3	0.7
-2	13-43	E	0.0	6.0	63.1	27.6	0.7	97.4	2.0	0.6	83.5	1.55	2.3	1.7	0.1
-3	43-84	C/Bh	0.0	4.7	59.8	28.8	0.6	93.9	3.3	2.8	76.9	1.55	4.2	3.3	1.1
-4	84-145	C1	0.0	4.9	59.8	30.0	0.8	95.5	2.8	1.7	101.0	1.49	3.5	2.6	0.9
-5	145-162	C2	0.0	4.5	58.0	34.1	0.6	97.2	1.7	1.1	88.7	1.53	2.6	1.9	0.3
-6	162-193	C3	0.1	7.1	60.0	30.4	0.9	98.5	0.7	0.8	95.3	1.52	2.4	1.8	0.2
-7	193-203	C4	0.3	11.2	62.7	24.0	0.7	98.9	0.3	0.8	102.0	1.51	2.1	1.6	0.1
Lakeland sand:															
S46-5-1	0-15	A	0.1	12.2	56.3	20.4	1.5	90.5	5.8	3.7	40.1	1.48	9.7	7.2	1.8
-2	15-64	C1	0.1	12.7	57.7	20.6	1.4	92.5	5.0	2.5	38.1	1.65	5.1	3.7	1.0
-3	64-124	C1	0.1	11.6	57.9	21.2	1.4	92.2	4.8	3.0	34.8	1.59	4.2	3.3	0.9
-4	124-185	C2	0.1	11.8	59.1	22.0	1.4	94.4	3.2	2.4	42.7	1.58	3.7	3.0	1.1
-5	185-203	C3	0.1	10.9	59.3	23.0	1.6	94.9	2.8	2.3	67.1	1.53	2.9	2.1	0.6
Leefield loamy fine sand:															
S46-18-1	0-18	A	0.0	4.1	16.1	39.9	20.8	79.8	10.5	9.6	23.9	1.11	33.1	23.8	4.8
-2	18-30	E1	0.4	5.6	16.8	36.4	20.8	80.0	13.0	7.0	2.6	1.42	20.6	13.8	3.0
-3	30-61	E2	0.4	5.5	15.5	37.2	22.2	80.8	10.7	8.5	3.2	1.61	15.8	9.7	3.1
-4	61-76	E3	0.0	3.1	15.0	38.8	23.1	80.0	10.2	9.8	1.4	1.72	13.3	7.9	3.4
-5	76-89	Bt	0.3	3.8	11.4	37.2	22.9	76.6	9.5	14.9	0.9	1.59	20.8	16.5	7.4
-6	89-114	Btv1	0.2	2.6	8.6	33.9	26.8	72.1	8.0	19.9	0.3	1.59	21.9	18.0	8.1
-7	114-152	Btv2	0.1	1.1	3.9	36.3	30.2	71.6	7.6	20.8	0.2	1.62	21.1	16.0	7.2
-8	152-203	B't	0.0	0.6	2.2	31.8	39.1	73.7	6.7	19.6	0.2	1.50	25.2	19.3	7.3

See footnote at end of table.

TABLE 14.--PHYSICAL ANALYSES OF SELECTED SOILS--Continued

Soil name and sample number	Depth	Hori- zon	Particle-size distribution: Sand: Very coarse (2-1 mm)	Coarse (1-0.5 mm)	Medium (0.5- 0.25 mm)	Fine (0.25- 0.1 mm)	Very fine (0.1- 0.05 mm)	Total (2- 0.05 mm)	Silt (0.05- 0.002 mm)	Clay (<0.002 mm)	Hydraulic conduc- tivity	Bulk density (field moist)*	Water content: 1/10 bar	1/3 bar	15 bar
	Cm		Pct								Cm/hr	g/cm^3	Pct (wt)		
Leon sand:															
S46-2-1	0-15	A	0.0	5.4	67.6	25.3	0.3	98.6	1.1	0.3	109.0	1.37	4.9	3.6	0.9
-2	15-41	E	0.1	5.3	62.8	29.9	0.3	98.4	0.8	0.8	71.7	1.38	3.9	2.8	0.3
-3	41-61	Bh	0.1	5.0	59.8	27.2	0.3	92.2	3.7	4.1	11.8	1.39	17.5	14.4	3.1
-4	61-86	BC	0.1	5.7	62.1	25.2	0.2	93.2	3.6	3.2	24.3	1.49	12.5	9.7	1.8
-5	86-142	C1	0.0	5.0	59.0	29.2	0.4	93.6	3.9	2.5	19.7	1.58	8.6	6.0	0.9
-6	142-203	C2	0.1	3.8	60.7	33.9	0.2	98.7	0.3	1.0	70.3	1.57	3.0	2.2	0.2
Mandarin sand:															
S46-5-1	0-13	A	0.0	6.1	62.6	29.2	0.4	98.3	1.2	0.5	122.0	1.36	5.7	4.8	0.8
-2	13-66	E	0.1	6.5	58.0	32.6	0.4	97.6	1.8	0.6	73.6	1.47	3.1	2.5	0.7
-3	66-81	Bh	0.0	6.6	54.2	29.4	0.4	90.6	4.7	4.7	19.9	1.41	16.3	14.0	3.8
-4	81-117	Bw	0.1	5.1	54.6	33.6	0.6	94.0	3.6	2.4	29.6	1.58	6.8	5.2	1.1
-5	117-137	BC	0.1	6.7	57.5	32.5	0.4	97.2	1.7	1.1	30.9	1.58	6.9	4.9	0.7
-6	137-203	C	0.2	7.6	59.4	30.9	0.3	98.4	1.1	0.5	43.4	1.62	2.4	1.8	0.2
Notcher sandy loam:															
S46-6-1	0-10	Ac	0.1	3.0	11.7	25.5	17.9	58.2	24.6	17.2	2.4	1.37	22.2	17.1	5.9
-2	10-25	Bc	0.2	3.0	11.4	24.4	18.4	57.4	26.1	16.5	1.2	1.59	16.8	14.0	6.5
-3	25-68	Btcv1	0.4	3.0	10.8	21.6	18.0	53.8	21.9	24.3	1.3	1.61	16.7	14.4	7.6
-4	68-109	Btcv2	0.2	2.8	10.6	22.8	18.0	54.4	22.5	23.1	0.2	1.68	18.7	17.2	9.6
-5	109-152	Btcv3	0.2	3.2	11.4	22.6	17.2	54.6	18.9	26.5	0.4	1.62	19.2	17.3	11.9
-6	152-203	Btcv3	0.2	4.2	14.2	24.6	14.8	58.0	14.5	27.5	0.1	1.66	20.4	18.9	12.7
Orangeburg sandy loam:															
S46-7-1	0-13	Ap	0.2	7.0	20.1	30.0	17.2	74.5	14.6	10.9	2.7	1.52	16.2	12.3	4.1
-2	13-23	BE	0.2	5.2	17.0	28.0	17.6	68.0	15.4	16.6	1.3	1.69	13.9	10.9	5.5
-3	23-64	Bt1	0.4	5.6	16.0	25.4	16.0	63.4	14.4	22.2	2.9	1.58	14.8	12.1	6.6
-4	64-104	Bt1	0.2	5.6	16.0	25.4	16.6	63.8	12.5	23.7	1.5	1.63	14.8	12.6	7.5
-5	104-152	Bt2	0.2	5.0	16.2	27.4	17.0	65.8	10.9	23.3	1.5	1.70	13.0	11.1	6.8
-6	152-203	Bt2	0.2	5.0	15.8	27.2	17.2	65.4	9.3	25.3	0.7	1.73	13.3	11.7	7.2
Resota sand:															
S46-4-1	0-15	A	0.0	6.6	64.7	26.0	0.7	98.0	1.5	0.5	69.7	1.42	4.0	2.8	0.6
-2	15-30	E	0.0	7.0	63.7	25.5	0.7	96.9	2.6	0.5	90.1	1.43	4.1	3.0	0.4
-3	30-48	Bh	0.1	6.6	61.0	24.9	0.6	93.2	4.4	2.4	65.1	1.46	5.2	4.0	0.9
-4	48-79	Bw1	0.0	6.2	59.6	27.1	0.8	93.7	4.0	2.3	74.9	1.50	4.5	3.4	0.8
-5	79-142	Bw2	0.1	6.1	60.3	26.6	0.8	93.9	3.7	2.4	51.3	1.53	4.0	3.0	0.8
-6	142-203	C	0.4	10.4	61.0	26.9	0.4	99.1	0.6	0.3	7.2	1.56	2.0	1.5	0.1

See footnote at end of table.

TABLE 14.--PHYSICAL ANALYSES OF SELECTED SOILS--Continued

Soil name and sample number	Depth	Horizon	Particle-size distribution: Sand: Very coarse (2-1 mm)	Coarse (1-0.5 mm)	Medium (0.5-0.25 mm)	Fine (0.25-0.1 mm)	Very fine (0.1-0.05 mm)	Total (2-0.05 mm)	Silt (0.05-0.002 mm)	Clay (<0.002 mm)	Hydraulic conductivity	Bulk density (field moist)*	Water content: 1/10 bar	1/3 bar	15 bar
	Cm		Pct								Cm/hr	g/cm^3	Pct (wt)		
Troup sand:															
S46-9-1	0-13	A	1.2	15.3	38.8	26.1	5.5	86.9	9.1	4.0	11.2	1.65	9.7	7.2	2.2
-2	13-36	AE	1.0	13.0	38.2	27.6	5.6	85.4	10.6	4.0	24.0	1.65	7.8	5.7	2.1
-3	36-81	E1	1.8	14.0	34.2	29.2	6.2	85.4	9.2	5.4	23.7	1.63	6.9	5.2	2.2
-4	81-122	E2	1.8	13.4	33.6	32.2	6.8	87.8	7.6	4.6	19.1	1.68	13.9	5.1	1.9
-5	122-203	Bt	2.0	12.4	28.2	23.0	5.0	70.6	7.2	22.2	18.0	1.67	12.0	10.3	6.1

* The bulk density of some horizons does not agree with the physical properties table. Most of the differences are within the range of normal laboratory error.

TABLE 15.--CHEMICAL ANALYSES OF SELECTED SOILS

(Absence of an entry indicates that data were not available)

Soil name and sample number	Depth	Horizon	Extractable bases: Ca	Extractable bases: Mg	Extractable bases: Na	Extractable bases: K	Extractable bases: Sum	Extractable acidity	Sum of cations	Base saturation	Organic carbon	Electrical conductivity	pH: H_2O (1:1)	pH: $CaCl_2$ 0.01M (1:2)	pH: KCl 1N (1:1)	Pyrophosphate extractable: C	Pyrophosphate extractable: Fe	Pyrophosphate extractable: Al	Citrate-dithionite extractable: Fe	Citrate-dithionite extractable: Al
	Cm		Milliequivalents/100 grams of soil							Pct	Pct	Mmhos/cm				Pct	Pct	Pct	Pct	Pct
Bigbee fine sand:																				
S46-11-1	0-15	A	0.12	0.05	0.05	0.02	0.24	4.10	4.34	6	1.24	0.05	4.4	3.8	3.8	---	---	---	---	---
-2	15-23	AC	0.02	0.02	0.03	0.01	0.08	3.48	3.56	2	0.54	0.02	4.9	4.4	4.3	---	---	---	---	---
-3	23-56	C1	0.02	0.01	0.03	0.00	0.06	2.60	2.66	2	0.25	0.02	4.8	4.7	4.5	---	---	---	---	---
-4	56-102	C2	0.02	0.02	0.03	0.00	0.07	1.38	1.45	5	0.04	0.02	4.9	4.6	4.5	---	---	---	---	---
-5	102-129	C3	0.02	0.01	0.03	0.00	0.06	0.34	0.40	15	0.10	0.02	4.8	4.5	4.5	---	---	---	---	---
-6	129-203	C4	0.01	0.01	0.03	0.00	0.05	0.82	0.87	6	0.04	0.01	5.0	4.6	4.6	---	---	---	---	---
Bonifay sand:																				
S46-20-1	0-18	Ap	1.01	0.29	0.01	0.06	1.37	2.94	4.31	32	0.47	0.03	5.2	5.0	4.6	---	---	---	---	---
-2	18-71	E1	0.42	0.15	0.01	0.05	0.63	2.00	2.63	24	0.14	0.02	5.3	5.2	4.6	---	---	---	---	---
-3	71-112	E2	0.21	0.10	0.01	0.02	0.34	1.85	2.19	16	0.11	0.02	4.9	4.6	4.6	---	---	---	---	---
-4	112-150	Btv1	0.52	0.21	0.02	0.04	0.79	3.17	3.96	20	0.11	0.05	5.2	5.5	4.9	---	---	---	1.06	0.21
-5	150-203	Btv2	0.38	0.20	0.02	0.04	0.64	3.36	4.00	16	0.09	0.02	5.1	5.5	5.6	---	---	---	3.40	0.49
Chipley sand:																				
S46-13-1	0-15	A	0.16	0.09	0.04	0.02	0.31	7.50	7.81	4	1.59	0.06	4.3	3.8	3.8	---	---	---	---	---
-2	15-38	AC	0.04	0.03	0.03	0.01	0.11	2.85	2.96	4	0.46	0.02	4.7	4.5	4.5	---	---	---	---	---
-3	38-51	C1	0.02	0.01	0.03	0.01	0.07	1.12	1.19	6	0.07	0.02	4.8	4.6	4.6	---	---	---	---	---
-4	51-86	C2	0.05	0.04	0.04	0.01	0.14	0.48	0.62	23	0.12	0.02	4.9	4.4	4.6	---	---	---	---	---
-5	86-122	C3	0.04	0.02	0.04	0.00	0.10	0.56	0.66	15	0.13	0.02	4.9	4.3	4.5	---	---	---	---	---
-6	122-155	C4	0.05	0.02	0.03	0.00	0.10	0.29	0.39	26	0.08	0.03	4.8	4.4	4.5	---	---	---	---	---
-7	155-203	C5	0.02	0.01	0.02	0.00	0.05	0.17	0.22	23	0.10	0.02	5.6	4.7	5.5	---	---	---	---	---
Dothan sand:																				
S46-22-1	0-13	A	0.15	0.06	0.02	0.02	0.25	4.49	4.74	5	0.78	0.02	5.0	4.4	4.2	---	---	---	---	---
-2	13-30	BE	0.20	0.09	0.02	0.01	0.32	2.69	3.01	11	0.25	0.01	5.4	4.6	4.6	---	---	---	---	---
-3	30-96	Bt	0.29	0.33	0.03	0.02	0.67	5.05	5.72	12	0.84	0.01	5.6	4.7	4.8	---	---	---	1.84	0.43
-4	96-142	Btv1	0.05	0.12	0.02	0.01	0.20	3.86	4.06	5	0.15	0.01	5.0	4.7	5.1	---	---	---	2.27	0.42
-5	142-160	Btv2	0.05	0.10	0.02	0.01	0.18	4.41	4.59	4	0.14	0.00	5.0	4.8	5.3	---	---	---	5.70	0.56
-6	160-203	Btv3	0.04	0.11	0.02	0.00	0.17	2.90	3.07	6	0.11	0.00	5.4	4.6	4.6	---	---	---	2.49	0.38

TABLE 15.--CHEMICAL ANALYSES OF SELECTED SOILS--Continued

Soil name and sample number	Depth	Horizon	Extractable bases: Ca	Extractable bases: Mg	Extractable bases: Na	Extractable bases: K	Extractable bases: Sum	Extractable acidity	Sum of cations	Base saturation	Organic carbon	Electrical conductivity	pH: H_2O (1:1)	pH: $CaCl_2$ 0.01M (1:2)	pH: KCl 1N (1:1)	Pyrophosphate extractable: C	Pyrophosphate extractable: Fe	Pyrophosphate extractable: Al	Citrate-dithionite extractable: Fe	Citrate-dithionite extractable: Al
	Cm		----Milliequivalents/100 grams of soil-----							Pct	Pct	Mmhos/cm				Pct	Pct	Pct	Pct	Pct
Escambia fine sand:																				
S46-19-1	0-15	A	0.02	0.04	0.04	0.02	0.12	11.42	11.64	1	2.29	0.05	3.8	---	---	---	---	---	---	---
-2	15-33	BE1	0.02	0.01	0.02	0.01	0.06	5.16	5.22	1	0.71	0.02	4.3	---	---	---	---	---	---	---
-3	33-58	BE2	0.07	0.06	0.02	0.01	0.13	3.53	3.69	4	0.18	0.01	4.1	---	---	---	---	---	---	---
-4	58-76	Btv1	0.05	0.05	0.02	0.01	0.13	4.07	4.20	3	0.07	0.01	4.1	---	---	---	---	---	0.62	0.17
-5	76-89	Btv2	0.06	0.07	0.03	0.02	0.18	5.50	5.68	3	0.07	0.01	4.1	---	---	---	---	---	0.76	0.18
-6	89-104	Btv3	0.10	0.12	0.03	0.04	0.29	6.73	7.02	4	0.06	0.01	4.0	---	---	---	---	---	0.81	0.21
-7	104-152	Bt1	0.16	0.18	0.03	0.07	0.44	7.68	8.12	5	0.05	0.02	3.9	---	---	---	---	---	0.68	0.18
-8	152-203	Bt2	0.03	0.34	0.03	0.09	0.49	6.34	6.83	7	0.04	0.02	4.0	---	---	---	---	---	0.56	0.16
Escambia fine sandy loam:																				
S46-21-1	0-12	A	0.07	0.06	0.03	0.04	0.20	10.91	11.11	2	1.64	0.02	4.2	4.1	3.9	---	---	---	---	---
-2	12-20	BE	0.03	0.02	0.02	0.01	0.08	6.08	6.16	1	0.68	0.03	4.3	4.2	4.3	---	---	---	---	---
-3	20-64	Btv	0.04	0.08	0.03	0.02	0.17	5.48	5.65	3	0.14	0.01	4.6	4.2	4.1	---	---	---	0.97	0.24
-4	64-122	Btg1	0.06	0.20	0.04	0.06	0.36	8.61	8.97	4	0.16	0.00	4.9	4.1	3.6	---	---	---	1.46	0.28
-5	122-203	Btg2	0.16	0.62	0.04	0.10	0.92	8.91	9.83	9	0.09	0.00	4.7	4.0	4.0	---	---	---	1.25	0.22
Foxworth sand:																				
S46-14-1	0-10	Ap	0.25	0.07	0.05	0.02	0.39	3.91	4.30	9	1.29	0.05	4.5	4.0	3.9	---	---	---	---	---
-2	10-23	AC	0.05	0.02	0.04	0.01	0.12	1.70	1.82	7	0.47	0.03	4.9	4.4	4.4	---	---	---	---	---
-3	23-84	C1	0.05	0.03	0.03	0.01	0.12	1.18	1.30	9	0.18	0.01	5.1	4.5	4.7	---	---	---	---	---
-4	84-114	C2	0.04	0.03	0.03	0.01	0.11	0.96	1.07	10	0.12	0.01	5.1	4.4	4.7	---	---	---	---	---
-5	114-160	C3	0.03	0.02	0.03	0.00	0.07	0.10	0.17	41	0.08	0.01	5.1	4.6	4.5	---	---	---	---	---
-6	160-203	C4	0.01	0.01	0.02	0.00	0.04	0.03	0.07	57	0.20	0.01	5.4	4.7	5.2	---	---	---	---	---
Fuquay loamy fine sand:																				
S46-16-1	0-13	A	0.12	0.05	0.04	0.03	0.24	4.13	4.37	5	0.91	0.02	4.6	4.1	4.3	---	---	---	---	---
-2	13-56	E	0.10	0.06	0.04	0.01	0.21	1.16	1.37	15	0.30	0.01	4.9	4.4	4.9	---	---	---	---	---
-3	56-71	BE	0.10	0.07	0.04	0.01	0.22	2.17	2.39	9	0.17	0.01	4.8	4.3	4.5	---	---	---	---	---
-4	71-114	Btv1	0.17	0.19	0.05	0.02	0.43	4.37	4.80	9	0.07	0.01	5.0	4.1	4.3	---	---	---	---	---
-5	114-150	Btv2	0.43	0.13	0.05	0.02	0.63	5.07	5.70	11	0.06	0.01	4.9	4.1	4.3	---	---	---	1.80	0.30
-6	150-170	Btv3	0.05	0.09	0.04	0.02	0.20	6.08	6.28	3	0.06	0.01	5.2	4.0	4.3	---	---	---	1.86	0.32
-7	170-203	C	0.05	0.05	0.03	0.02	0.15	4.16	4.31	3	0.06	0.01	4.9	4.0	4.2	---	---	---	1.88	0.28
Hurricane sand:																				
S46-10-1	0-15	A	0.22	0.07	0.03	0.02	0.34	2.95	3.29	10	0.73	0.05	5.0	4.1	4.1	---	---	---	---	---
-2	15-84	E1	0.06	0.04	0.02	0.01	0.13	1.19	1.32	10	0.15	0.02	5.2	4.0	4.6	---	---	---	---	---
-3	84-107	E2	0.08	0.05	0.03	0.01	0.17	1.46	1.63	10	0.05	0.03	5.2	4.1	4.5	---	---	---	---	---
-4	107-165	E3	0.02	0.02	0.02	0.00	0.06	0.56	0.62	10	0.02	0.01	5.7	5.1	5.5	---	---	---	---	---
-5	165-178	Bh1	0.07	0.03	0.03	0.00	0.13	6.66	6.79	2	1.55	0.03	4.8	4.2	4.2	0.98	0.00	0.31	0.08	0.04
-6	178-203	Bh2	0.09	0.04	0.04	0.00	0.17	36.39	36.56	0	12.13	0.08	4.3	3.8	3.8	4.19	0.00	0.07	0.20	0.18

TABLE 15.--CHEMICAL ANALYSES OF SELECTED SOILS--Continued

Soil name and sample number	Depth	Horizon	Extractable bases: Ca	Extractable bases: Mg	Extractable bases: Na	Extractable bases: K	Extractable bases: Sum	Extractable acidity	Sum of cations	Base saturation	Organic carbon	Electrical conductivity	pH H_2O (1:1)	pH $CaCl_2$ 0.01M (1:2)	pH KCl 1N (1:1)	Pyrophosphate extractable: C	Pyrophosphate extractable: Fe	Pyrophosphate extractable: Al	Citrate-dithionite extractable: Fe	Citrate-dithionite extractable: Al
	Cm		----Milliequivalents/100 grams of soil-----							Pct	Pct	Mmhos/cm				Pct	Pct	Pct	Pct	Pct
Kureb sand:																				
S46-1-1	0-13	A	0.26	0.08	0.03	0.02	0.39	1.11	1.50	26	0.49	0.00	5.2	4.1	4.0	---	---	---	---	---
-2	13-43	E	0.03	0.02	0.03	0.00	0.08	0.25	0.33	24	0.08	0.00	5.1	4.4	4.0	---	---	---	---	---
-3	43-84	C/Bh	0.03	0.04	0.03	0.01	0.11	1.73	1.84	6	0.15	0.00	4.8	4.3	4.1	---	---	---	---	---
-4	84-145	C1	0.02	0.02	0.03	0.00	0.07	0.55	0.62	11	0.09	0.00	5.1	4.6	4.4	---	---	---	---	---
-5	145-162	C2	0.02	0.02	0.02	0.00	0.06	0.22	0.28	21	0.04	0.00	5.3	4.7	4.5	---	---	---	---	---
-6	162-193	C3	0.01	0.01	0.00	0.00	0.02	0.08	0.10	20	0.05	0.00	5.1	4.8	4.6	---	---	---	---	---
-7	193-203	C4	0.02	0.02	0.01	0.00	0.05	0.01	0.06	83	0.05	0.00	5.2	5.0	4.8	---	---	---	---	---
Lakeland sand:																				
S46-5-1	0-15	A	16.00	0.21	0.03	0.06	16.30	0.54	16.84	97	1.02	0.04	6.9	6.9	7.0	---	---	---	---	---
-2	15-64	C1	1.00	0.03	0.01	0.02	1.06	0.41	1.47	72	0.11	0.00	7.1	6.8	6.6	---	---	---	---	---
-3	64-124	C1	0.58	0.02	0.01	0.02	0.63	0.52	1.15	55	0.07	0.00	7.0	6.8	6.4	---	---	---	---	---
-4	124-185	C2	0.42	0.02	0.01	0.01	0.46	0.51	0.97	47	0.05	0.00	7.1	6.7	6.4	---	---	---	---	---
-5	185-203	C3	0.35	0.02	0.01	0.01	0.39	0.43	0.82	48	0.04	0.00	7.1	6.7	6.3	---	---	---	---	---
Leefield loamy fine sand:																				
S46-18-1	0-18	A	0.02	0.05	0.04	0.03	0.14	15.04	15.18	1	2.43	0.03	4.6	4.1	4.2	---	---	---	---	---
-2	18-30	E1	0.01	0.03	0.03	0.01	0.08	7.28	7.36	1	0.82	0.02	4.4	4.2	4.5	---	---	---	---	---
-3	30-61	E2	0.02	0.01	0.02	0.01	0.06	4.35	4.41	1	0.29	0.02	4.1	4.2	4.4	---	---	---	---	---
-4	61-76	E3	0.02	0.04	0.03	0.01	0.10	3.76	3.86	3	0.12	0.01	3.9	4.0	4.3	---	---	---	---	---
-5	76-89	Bt	0.04	0.08	0.03	0.02	0.17	5.51	5.68	3	0.10	0.01	3.9	4.0	4.2	---	---	---	0.82	0.20
-6	89-114	Btv1	0.09	0.17	0.03	0.04	0.33	6.68	7.01	5	0.07	0.02	3.1	4.0	4.1	---	---	---	0.85	0.21
-7	114-152	Btv2	0.23	0.30	0.04	0.08	0.65	7.70	8.35	8	0.04	0.02	4.6	3.9	4.2	---	---	---	---	---
-8	152-203	B't	0.71	0.90	0.05	0.10	1.76	7.17	8.93	20	0.05	0.02	4.8	3.8	4.0	---	---	---	---	---
Leon sand:																				
S46-2-1	0-15	A	0.10	0.06	0.02	0.01	0.19	1.23	1.42	13	0.48	0.00	4.7	3.6	3.4	---	---	---	---	---
-2	15-41	E	0.02	0.02	0.03	0.00	0.07	0.45	0.52	13	0.13	0.00	4.6	4.1	3.7	---	---	---	---	---
-3	41-61	Bh	0.04	0.04	0.03	0.03	0.14	20.06	20.20	1	2.16	0.00	4.2	3.9	3.7	1.29	0.02	0.28	0.06	0.24
-4	61-86	BC	0.02	0.02	0.02	0.00	0.06	4.16	4.22	1	0.38	0.00	4.5	4.4	4.3	---	---	---	---	---
-5	86-142	C1	0.02	0.02	0.04	0.00	0.08	2.16	2.24	4	0.31	0.00	4.6	4.4	4.3	---	---	---	---	---
-6	142-203	C2	0.07	0.01	0.01	0.00	0.09	0.50	0.59	15	0.10	0.00	4.9	4.7	4.6	---	---	---	---	---
Mandarin sand:																				
S46-3-1	0-13	A	0.17	0.09	0.03	0.02	0.31	1.83	2.14	14	0.39	0.00	4.4	3.5	3.3	---	---	---	---	---
-2	13-66	E	0.03	0.02	0.04	0.00	0.09	0.14	0.23	39	0.07	0.00	4.9	4.6	4.3	---	---	---	---	---
-3	66-81	Bh	0.02	0.02	0.03	0.01	0.08	15.09	15.17	1	1.34	0.00	4.6	4.3	4.1	0.70	0.03	0.28	0.05	0.26
-4	81-117	Bw	0.01	0.01	0.03	0.00	0.05	2.11	2.16	2	0.25	0.00	4.7	4.5	4.4	---	---	---	---	---
-5	117-137	BC	0.01	0.01	0.01	0.00	0.03	0.83	0.86	3	0.16	0.00	4.7	4.6	4.5	---	---	---	---	---
-6	137-203	C	0.01	0.01	0.01	0.00	0.03	0.03	0.06	50	0.04	0.00	5.1	4.8	4.7	---	---	---	---	---

TABLE 15.--CHEMICAL ANALYSES OF SELECTED SOILS--Continued

Soil name and sample number	Depth	Horizon	Extractable bases: Ca	Extractable bases: Mg	Extractable bases: Na	Extractable bases: K	Extractable bases: Sum	Extractable acidity	Sum of cations	Base saturation	Organic carbon	Electrical conductivity	pH H_2O (1:1)	pH $CaCl_2$ 0.01M (1:2)	pH KCl 1N (1:1)	Pyrophosphate extractable: C	Pyrophosphate extractable: Fe	Pyrophosphate extractable: Al	Citrate-dithionite extractable: Fe	Citrate-dithionite extractable: Al
	Cm		Milliequivalents/100 grams of soil							Pct	Pct	Mmhos/cm				Pct	Pct	Pct	Pct	Pct
Notcher sandy loam:																				
S46-8-1	0-10	Ac	0.23	0.15	0.09	0.06	0.53	20.31	20.84	3	2.74	0.00	4.7	4.1	3.8	---	---	---	---	---
-2	10-25	Bc	0.15	0.11	0.06	0.02	0.34	10.01	10.35	3	0.97	0.00	4.9	4.2	4.0	---	---	---	---	---
-3	25-68	Btcv1	0.20	0.09	0.06	0.01	0.36	5.91	6.27	6	0.25	0.00	5.4	4.5	4.5	---	---	---	0.08	0.07
-4	68-109	Btcv2	0.05	0.09	0.04	0.01	0.19	4.51	4.70	4	0.14	0.02	5.2	4.5	4.7	---	---	---	0.07	0.08
-5	109-152	Btcv3	0.07	0.13	0.03	0.01	0.24	4.56	4.80	5	0.07	0.00	5.3	4.7	5.0	---	---	---	0.04	0.07
-6	152-203	Btcv3	0.07	0.18	0.04	0.01	0.30	3.61	3.91	8	0.04	0.01	5.2	4.4	4.4	---	---	---	0.04	0.07
Orangeburg sandy loam:																				
S46-7-1	0-13	Ap	0.90	0.28	0.03	0.21	1.42	7.79	9.21	15	1.14	0.00	5.3	4.6	4.1	---	---	---	---	---
-2	13-23	BE	0.57	0.09	0.02	0.03	0.71	4.61	5.32	13	0.28	0.03	5.2	4.6	4.2	---	---	---	0.06	0.08
-3	23-64	Bt1	0.31	0.07	0.02	0.03	0.43	5.70	6.13	7	0.16	0.02	5.0	4.3	4.0	---	---	---	0.05	0.07
-4	64-104	Bt1	0.54	0.16	0.02	0.02	0.74	4.40	5.14	14	0.15	0.02	5.2	4.6	4.3	---	---	---	0.07	0.07
-5	104-152	Bt2	0.53	0.09	0.02	0.02	0.66	3.85	4.51	15	0.08	0.00	5.3	4.7	4.5	---	---	---	0.06	0.05
-6	152-203	Bt2	0.54	0.14	0.02	0.02	0.72	3.69	4.41	16	0.05	0.02	5.1	4.6	4.6	---	---	---	0.10	0.09
Resota sand:																				
S46-4-1	0-15	A	0.16	0.08	0.02	0.02	0.28	1.96	2.24	13	0.68	0.00	4.5	3.7	3.2	---	---	---	---	---
-2	15-30	E	0.11	0.04	0.01	0.00	0.16	0.29	0.45	36	0.18	0.00	4.7	4.0	3.6	---	---	---	---	---
-3	30-48	Bh	0.03	0.02	0.01	0.01	0.07	1.91	1.98	4	0.27	0.00	4.8	4.5	4.3	---	---	---	---	---
-4	48-79	Bw1	0.03	0.03	0.04	0.01	0.11	1.45	1.56	7	0.13	0.03	5.1	4.6	4.4	---	---	---	---	---
-5	79-142	Bw2	0.06	0.06	0.02	0.01	0.15	1.23	1.38	11	0.07	0.00	5.1	4.5	4.3	---	---	---	---	---
-6	142-203	C	0.02	0.01	0.02	0.00	0.05	0.36	0.46	12	0.03	0.00	4.3	4.9	4.6	---	---	---	---	---
Troup sand:																				
S46-9-1	0-10	A	0.96	0.37	0.02	0.07	1.42	7.09	8.51	17	0.70	0.05	5.5	4.9	4.6	---	---	---	---	---
-2	10-36	AE	0.88	0.16	0.01	0.06	1.11	1.95	3.06	36	0.28	0.03	5.9	5.2	5.2	---	---	---	---	---
-3	36-81	E1	0.46	0.07	0.01	0.09	0.63	1.35	1.98	32	0.09	0.02	6.0	5.4	5.3	---	---	---	---	---
-4	81-122	E2	0.26	0.05	0.02	0.07	0.40	1.30	1.70	24	0.08	0.03	5.7	4.9	4.6	---	---	---	---	---
-5	122-203	Bt	0.51	0.11	0.01	0.10	0.73	3.42	4.15	18	0.12	0.03	5.5	5.1	5.0	---	---	---	0.02	0.07

TABLE 16.--CLAY MINERALOGY OF SELECTED SOILS

Soil name and sample number	Depth	Horizon	Percentage of clay materials				
			Montmorillonite	14-angstrom intergrade	Kaolinite	Gibbsite	Quartz
	Cm						
Bigbee fine sand:							
S46-11-1	0-15	A	11	44	20	5	20
-4	56-102	C2	16	40	13	14	17
-6	129-203	C4	17	33	27	8	15
Bonifay sand:							
S46-20-1	0-18	Ap	0	45	33	6	16
-4	112-150	Btv1	0	35	50	10	5
-5	150-203	Btv2	0	20	62	7	11
Chipley sand:							
S46-13-1	0-15	A	17	40	24	4	15
-4	51-86	C2	18	32	18	21	11
-7	155-203	C5	4	74	6	5	11
Dothan loamy sand:							
S46-22-1	0-13	A	0	43	25	5	27
-4	96-142	Btv1	0	41	35	10	14
-6	160-203	Btv2	0	10	66	6	18
Escambia fine sand:							
S46-19-1	0-15	A	0	52	32	0	16
-4	58-76	Btv1	0	39	48	0	13
-6	84-104	Btv3	0	24	62	0	14
-8	152-203	Bt2	0	19	60	0	21
Escambia fine sandy loam:							
S46-21-1	0-12	A	0	35	52	0	13
-3	20-64	Btv	0	25	58	0	17
-5	122-203	Btg2	0	13	70	0	17
Foxworth sand:							
S46-14-1	0-10	Ap	12	39	19	9	21
-4	84-114	C2	17	34	21	14	14
-6	160-203	C4	19	26	25	6	24
Fuquay loamy fine sand:							
S46-16-1	0-13	A	0	36	50	0	14
-4	71-114	Btv1	0	32	61	0	7
-7	170-203	C	0	18	76	0	6
Hurricane sand:							
S46-10-1	0-15	A	20	47	13	5	15
-6	178-203	Bh2	15	11	10	0	64
Kureb sand:							
S46-1-1	0-13	A	47	21	8	0	24
-3	43-84	C/Bh	34	52	9	0	5
-6	162-193	C3	31	50	9	0	10
Lakeland sand:							
S46-5-1	0-15	A	42	21	9	14	14
-3	64-124	C1	18	34	13	31	4
-5	185-203	C3	20	33	13	30	4

TABLE 16.--CLAY MINERALOGY OF SELECTED SOILS--Continued

Soil name and sample number	Depth	Horizon	Percentage of clay materials				
			Montmorillonite	14-angstrom intergrade	Kaolinite	Gibbsite	Quartz
	Cm						
Leefield loamy fine sand:							
S46-18-1	0-18	A	0	54	32	0	14
-6	89-114	Btv1	0	27	58	0	15
-8	152-203	B't	0	22	52	0	26
Leon sand:							
S46-2-1	0-15	A	42	12	10	0	36
-3	41-46	Bh	26	46	10	0	18
-6	142-203	C2	32	37	19	0	12
Mandarin sand:							
S46-3-1	0-13	A	40	12	10	0	38
-3	66-81	Bh	16	51	13	0	20
-6	137-203	C	17	37	7	0	39
Notcher sandy loam:							
S46-8-1	0-10	Ac	0	40	14	40	6
-4	68-109	Btcv2	0	28	14	54	4
-6	152-203	Btcv3	0	13	25	60	2
Orangeburg sandy loam:							
S46-7-1	0-13	Ap	0	38	15	42	5
-4	64-104	Bt1	0	32	15	50	3
-6	152-203	Bt2	0	23	16	59	2
Resota sand:							
S46-4-1	0-15	A	46	28	7	0	19
-3	30-48	Bh	24	54	12	0	10
-6	142-203	C	28	46	9	0	17
Troup sand:							
S46-9-1	0-10	A	0	38	14	39	9
-5	122-203	Bt	0	24	16	56	4

TABLE 17.--ENGINEERING INDEX TEST DATA

[Tests performed by the Florida Department of Transportation (FDOT) in cooperation with the U.S. Bureau of Public Roads, in accordance with standard procedures of the American Association of State Highway and Transportation Officials (AASHTO). See the section "Soil Series and Their Morphology" for location of pedons sampled. LL means liquid limit; PI, plasticity index; MD, maximum dry density; OM, optimum moisture; and NP, nonplastic]

Soil name, report number, horizon, and depth in inches	FDOT report number	Classification		Grain-size distribution[1]								LL	PI	Moisture density[2]	
				Percentage passing sieve--[3]				Percentage smaller than--							
		AASHTO[4]	Unified (est.)	No. 4	No. 10	No. 40	No. 200	.05 mm	.02 mm	.005 mm	.002 mm			MD	OM
												Pct		Lb/ cu ft	Pct
Bigbee fine sand: (S86FL-091-011-4)															
C2----- 22 to 40	15	A-2-4	SP-SM	100	100	99	26	19	7	3	2	NP	NP	108.0	11.9
Bonifay sand: (S87FL-091-020-5)															
Btv2--- 59 to 80	24	A-2-7	SC-SM	100	100	51	32	30	27	24	22	45	20	114.4	15.1
Chipley sand: (S86FL-091-013-4)															
C2----- 20 to 34	17	A-3	SP-SM	100	100	75	9	8	7	4	4	NP	NP	108.2	10.9
Dothan loamy sand: (S87FL-091-022-4)															
Btv1--- 38 to 56	26	A-6	SM-SC	100	100	86	38	35	30	25	24	28	14	117.3	14.5
Escambia loamy sand: (S87FL-091-021-4)															
Btg1--- 25 to 48	25	A-6	SC	100	100	99	70	63	45	34	30	37	21	110.9	16.7
Foxworth sand: (S86FL-091-014-3)															
C1----- 9 to 33	18	A-3	SP-SM	100	100	82	8	7	5	4	3	NP	NP	109.2	11.0
Fuquay loamy fine sand: (S86FL-091-016-5)															
Btv2--- 45 to 59	20	A-4	SM-SC	100	100	97	36	31	28	25	23	30	10	109.0	15.3
Hurricane sand: (S86FL-091-010-2)															
E1----- 6 to 33	14	A-3	SP-SM	100	100	88	6	6	5	3	2	NP	NP	105.8	10.8
Kureb sand: (S85FL-091-001-3,4)															
C/Bh--- 17 to 33	1	A-3	SP	100	100	89	6	4	3	2	0	NP	NP	105.9	13.0
C1----- 33 to 57	2	A-3	SP	100	100	88	5	4	3	2	0	NP	NP	104.5	12.8
Lakeland sand: (S85FL-091-005-2)															
C1----- 6 to 49	9	A-3	SP-SM	100	100	77	9	8	7	3	2	NP	NP	109.2	11.0
Leefield loamy fine sand: (S87FL-091-018-7)															
Bt1---- 45 to 60	22	A-6	SM-SC	100	100	98	36	32	25	22	21	33	12	109.1	14.9

See footnotes at end of table.

TABLE 17.--ENGINEERING INDEX TEST DATA--Continued

Soil name, report number, horizon, and depth in inches	FDOT report number	Classification		Grain-size distribution[1]								LL	PI	Moisture density[2]	
				Percentage passing sieve--[3]				Percentage smaller than--							
		AASHTO[4]	Unified (est.)	No. 4	No. 10	No. 40	No. 200	.05 mm	.02 mm	.005 mm	.002 mm			MD	OM
												Pct		Lb/ cu ft	Pct
Leon sand:															
(S85FL-091-002-3,5)															
Bh----- 16 to 24	3	A-2-4	SP-SM	100	100	91	11	10	8	6	5	NP	NP	100.0	16.0
C1----- 34 to 56	4	A-3	SP-SM	100	100	88	6	5	5	3	3	NP	NP	105.5	12.3
Mandarin sand:															
(S85FL-091-003-2,3)															
E------ 5 to 26	5	A-3	SP	100	100	86	3	0	0	0	0	NP	NP	99.3	15.5
Bh----- 26 to 32	6	A-2-4	SP-SM	100	100	88	12	10	8	7	6	NP	NP	100.0	15.5
Notcher gravelly sandy loam:															
(S85FL-091-008-5)															
Btcv3-- 43 to 80	12	A-6	CL	100	100	93	53	48	42	36	33	37	18	103.1	18.1
Orangeburg sandy loam:															
(S85FL-091-007-3)															
Bt2---- 9 to 41	11	A-6	SC	100	100	90	40	39	29	23	22	22	11	120.4	11.3
Orangeburg sandy loam:															
(S85FL-091-006-4)															
Bt3---- 30 to 80	10	A-4	SC	100	100	79	31	29	27	23	21	22	9	121.6	11.5
Resota sand:															
(S85FL-091-004-3,5)															
Bw1---- 12 to 19	7	A-3	SP-SM	100	100	86	7	7	5	3	1	NP	NP	106.1	12.3
Bw3---- 31 to 56	8	A-3	SP-SM	100	100	88	7	7	6	3	2	NP	NP	106.4	12.5
Troup sand:															
(S85FL-091-009-5)															
Bt----- 48 to 80	13	A-2-4	CL-ML	100	100	79	32	29	26	22	21	20	6	120.8	11.4

[1] Mechanical analysis is according to AASHTO designation T 88-78. Results from this procedure differ slightly from those obtained by the soil survey procedure of the Natural Resources Conservation Service. In the AASHTO procedure, the fine material is analyzed by the hydrometer method and the various grain-size fractions are calculated on the basis of all the material, including the material coarser than 2 millimeters in diameter. In the Natural Resources Conservation Service soil survey procedure, the fine material is analyzed by the pipette method and the material coarser than 2 millimeters in diameter is excluded from the calculations of grain-size fractions. The mechanical analysis used in this table is not suitable for use in naming soil textural classes.

[2] Based on AASHTO designation T 99-74.

[3] In some horizons, sieve information is slightly different from information given in the engineering index properties table. Most of the differences are within the range of normal laboratory error.

[4] Based on AASHTO designation H 145-73.

TABLE 18.--CLASSIFICATION OF THE SOILS

Soil name	Family or higher taxonomic class
Albany	Loamy, siliceous, thermic Grossarenic Paleudults
Angie	Clayey, mixed, thermic Aquic Paleudults
Arents	Arents
Bibb	Coarse-loamy, siliceous, acid, thermic Typic Fluvaquents
Bigbee	Thermic, coated Typic Quartzipsamments
Bonifay	Loamy, siliceous, thermic Grossarenic Plinthic Paleudults
Chipley	Thermic, coated Aquic Quartzipsamments
Corolla	Thermic, uncoated Aquic Quartzipsamments
Cowarts	Fine-loamy, siliceous, thermic Typic Kanhapludults
Dorovan	Dysic, thermic Typic Medisaprists
Dothan	Fine-loamy, siliceous, thermic Plinthic Kandiudults
Duckston	Siliceous, thermic Typic Psammaquents
Escambia	Coarse-loamy, siliceous, thermic Plinthaquic Paleudults
Foxworth	Thermic, coated Typic Quartzipsamments
Fuquay	Loamy, siliceous, thermic Arenic Plinthic Kandiudults
Garcon	Loamy, siliceous, thermic Arenic Hapludults
Hurricane	Sandy, siliceous, thermic Grossarenic Entic Haplohumods
Johnston	Coarse-loamy, siliceous, acid, thermic Cumulic Humaquepts
Kinston	Fine-loamy, siliceous, acid, thermic Typic Fluvaquents
Kureb	Thermic, uncoated Spodic Quartzipsamments
Lakeland	Thermic, coated Typic Quartzipsamments
Leefield	Loamy, siliceous, thermic Arenic Plinthaquic Paleudults
Leon	Sandy, siliceous, thermic Aeric Haplaquods
Lucy	Loamy, siliceous, thermic Arenic Kandiudults
Mandarin	Sandy, siliceous, thermic Typic Haplohumods
Newhan	Thermic, uncoated Typic Quartzipsamments
Notcher	Fine-loamy, siliceous, thermic Plinthic Paleudults
Orangeburg	Fine-loamy, siliceous, thermic Typic Kandiudults
Pansey	Fine-loamy, siliceous, thermic Plinthic Paleaquults
Pickney	Sandy, siliceous, thermic Cumulic Humaquepts
Resota	Thermic, uncoated Spodic Quartzipsamments
Rutlege	Sandy, siliceous, thermic Typic Humaquepts
Stilson	Loamy, siliceous, thermic Arenic Plinthic Paleudults
Troup	Loamy, siliceous, thermic Grossarenic Kandiudults
Udorthents	Udorthents
Yemassee	Fine-loamy, siliceous, thermic Aeric Ochraquults

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