United States Department of Agriculture

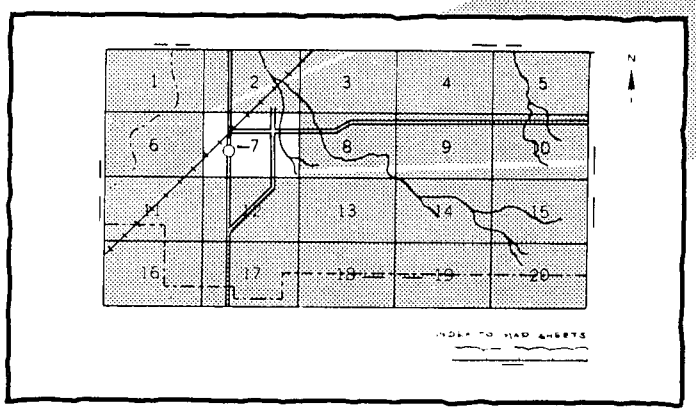
Soil Conservation Service

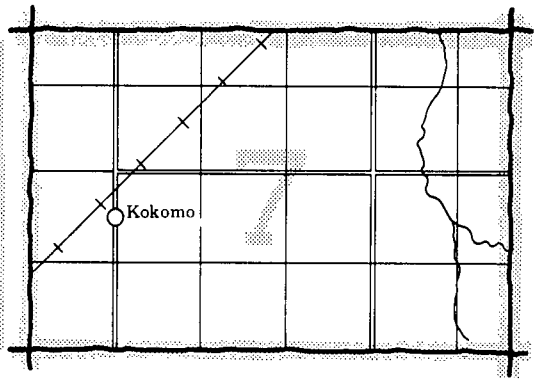
In cooperation with United States Department of Agriculture, Forest Service; University of Florida, Institute of Food and Agricultural Sciences, Agricultural Experiment Stations, Soil Science Department; and Florida Department of Agriculture and Consumer Services

Soil Survey of Columbia County Florida

HOW TO USE

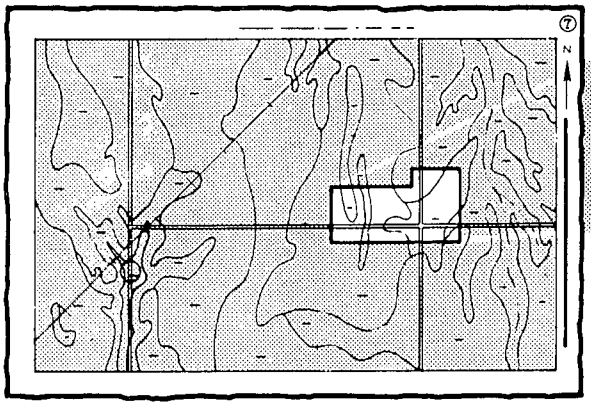
1. Locate your area of interest on the "Index to Map Sheets."

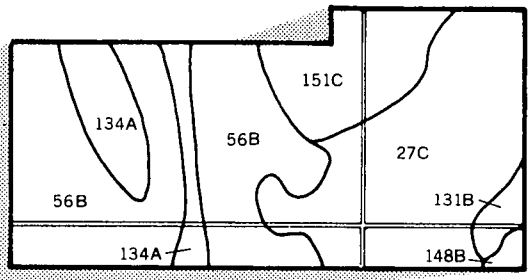




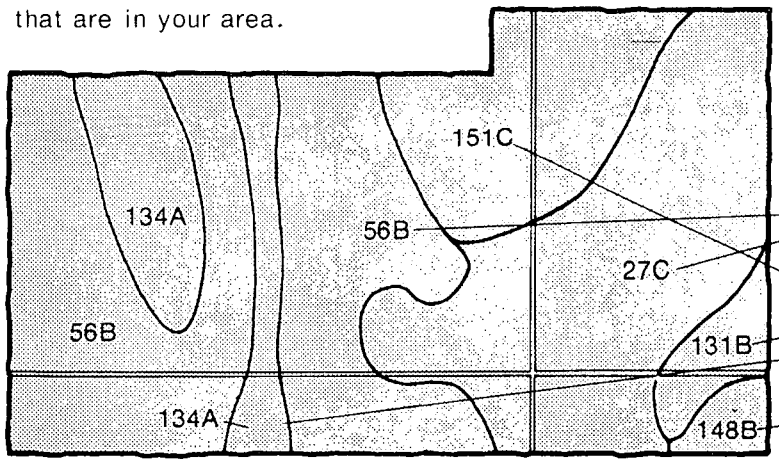
2. Note the number of the map sheet and turn to that sheet.

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





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

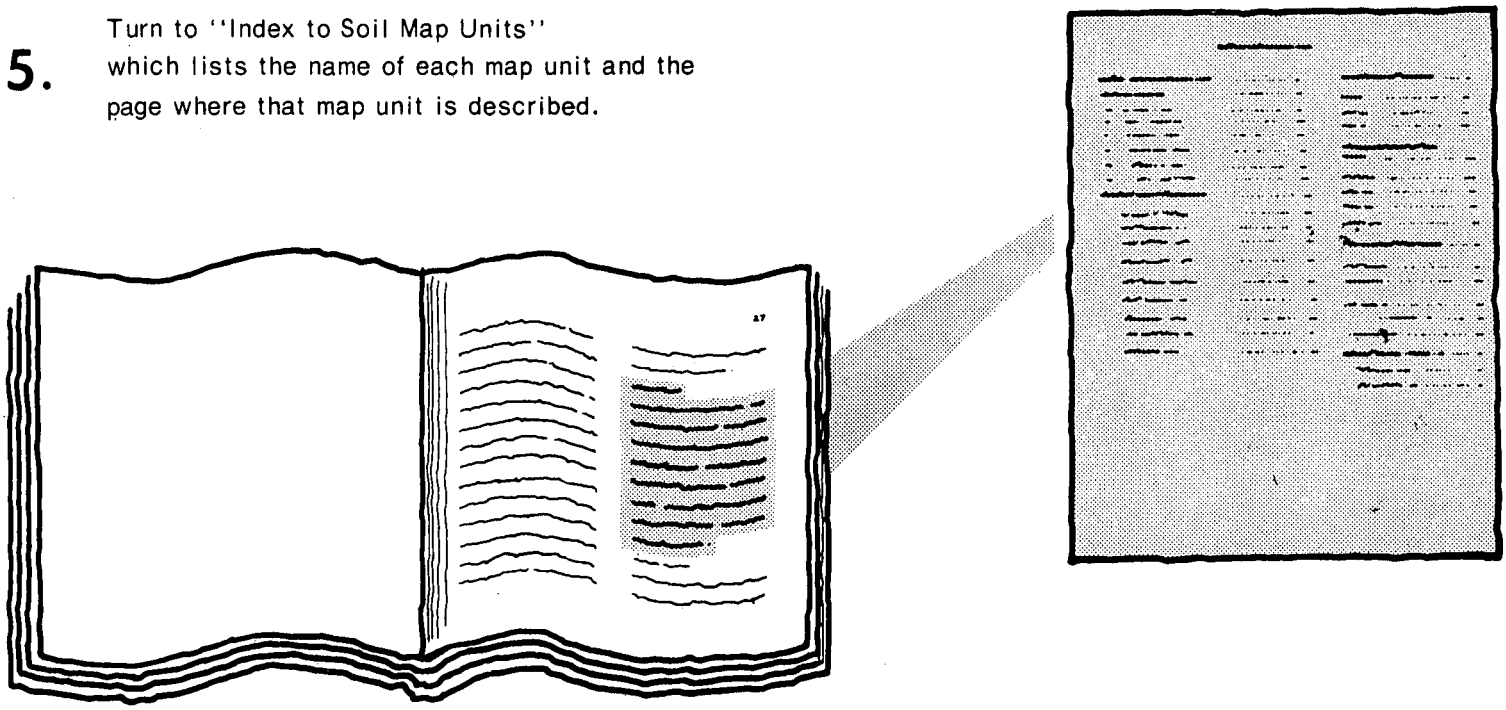


Symbols

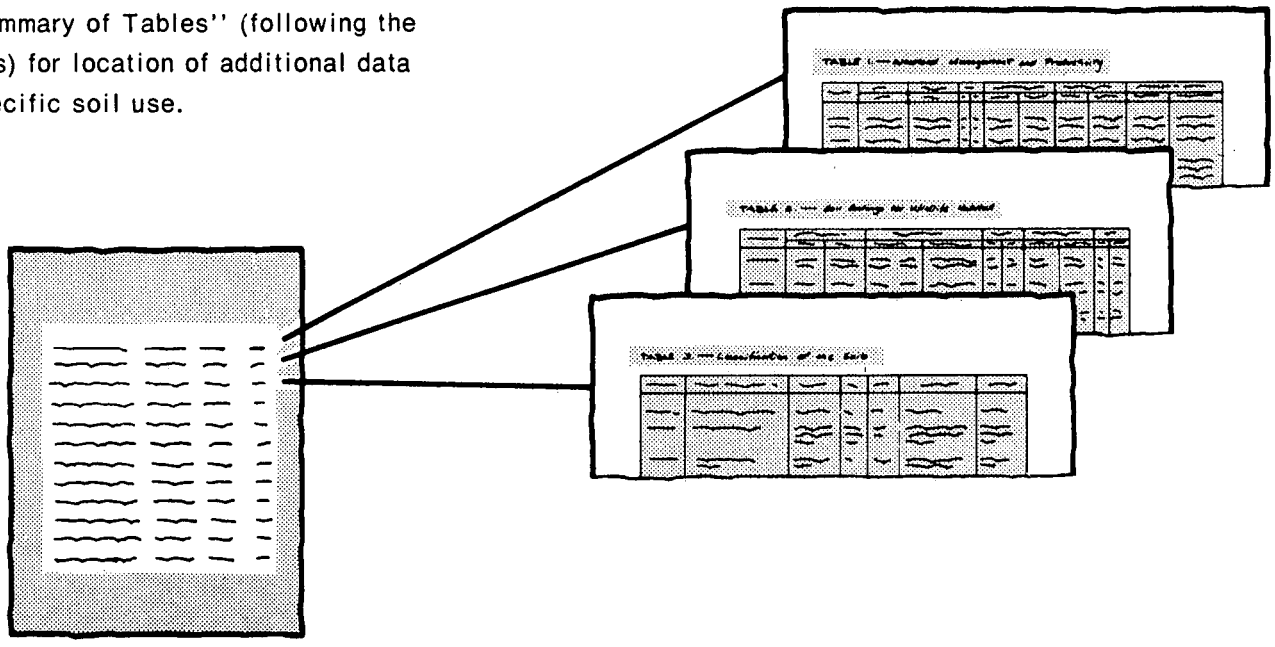
27C
56B
131B
134A
148B
151C

THIS SOIL SURVEY

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



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



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

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

Major fieldwork for this soil survey was completed in 1981. Fieldwork in the Osceola National Forest was completed in June 1973 by the U.S. Department of Agriculture, Forest Service. The information was revised and correlated by the Soil Conservation Service and incorporated in this report. Soil names and descriptions were approved in 1981. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1981. This survey was made by the Soil Conservation Service in cooperation with the U.S. Department of Agriculture, Forest Service; 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. It is part of the technical assistance furnished to the Santa Fe Soil and Water Conservation District. The Columbia County Board of Commissioners contributed financially to the publication of this survey.

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.

Cover: Falling Creek in an area of the Plummer-Pelham-Albany map unit.

Contents

Soil Series

Issued October 1984

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Summary of Tables

Foreword

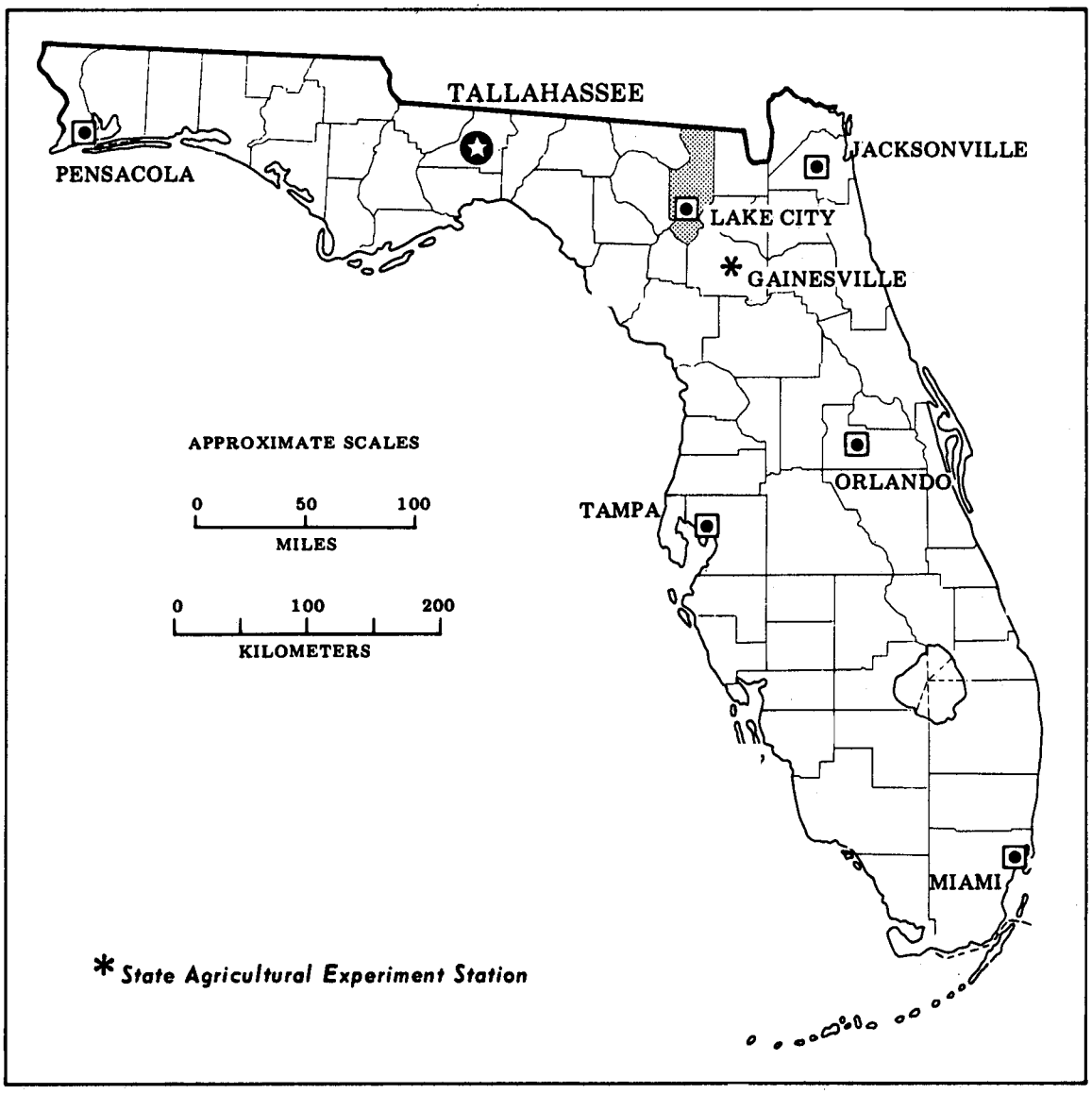
This soil survey contains information that can be used in land-planning programs in Columbia County, Florida. It contains predictions of soil behavior for selected land uses. The survey also highlights limitations and hazards inherent in the soil, improvements needed to overcome the limitations, and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

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

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

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

James W Mitchell
State Conservationist
Soil Conservation Service



Location of Columbia County in Florida.

Soil Survey of
Columbia County, Florida

By David A. Howell, Soil Conservation Service

Fieldwork by T. B. Houston (retired). William J. Allen,
Ernest Genter, and Robert L. Weatherspoon, Soil Conservation Service,
and Kenneth C. Bracy, Forest Service

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

COLUMBIA COUNTY is in the Suwannee River region of northern peninsular Florida. It extends more than 50 miles from the Florida-Georgia state line south to the Santa Fe River. Its maximum width, between Suwannee and Baker Counties, is about 20 miles. Columbia County is bounded on the east by Baker County and is separated from Union County in the southeast by Olustee Creek. The Santa Fe River separates it from Alachua and Gilchrist Counties in the south, and the Ichetucknee River separates it from Suwannee County in the southwest. The Suwannee River, made famous around the world by Stephen Foster's song, separates Columbia County from Hamilton County in the northwest.

The total area within Columbia County is 503,040 acres, or 786 square miles. Of this area, 77,895 acres is part of the Osceola National Forest. The county seat is Lake City, located in the center of the county. The town of Fort White is the other incorporated settlement in the county. It is about 18 miles southwest of Lake City.

The county's population was about 35,000 in 1980, an increase of 40 percent since 1970. The population of Lake City was about 9,200, a decrease of 12 percent in 10 years. Townspeople and newcomers are attracted to housing developments and apartments located outside the city limits (fig. 1).

Agriculture and forestry are the principal businesses in the county. The county supports some light industry.

General Nature of the County

In this section, environmental and cultural factors that affect the use and management of soils in Columbia County are discussed. The factors are climate, settlement, physiography and drainage, water resources, farming, and transportation.

Climate

Columbia County has a moderate climate. It is favorable for the production of crops, livestock, and pine forests. The summers are long, hot, and humid. Winters, although punctuated with periodic invasions of cool to occasionally cold air from the north, are mild because the county is in the southern latitudes and is a short distance from the relatively warm ocean waters.

Mean annual precipitation in Columbia County for the period 1951-74 was about 54 inches *(12)*. Rainfall is heaviest from June through September; October and November are the driest months. About 49 percent of the annual rainfall occurs in the summer and results from afternoon and evening thundershowers. The remainder of the precipitation is evenly distributed throughout the rest of the year. In about once in 10 years, however, there is excessive rainfall in the spring. These storms have caused rivers to overflow.

Figure 1.—One of the increasing number of outlying subdivisions in the survey area. The Bonneau soil in this area supports excellent grass and tree growth and helps provide an ideal environment for residential development.

Heavy summer thundershowers can produce 2 or 3 inches of rainfall in 1 or 2 hours. Daylong rains in the summer are rare. When they do occur, they are usually associated with tropical storms. The average relative humidity is about 75 percent.

Hail falls occasionally during thundershowers, but the hailstones generally are small and seldom cause much damage. Snow is very rare and usually melts as it hits the ground.

Tropical storms can affect the area at any time from early in June through November. Columbia County, because it is inland, gets only fringe effects of tropical storms *(11)*. These effects include moderately higher wind velocities, several days of overcast skies, and some rainfall.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Lake City in the period 1951 to 1974. Table 2 shows freeze probabilities.

In winter the average temperature is 55 degrees F, and the average daily minimum temperature is 43 degrees. The lowest temperature on record, which occurred in 1962, is 10 degrees. In summer the average temperature is 80 degrees, and the average daily maximum temperature is 91 degrees. The highest recorded temperature, which occurred in 1954, is 105 degrees.

Settlement

Mrs. Nettie Black Ozaki, Columbia County historian, helped prepare this section.

Florida was obtained from Spain by treaty on February 21, 1821 *(4)*. Columbia County was established by the legislative council on February 4, 1832. It was named after the poetical name of the United States. As established, Columbia County included the areas that now make up Suwannee, Bradford, Baker, and Union Counties and Newnansville which is now in Alachua County. Suwannee County was established in 1838 and Baker and Bradford Counties in 1862.

The area was originally occupied by the Timucuan Indians, as noted in 1539 by Spanish explorer Don Hernando de Soto on his travels through the area that is now Lake City. Spanish missionaries venturing out of St. Augustine in the early 1600's established missions in the vicinity of Ichetucknee Springs and converted many of the Timucuan Indians to Christianity.

With the help of the Yamasses, Creeks, and Carolinian Indians of Carolina, the English gained control of Florida in 1763. The Spanish regained control in 1783.

The Seminole Indians occupied much of the area during the early 1800's. It was during this time that the Seminole village of Alligator was established on the northeast side of Alligator Lake. In 1813, Chief Halpatter Tustenuggee, who was called Chief Alligator by the white men, led the Seminoles out of Alligator to an area further south. The village of Alligator later became the county seat and was renamed Lake City.

Settlement came rapidly to the area. In 1830, the United States census of Alachua County, which at that time included the present Columbia County, listed 27 households in the Alligator community and a population of 227.

Georgia and South Carolina were the two states most represented by the early settlers of Columbia County. Camden County, Georgia, in particular, was the home of many of Columbia County's pioneer families. Columbia County's population increased from 2,102 in 1840 to 4,646 in 1860.

Much of the prosperity and growth during this period was associated with the expansion of cotton growing. The textile mills of England and New England were clamoring for southern Sea Island cotton. Although cotton was the dominant cash crop in the county, Cuban tobacco, livestock, and vegetables also played an important role in the area's development. The arrival of the railroad in 1860 also contributed greatly to the county's development.

Fort White was incorporated in 1884. It was the second largest community in the county and was also undergoing considerable expansion during the latter part of the 19th century. Fort White and the surrounding area had a population close to 2,000 by the year 1900. This area had a varied economy based on timber, cotton, and phosphate. After 1890, when phosphate was discovered in the area and in southern Suwannee County, mining phosphate became one of the largest industries in the Fort White area. A small tram road and a small wood-burning locomotive carried the phosphate to Fort White from where it was transported by railroad to Fernandina for export.

Physiography and Drainage

Columbia County is divided into two physiographic provinces—the Northern Highlands and the Gulf Coastal Lowlands *(5)*. About two-thirds of the county is within the Northern Highlands where the elevation ranges from 100 to more than 200 feet above mean sea level. The Okefenokee terrace occupies most of the Northern Highlands. The Coastal Lowlands are in the southern third of the county where the elevation ranges from 25 to 100 feet above mean sea level.

Physiographic features and marine terraces determine the drainage in Columbia County *(6)*. The central ridge, the Okefenokee terrace, and the Coastal Lowlands are each characterized by unique topography, soils, and subsurface geologic conditions, which influence local drainage patterns.

The Coharie and Sunderland terraces form a broad ridge extending across the county in an east-west direction. Lake City is located on this ridge.

North of the central ridge, the Okefenokee terrace slopes gently toward the Florida-Georgia state line and the Okefenokee Swamp. The flat terrain is responsible for the slow runoff of surface water and sluggish streamflow. Low sandy ridges rise above low areas and depressions that support swamps and wetlands. The Hawthorn Formation, a marine deposit consisting of phosphoritic sands, clays, marls, and sandy limestones, underlies the surficial sands deposited during the Pleistocene Epoch. Surface water drains west toward the Suwannee River or east toward St. Marys River.

The southern part of the terrace consists of land west of Lake City lying between U.S. Interstate Highway 10 and State Road 47 and south of Lake City between U.S. Interstate Highway 75 and State Road 100. Areas on higher elevations south of the interchange and U.S. Highway 41 are also part of the Okefenokee terrace.

The steeper slopes of the scarp zone facilitate the removal of surface water, which results in better developed drainage patterns. Undifferentiated sediments consisting primarily of clay and clayey sand of the Hawthorn and Alachua Formations lie beneath the ground surface. These formations are not so thick south of the ridge as they are to the north. Pleistocene terrace deposits, consisting of unconsolidated sands, are underlain by clay. The slow absorption of water into the clay results in the development of a high water table in the overlying sand during the rainy season.

Drainage on the Okefenokee terrace south of the ridge is divided into four general areas. The first of these is land lying north of U.S. Highway 90. Topographically, the area is characterized by rolling hills and numerous basins and sinkholes. Most of the lakes in Columbia County are located in or near this area. Six large basins and their drainageways form the principal drainage features in this area. Two of these, Lake Jeffrey-Indian Mound Swamp and Tiger Branch, have outlets to the Suwannee River. The remaining four, Gwen Lake, Lake Wilson, Hancock Lake and Turkey Prairie, are closed systems.

The second drainage area is land lying between U.S. Highway 90 and Florida Highway 247. South of U.S. Highway 90, the rolling hills level out as the Okefenokee

terrace approaches the flatlands of the Coastal Lowlands. Sinkholes and solution-formed basins are widespread in the area. Many support wetland vegetation or form ponds and lakes. In the vicinity of U.S. Highway 90, solution-formed lakes and ponds are more frequent. Other than the depressions and sinkholes, there are no surface-water features in the area. Rainfall percolates directly into the ground, and runoff collects in depressions and sinkholes where it either seeps into the geological formations below or evaporates into the atmosphere.

The third drainage area is made up of south-central Columbia County. That part of the Okefenokee terrace lying between Lake City, Ellisville, and Lulu falls within the rolling hills of the scarp zone. Numerous depressions and sinkholes dot the landscape. Drainage is good in the area because the sloping ground facilitates the runoff of surface water. Price Creek collects runoff from the Lake City Municipal Airport and from the wetlands in the pine flatwoods further soutn and east. Price Creek discharges into the southeast corner of Alligator Lake south of Lake City. A drainageway extending south from Alligator Lake channels overflow from the lake into Clayhole Creek. Originating in wetlands southwest of Lake City, Cannon Creek runs east of U.S. Interstate Highway 75 until it enters Clayhole Creek. Rose Creek rises in wetlands along State Road 100. Several forks of the creek collect overflow from wetlands in the southeastern part of the Okefenokee terrace and higher elevations of the Coharie terrace. Both Clayhole and Rose Creeks flow in a southwesterly direction across the Okefenokee terrace into the Gulf Coastal Lowlands physiographic province.

The fourth drainage area is made up of southeast Columbia County. The Okefenokee terrace extends along the Olustee Creek valley from the ridge near the Columbia-Baker County line in a southwesterly direction past the U.S. Interstate Highway 75 and U.S. Highway 441 interchange to within several miles of Fort White. The rolling hills of the scarp zone extend south along the U.S. Interstate Highway 75 corridor. Depressions and sinkholes are common throughout the area. Interconnected swamps collect runoff from the poorly drained pine flatwoods and discharge their overflow into Olustee Creek through many small and, in many places, intermittent streams. Further southwest in the scarp zone, drainage is better. Hammock Branch rises in wetlands on remnants of the Coharie terrace near Mikesville. It flows southeast until it discharges into the Buzzard Roost Prairie north of O'Leno State Park. Overflow from the prairie makes its way to the Santa Fe River in the O'Leno State Park.

The land north of U.S. Highway 90 and east of Lake City drains into Falling Creek through swamps and marshy channels. Falling Creek is captured by a sinkhole, but some water eventually reaches the Atlantic Ocean through the St. Marys River.

Drainage in the area south of U.S. Highway 90 is through interconnected wetlands which form the headwaters of several streams.

West of Lake City and State Road 100, drainage occurs through large basins and solution-formed lakes located mainly on the Okefenokee terrace. Drainage on the western part of the ridge is better than that on the eastern part. Water percolates into the ground, collects in ponds and lakes, or flows into large basins that formed in the adjacent Okefenokee terrace

Much of the land south of Lake City lies within the Gulf Coastal Lowlands physiographic province. These lowlands extend up the valleys of the Suwannee and Sante Fe Rivers and Olustee Creek. Limestone caverns have collapsed and have formed sinkholes and depressions throughout the Coastal Lowlands. Sands and clays overlie the limestone and fill depressions in the limestone. These sands and clays are a source of water for the Floridan Aquifer.

Very few surface-water features are found in the Coastal Lowlands because water percolates rapidly into the ground. The Ichetucknee River is the only stream that originates in the area. Clayhole and Rose Creeks are probably parts of an ancestral drainage system that included the Ichetucknee River. A dry channel or karst valley connects Clayhole and Rose Creeks with the sinkholes that receive their drainage. The dry streambed can easily be traced from the settlement of Columbia City to the Ichetucknee River. These dry streambeds collect the overflow from Clayhole and Rose Creeks.

Although the Coastal Lowlands were terraced by the seas during the Pleistocene Epoch, the ground surface has been so modified by erosion and limestone solution that their presence has been greatly masked.

Water Resources

Potable water is currently drawn from ground-water sources in Columbia County *(6)*. The two types of water supply are individual wells and public water systems. The individual water-supply systems are found on many residential lots scattered throughout the county. Most of these systems are deep wells, ranging in depth from 120 feet to 150 feet. About half of the community water-supply systems serve commercial activities. These systems serve subdivisions, mobile-home parks, institutions, and businesses, mostly at the U.S. Highway 90 and U.S. Interstate Highway 75 interchange. Two community water-supply systems are operated by Lake City. One serves most of the incorporated areas and some parts of the unincorporated fringe, and the other system supplies potable water to the Lake City Community College area. Wells operated by the city range in depth from 275 feet to 300 feet within the city and from 309 feet to 372 feet in the college area.

Fort White residents are served mainly by private individual wells. The town does not own or operate a

municipal water-supply system; however, there are noncommunity systems in the town.

The major source of irrigation water for crops is deep wells. Because of the types of soil in the area, overhead-sprinkler irrigation systems mainly are used. Irrigation water is pumped from small lakes and ponds where sufficient suitable water is available.

Columbia County is characterized by many solution sinks and depressions that usually contain water. Small streams of relatively short length empty into many of them. Larger streams and creeks, including Deep Creek, Little Suwannee River, and Olustee Creek, empty into the larger rivers bordering the county. Falling Creek, which is captured by a sinkhole, is typical of the creeks in the karst topography. Clayhole and Rose Creeks terminate in a group of sinkholes near Columbia City. Alligator Lake is the largest lake in the county, but it dries up occasionally as a result of water loss through a sinkhole. The Suwannee and Santa Fe Rivers on the county boundaries receive most of the surface drainage and eventually empty into the Gulf of Mexico. These rivers supply large quantities of water for sports and recreation. Numerous lakes also provide large quantities of water for recreation and for the irrigation of crops in Columbia County. Some of these are the Alligator, Jeffrey, DeSoto, Harris, Ogden, Isabelle, and Watertown Lakes.

Farming

Columbia County is a general farming and tree producing area. The main crops are corn, tobacco, soybeans, peanuts, watermelon, small grains, and a few vegetables (fig. 2). Most of the cropland is in the south-central and northwestern parts of the county. In 1978, according to the Census of Agriculture of that year, the market value of agricultural products totaled about 18 million dollars. Many farmers in the area raise cattle, swine, poultry, and a few goats.

Most of the soils in Columbia County that are used for crops are deep, droughty sands that are subject to water and wind erosion. Historically, deep plowing and clean cultivation have been used in the county; however, because of the high cost of energy, loss of the soil surface layer, and loss of natural fertility, there is an increasing interest in no-till methods of crop production. Gully control structures, grassed waterways, windbreaks, and permanent vegetative cover also are needed to help control erosion.

The enactment of legislation in 1937 to create Soil Conservation Districts stirred the interest of many landowners in Columbia County. The Santa Fe Soil and Water Conservation District was organized and chartered by the State of Florida on December 4, 1942. The district was very active in promoting farming and was instrumental in getting the first combines, tree planters, and other farm implements into the county during the 1940's and 1950's. Its aim is to assist farmers, public agencies, and other land users with problems related to soil and water conservation. This soil survey is part of that assistance.

For more information on farming, see the section "Crops and Pasture" in this publication.

Transportation

In Columbia County, many county, state, and federal highways facilitate the transport of goods from farm to market. Rail, bus, and charter air service are available within the county.

How This Survey Was Made

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

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

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

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, acidity, and other features that enable them to identify soils. After

Figure 2.—Soybeans in an area of Blanton-Bonneau-Ichetucknee complex, 2 to 5 percent slopes.

describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. The system of taxonomic classification used in the United States is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

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

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can state with a fairly high degree of probability that a given soil will have

a high water table within certain depths in most years, but they cannot assure that a high water table will always be at a specific level in the soil on a specific date.

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

Interpretations of soils shown in the west half of sections 18 and 19, township 6 S. range 18 E., atlas sheet 16 are based on photographs. Field observations were prohibited by the property owner.

Map Unit Composition

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

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

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

General Soil Map Units

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

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

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

The soils in the survey area vary widely in their potential for major land uses. Table 3 shows the extent of the map units on the general soil map. It lists the potential of each, in relation to that of the other map units, for major land uses and shows soil properties that limit use. Soil potential ratings are based on the practices commonly used in the survey area to overcome soil limitations. These ratings reflect the ease of overcoming the limitations. They also reflect the problems that will persist even if such practices are used.

Each map unit is rated for *cultivated crops, pasture, woodland, urban uses,* and *recreation areas*. Cultivated crops are those grown extensively in the survey area. Pasture refers to the improved pasture grasses commonly grown in the survey area. Woodland refers to areas of native pine trees. Urban uses include sanitary facilities and building sites. Recreation areas are campsites, picnic areas, playgrounds, and other areas that are subject to heavy foot traffic.

Soil Descriptions

Soils of the Sand Ridges

The three map units in this group consist of excessively drained to moderately well drained, nearly level to strongly sloping soils. Some soils are sandy throughout or are sandy to a depth of 20 to 80 inches and loamy below that. The soils are mainly in the western and southern parts of the county.

1. Blanton-Alpin-Troup

Nearly level to strongly sloping, moderately well drained to excessively drained soils that are sandy to a depth of 80 inches or more or are sandy to a depth of 40 to 80 inches and loamy below

This map unit consists mostly of broad, rolling areas. One of these areas is in the northwestern part of the county bordering the Suwannee County line. It is south of the Suwannee River flood plains. This area is about 8 miles long and about 3 miles wide from north to south. A second area is in Lake City along the north side of Alligator Lake.

The landscape consists of broad, nearly level to strongly sloping, low ridges interspersed with numerous lakes and intermittent ponds. Many of these ponds are dry most of the time. The lakes are as much as 100 acres in size and are connected by intermittent, mostly subterraneous drainage systems. The water level in the lakes and ponds fluctuates considerably, depending on rainfall and seepage from the surrounding deep, sandy over loamy soils.

The natural vegetation is slash and longleaf pine, live and turkey oak, sassafras, and wild persimmon and an understory of grasses and shrubs.

This map unit makes up 5 percent of Columbia County. It takes in an area of about 25,152. It is about 40 percent Blanton soils, 25 percent Alpin soils, 10 percent Troup soils, and 25 percent minor soils.

The Blanton soils are moderately well drained. Typically, the surface layer is gray and very pale brown fine sand, and the subsurface layer is light gray and white fine sand that extends to a depth of 52 inches. The subsoil is fine sandy loam. It is light yellowish brown in the upper part and very pale brown and light brownish gray with brown mottles in the lower part.

The Alpin soils are excessively drained. Typically, they are fine sand to a depth of 80 inches or more. They are grayish brown in the upper 6 inches, pale brown to a depth of 27 inches, very pale brown to 52 inches, and very pale brown with horizontal bands of yellowish brown loamy fine sand to a depth of 80 inches.

The Troup soils are well drained. Typically, the surface layer is dark brown fine sand 8 inches thick. The upper

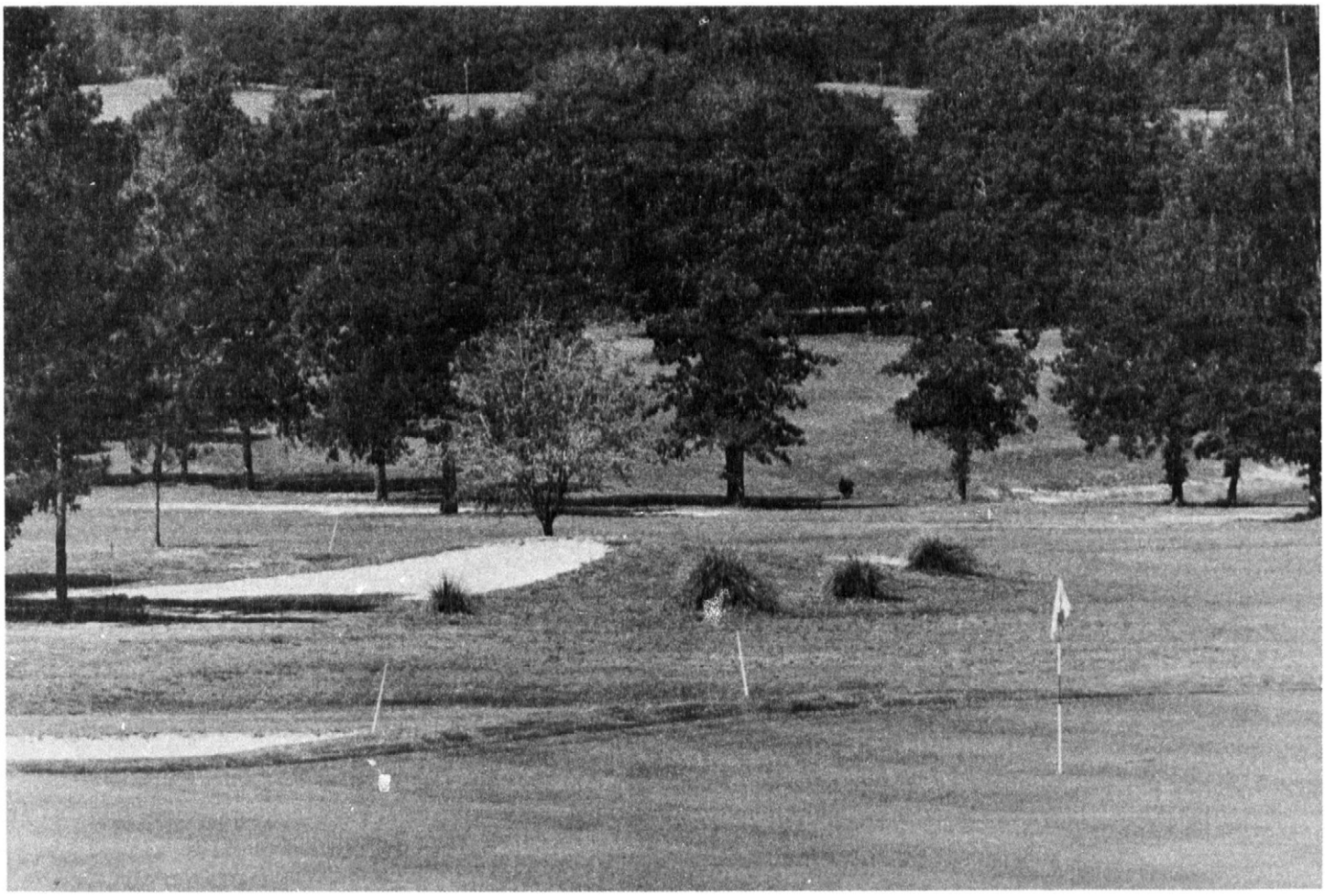


Figure 3.—A golf course on Alpin fine sand, 5 to 12 percent slopes. This soil is very droughty and requires irrigation if used for crops or grasses.

30 inches of the subsurface layer is reddish yellow loamy sand; the lower 14 inches is strong brown loamy sand. The subsoil is strong brown fine sandy loam 6 inches thick and is underlain by yellowish red sandy clay loam.

Of minor extent in this unit are Albany, Chipley, and Plummer soils.

Most of this map unit is pine woodland or cropland. A few areas are used for improved pasture. Most of the Lake City area is used for community development and recreation (fig. 3).

2. Blanton-Alpin-Bonneau

Nearly level to strongly sloping, moderately well drained and excessively drained soils that are sandy to a depth of 20 to 40 inches or 40 to 80 inches and loamy below or are sandy throughout

This map unit consists of broad, rolling and undulating areas. The largest of these areas is south of U.S. Highway 90 in a rectangular block adjoining Suwannee County. It is about 14 miles long and 6 miles wide from north to south. A second area extends south to Ichetucknee Springs along U.S. Highway 27 to Fort White.

The landscape consists of broad, mostly nearly level to gently sloping, undulating terrain with many depressions and sinkholes surrounded by strong slopes.

This area drains by percolation and by subterraneous movement through interbedded deep materials. The depressions are usually circular and have somewhat wetter soils in their center. They collect water from surrounding slopes. There are usually no defined surface drainageways.

The natural vegetation is slash and longleaf pine; turkey, water, live, and laurel oak; chinkapin; wild cherry; blackberry; and pineland threeawn.

This map unit makes up about 50,304 acres, or about 10 percent of Columbia County. It is about 45 percent Blanton soils, 15 percent Alpin soils, 15 percent Bonneau soils, and 25 percent minor soils.

The Blanton soils are moderately well drained. Typically, the surface layer is gray and very pale brown fine sand, and the subsurface layer is light gray and white fine sand that extends to a depth of 52 inches. The subsoil is fine sandy loam. It is light yellowish brown in the upper part and very pale brown and light brownish gray with brown mottles in the lower part.

The Alpin soils are excessively drained. Typically, they are fine sand to a depth of 80 inches or more. They are grayish brown in the upper 6 inches, pale brown to a depth of 27 inches, very pale brown to 52 inches, and very pale brown with horizontal bands of yellowish brown loamy fine sand to a depth of 80 inches.

The Bonneau soils are moderately well drained. Generally, the surface layer is grayish brown fine sand about 7 inches thick. The subsurface layer is 23 inches thick. The upper 17 inches is pale brown, and the next 6 inches is pale brown with very pale brown mottles. The subsoil is brownish yellow fine sandy loam 3 inches thick; the next 27 inches is brownish yellow sandy clay loam; the next 12 inches is mottled, brownish yellow, light gray, and red sandy clay loam; and the lower 8 inches is light gray sandy clay loam with light yellowish brown and red mottles.

The minor soils in this unit are the Ichetucknee, Goldsboro, Albany, Surrency, and Plummer soils.

Most of this map unit is used as slash pine plantations. Many areas are cultivated and planted to corn, tobacco, soybeans, and other row crops.

3. Lakeland-Alpin-Chiefland

Nearly level to strongly sloping, well drained and excessively drained soils that are sandy to a depth of 80 inches or more or are sandy over loamy and underlain by limestone at a depth of 40 inches or less

This map unit consists of broad, rolling, dry sand ridges and plains with numerous sinkholes and limestone outcrops. The area forms a bow along the Ichetucknee and Santa Fe Rivers in the southern tip of the county and extends 2 to 3 miles inland. The eastern end of the bow extends to Interstate Highway 75; the western end stops at the Ichetucknee River. Also, a 2-mile-long, strongly sloping area follows an old riverbed from U.S. Highway 27 to the Santa Fe River. A small part of the map unit is on river flood plains.

About 1 to 3 percent of the surface is dotted with boulders. Most sinkholes are surrounded by strongly sloping, concave, circular areas. The soils are very droughty and are drained mainly by percolation.

The natural vegetation is slash and longleaf pine, turkey and shrub live oak, and hickory and an understory of grasses and shrubs. In part of the map unit the natural vegetation is red maple, hackberry, red mulberry, boxelder, and southern magnolia.

This map unit makes up about 27,667 acres, or 5.5 percent of Columbia County. It is about 60 percent Lakeland soils, 10 percent Alpin soils, 10 percent Chiefland soils, and 20 percent minor soils.

The Lakeland soils are excessively drained. Typically, they are fine sand to a depth of more than 80 inches. The surface layer is grayish brown. It is 6 inches thick. The next layer, about 14 inches thick, is light yellowish brown. The layer below that, about 35 inches thick, is very pale brown with light yellowish brown splotches. The next layer, which extends to a depth of 80 inches, is very pale brown with yellow mottles.

The Alpin soils are excessively drained. Typically, they are fine sand to a depth of 80 inches or more. They are grayish brown in the upper 6 inches, pale brown to a depth of 27 inches, very pale brown to 52 inches, and very pale brown with horizontal bands of yellowish brown loamy fine sand to a depth of 80 inches.

The Chiefland soils are well drained. Typically, the surface layer is brown fine sand about 8 inches thick. The subsurface layer is pale brown fine sand 25 inches thick. The subsoil is strong brown fine sandy loam to a depth of 39 inches. It is underlain by soft limestone.

Minor soils in this unit are the Troup, Chipley, Bigbee, Blanton, and Oleno soils and the Pedro Variant soils.

Most of this map unit is in pine woodland or improved pasture. A few areas are used for cultivated crops.

Soils of the Gently Rolling Uplands

The three map units in this group consist of somewhat poorly drained to well drained, nearly level to sloping soils. Some soils are sandy to a depth of 20 inches and clayey below or are sandy to a depth of 20 to 80 inches and are loamy below. The soils are mainly in the south-central and southeastern parts of the county.

4. Bonneau-Blanton-Ichetucknee

Nearly level to sloping, somewhat poorly drained and moderately well drained soils that are sandy to a depth of 20 inches, 20 to 40 inches, or 40 to 80 inches and are loamy or clayey below

This map unit consists mostly of broad, gently rolling and undulating areas in the uplands. Small areas of this unit are in the western part of the county adjoining Suwannee County. The largest area is in the south-

central part of the county. This 4.5-mile-wide strip extends from south of Lake City to within about 5 miles of Fort White. Another area of this map unit parallels U.S. Highway 27. It is north of the highway and is 10 miles long and about 3 miles wide.

The landscape consists of small knolls and broad, rolling areas of clay outcrops and depressions that occur in irregular patterns. The area is drained by percolation and runoff.

The natural vegetation is slash and longleaf pine; live, laurel, and water oak; black cherry; wild persimmon; sassafras; red maple; partridgepea; and blackberry and grasses and shrubs.

This map unit makes up about 57,850 acres, or 11.5 percent of Columbia County. It is about 45 percent Bonneau soils, 25 percent Blanton soils, 5 percent Ichetucknee soils, and 25 percent minor soils.

The Bonneau soils are moderately well drained. Typically, the surface layer is grayish brown fine sand about 7 inches thick. The subsurface layer is 23 inches thick. In the upper 17 inches it is pale brown fine sand, and in the next 6 inches it is pale brown fine sand with very pale brown mottles. The subsoil extends to a depth of 80 inches. The upper 3 inches is brownish yellow fine sandy loam; the next 27 inches is brownish yellow sandy clay loam; the next 12 inches is mottled, brownish yellow, light gray, and red sandy clay loam; and the lower 8 inches is light gray sandy clay loam with light yellowish brown and red mottles.

The Blanton soils are moderately well drained. Typically, the surface layer is gray and very pale brown fine sand, and the subsurface layer is light gray and white fine sand that extends to a depth of 52 inches. The subsoil is fine sandy loam. It is light yellowish brown in the upper part and very pale brown and light brownish gray with brown mottles in the lower part.

The Ichetucknee soils are somewhat poorly drained. Typically, the surface layer is gray fine sand 5 inches thick. The subsurface layer is light gray fine sand 8 inches thick. Below this is pale brown and yellowish red clay. Limestone is at a depth of 55 inches.

Minor soils in this unit are the Goldsboro, Ocilla, Chipley, Albany, and Plummer soils and Udorthents.

Most of this map unit is in pine woodland, cropland, or pasture.

5. Bonneau-Blanton

Nearly level to sloping, moderately well drained soils that are sandy to a depth of 20 to 40 inches or 40 to 80 inches and are loamy below

This map unit consists of broad, undulating areas in the uplands. A small area is in the western part of the county adjoining Suwannee County. A large area is in southern Columbia County. This area is south of Florida Highway 349 along Florida Highway 131 and is about 7 miles long and 1.5 miles wide.

The landscape consists of small knolls and broad rolling areas interspersed with depressions, long swales, and colluvial spots. The areas are drained mainly by percolation and runoff. Surface erosion is common.

The natural vegetation is slash and longleaf pine; live, laurel, and water oak; blackberry; wild persimmon; sassafras; and black cherry and grasses and shrubs.

This map unit makes up about 15,091 acres, or 3 percent of Columbia County. It is about 55 percent Bonneau soils, 20 percent Blanton soils, and 25 percent minor soils.

The Bonneau soils are moderately well drained. Typically, the surface layer is grayish brown fine sand about 7 inches thick. The subsurface layer is fine sand 23 inches thick. The upper 17 inches is pale brown; the next 6 inches is pale brown with very pale brown mottles. The subsoil extends to a depth of 80 inches or more. The upper 3 inches is brownish yellow fine sandy loam; the next 27 inches is brownish yellow sandy clay loam; the next 12 inches is mottled, brownish yellow, light gray, and red sandy clay loam; and the lower 8 inches is light gray sandy clay loam with light yellowish brown and red mottles.

The Blanton soils are moderately well drained. Typically, the surface layer is gray and very pale brown fine sand, and the subsurface layer is light gray and white fine sand that extends to a depth of 52 inches. The subsoil is fine sandy loam. It is light yellowish brown in the upper part and very pale brown and light brownish gray with brown mottles in the lower part.

Minor soils in this unit are the Goldsboro, Ocilla, Chipley, Albany, and Plummer soils.

Most of this map unit is pine woodland, cropland, or pasture.

6. Blanton-Troup-Lucy

Nearly level to sloping, moderately well drained to well drained soils that are sandy to a depth of 40 to 80 inches or 20 to 40 inches and are loamy below

This map unit consists mostly of broad, gently rolling areas and long, narrow ridges in the uplands. There are only two areas of this map unit in Columbia County. The smaller area is in the southeastern part of the county south of Florida Highway 18 and east of Interstate Highway 75. The other area occurs as a long ridge south of Florida Highway 349 along Interstate Highway 75 to about 2 miles from Alachua County.

The landscape consists of narrow to broad ridges that are distinctly higher than the surrounding landscape. Concretions and other coarse fragments on the surface are typical. Most areas are drained by percolation and by surface runoff into Olustee Creek and the Santa Fe River.

The natural vegetation is slash and longleaf pine, maple, hickory, bluejack and live oak, ash, and smilax and other shrubs and grasses.

This map unit makes up about 17,606 acres, or 3.5 percent of Columbia County. It is about 60 percent Blanton soils, 10 percent Troup soils, 5 percent Lucy soils, and 25 percent minor soils.

The Blanton soils are moderately well drained. Typically, the surface layer is gray and very pale brown fine sand, and the subsurface layer is light gray and white fine sand that extends to a depth of 52 inches. The subsoil is fine sandy loam. It is light yellowish brown in the upper part and very pale brown and light brownish gray with brown mottles in the lower part.

The Troup soils are well drained. Typically, the surface layer is dark brown fine sand about 8 inches thick. The subsurface layer is dark brown loamy sand and extends to a depth of 52 inches. The subsoil extends to a depth of 80 inches. In the upper 6 inches, it is strong brown fine sandy loam; below that, it is yellowish red sandy clay loam.

The Lucy soils are well drained. Typically, the surface layer is dark brown loamy fine sand, and the subsurface layer is yellowish brown and strong brown loamy sand and loamy fine sand. The subsoil extends from 29 to 80 inches. It is yellowish red fine sandy loam, and it has strong brown mottles in the lower 10 inches.

Minor soils in this unit are the Fort Meade Variant, Bonneau, Goldsboro, Orangeburg, and Ocilla soils.

Most of this map unit is used for cultivated crops and improved pasture. A few areas are planted to pines, and the remaining areas are in native hardwoods.

Soils of the Low Ridges and Knolls

The two map units in this group consist of somewhat poorly drained to moderately well drained, nearly level to sloping soils. Some soils are sandy to a depth of 20 to 80 inches and are loamy below or are sandy to a depth of more than 80 inches. The soils are mainly in the northwestern, western, southeastern, and central parts of the county.

7. Albany-Blanton-Chipley

Nearly level to sloping, somewhat poorly drained and moderately well drained soils that are sandy to a depth of 40 to 80 inches and loamy below or are sandy to a depth of more than 80 inches

This map unit consists mostly of undulating areas interspersed with swales and wet depressions. Small swamps and ponded areas are common. Areas of this unit are adjacent to the Suwannee River flood plains along the western county line. They are also in isolated patches bounded by the Suwannee River to the north, U.S. Highway 441 to the east, and Florida Highway 242 to the south. Another area is adjacent to the east and west boundaries of Alligator Lake.

The landscape consists of ridges and knolls that are slightly higher than the adjacent flats. Some of these knolls are broad and cover areas as large as 600 acres. Many lakes, ponds, and intermittent drainage systems are on the landscape.

The natural vegetation is slash and longleaf pine; live, laurel, and water oak; inkberry; and waxmyrtle. Pineland threeawn is the dominant native grass.

This map unit makes up about 35,213 acres, or 7 percent of Columbia County It is about 40 percent Albany soils, 20 percent Blanton soils, 20 percent Chipley soils, and 20 percent minor soils.

The Albany soils are somewhat poorly drained. Typically, the surface layer is grayish brown fine sand 7 inches thick. The subsurface layer is 48 inches of fine sand. The upper 8 inches is pale brown, the next 15 inches is pale brown mottled with yellow and white, and the next 25 inches is white mottled with brownish yellow. The subsoil is pale yellow loamy fine sand underlain by gray sandy clay loam mottled with yellowish brown.

The Blanton soils are moderately well drained. Typically, the surface layer is gray fine sand 7 inches thick. The subsurface layer is very pale brown and light gray fine sand that extends to a depth of 52 inches. The fine sandy loam subsoil is light yellowish brown in the upper part and very pale brown and light brownish gray with brown mottles in the lower part.

The Chipley soils are moderately well drained Typically, the surface layer is gray fine sand 7 inches thick. The fine sand substratum extends to a depth of 80 inches. The upper 23 inches is very pale brown; the next 10 inches is light gray with very pale brown mottles; the 20 inches below that is very pale brown with brownish yellow, white, and yellowish red mottles; the next 6 inches is white; and the lowermost 14 inches is white with brownish yellow and yellow mottles.

Of minor extent in this unit are the Ocilla, Hurricane, Lakeland, and Leon soils.

Most of this map unit is in woodland or pasture. Some areas are in cultivated crops.

8. Albany-Ocilla-Hurricane

Nearly level to gently sloping, somewhat poorly drained soils that are sandy to a depth of 20 to 40 inches or 40 to 80 inches and loamy below or are sandy to a depth of more than 80 inches

This map unit consists mostly of broad, nearly level areas interspersed with low ridges and knolls. Five separate areas occur in the county. Two of these are east and west of Interstate Highway 75, north of the Santa Fe River. One area is a 2-mile-wide band extending north to south along Price Creek road. A small area is in the town of Lulu. The remaining areas are northwest of Lake City between Interstate Highway 75 and U.S. Highway 41.

The landscape consists of broad flats and low knolls dissected by intermittent drainageways. There are many small swamps and wet depressions. In some areas, relatively broad ridges slope down to the drainageways.

The natural vegetation is slash pine, water oak, live oak, laurel oak, waxmyrtle, sawpalmetto, inkberry, fetterbush, and pineland threeawn.

This map unit makes up about 27,667 acres, or 5.5 percent of Columbia County. It is about 40 percent Albany soils, 37 percent Ocilla soils, 13 percent Hurricane soils, and 10 percent minor soils.

The Albany soils are somewhat poorly drained. Typically, the surface layer is grayish brown fine sand 7 inches thick. The fine sand subsurface layer extends to a depth of 55 inches. The upper 8 inches is pale brown; the next 15 inches is pale brown mottled with yellow and white; and the next 25 inches is white mottled with brownish yellow. The subsoil is pale yellow loamy fine sand underlain by gray sandy clay loam mottled with yellowish brown.

The Ocilla soils are somewhat poorly drained. Typically, the surface layer is dark gray fine sand 9 inches thick. The subsurface layer is fine sand. The upper 10 inches is grayish brown; the next 7 inches is light brownish gray; and the next 6 inches is pale brown. The subsoil in the upper 20 inches is mottled light brownish gray, strong brown, and pale brown fine sandy loam. Below that, it is gray fine sandy loam with strong brown and pale brown mottles. The substratum extends from 68 inches to 80 inches or more. It is light gray clay with strong brown mottles.

The Hurricane soils are somewhat poorly drained. Typically, they are fine sand to a depth of 80 inches or more. The surface layer is very dark gray about 8 inches thick. The upper 10 inches of the subsurface layer is grayish brown, the next 14 inches is pale brown with yellowish brown and light gray mottles, and the next 24 inches is light gray with gray mottles. The subsoil in the upper 9 inches is dark brown fine sand stained with black organic matter. Below that, it is black fine sand.

The minor soils in this unit are the Blanton, Chipley, Plummer, Leon, and Sapelo soils.

Most of this map unit is in pine woodland or pasture. Some areas are cultivated cropland.

Soils of the Flatwoods

The three map units in this group consist of very poorly drained to somewhat poorly drained, nearly level to gently sloping soils. Some soils are sandy to a depth of 20 to 80 inches and are loamy below or are sandy to a depth of more than 80 inches. The soils are mainly in the Osceola National Forest and in large areas to the north, west, and south. They also are in scattered areas south and west of Alligator Lake.

9. Mascotte-Olustee-Surrency

Nearly level, poorly drained and very poorly drained soils that are sandy to a depth of 20 to 40 inches and loamy below or have slowly permeable layers stained with organic matter at a depth of 20 inches or less

This map unit consists mostly of very broad, nearly level flatwoods in the central highlands. This map unit is mainly in the Osceola National Forest and the Lake Butler Wildlife Management Area.

The landscape consists of broad flatwoods interspersed with swamps, solution depressions, and sloughs, most of which are linked by intermittent drainageways. The area north of U.S. Highway 90 drains north into the Suwannee and St. Marys Rivers; the area south of U.S. Highway 90 drains south into the Olustee, Clayhole, and Rose Creeks and the Santa Fe River.

The natural vegetation of the flatwoods is slash pine. longleaf pine, inkberry, sawpalmetto, waxmyrtle, fetterbush, pineland threeawn, blueberry, huckleberry, bluestem, and brackenfern. The dominant vegetation of the swamps and depressions is pond cypress, blackgum, slash pine, sweet bay, fetterbush, and smilax (fig. 4).

This map unit makes up about 145,882 acres, or 29 percent of Columbia County. It is about 40 percent Mascotte soils, 20 percent Olustee soils, 20 percent Surrency soils, and about 20 percent minor soils.

The Mascotte soils are poorly drained. Typically, the surface layer is black fine sand about 6 inches thick. The subsurface layer is gray fine sand 9 inches thick. The upper 10 inches of the subsoil is black and dark reddish brown fine sand stained with organic matter; the next 10 inches is yellowish brown fine sand; and the next 2 inches is black fine sand. The lower part of the subsoil is light gray and gray fine sandy loam to a depth of 67 inches. The substratum is light olive gray loamy sand to a depth of 80 inches.

The Olustee soils are poorly drained. Typically, the surface layer is black and very dark gray fine sand 18 inches thick. Below this is 5 inches of dark reddish brown fine sand stained with organic matter. Below this is 14 inches of light gray fine sand, 26 inches of light brownish gray fine sandy loam, and 17 inches of light brownish gray loamy fine sand.

The Surrency soils are very poorly drained. Typically, the surface layer is black and very dark gray fine sand 16 inches thick. The subsurface layer is gray fine sand 22 inches thick. The subsoil is grayish brown sandy clay loam with yellowish brown mottles.

Minor soils in this unit are the Albany, Sapelo, Leefield, Leon, Electra Variant, Pelham, Plummer, Pamlico, and Hurricane soils.

Most of this map unit is planted to pines. A few areas are used for improved pasture. Some areas are used for woodland grazing.

10. Plummer-Pelham-Albany

Nearly level to gently sloping, poorly drained and somewhat poorly drained soils that are sandy to a depth of 20 to 40 inches or 40 to 80 inches and are loamy below

Figure 4.—Mixed hardwood and cypress trees on Surrency fine sand. This area is covered with as much as 2 feet of water during seasons of intense rainfall.

This map unit consists mostly of small, nearly level areas interspersed with slightly higher knolls. These knolls are better drained than the nearly level areas. There are two areas of this map unit. The larger area is between U.S. Highways 41 and 441 just south of the Suwannee River flood plain. The second area is in the southeastern part of the county adjacent to Alligator Lake.

The nearly level landscape receives surface water runoff from higher soils and is dissected by creeks and streams. Falling Creek flows through this map unit.

The natural vegetation is slash pine, loblolly pine, blackgum, sweetgum, cypress, live oak, water oak, laurel oak, waxmyrtle, inkberry, scattered sawpalmetto, pineland threeawn, and brackenfern.

This map unit makes up about 10,061 acres, or 2 percent of Columbia County. It is about 50 percent Plummer soils, 35 percent Pelham soils, 8 percent Albany soils, and 7 percent minor soils.

The Plummer soils are poorly drained. Typically, the surface layer is very dark gray and dark grayish brown fine sand 9 inches thick. The subsurface layer is 18 inches of gray fine sand underlain by white fine sand to a depth of 56 inches. The subsoil is light gray fine sandy

loam underlain by sandy clay loam to a depth of 80 inches.

The Pelham soils are poorly drained. Typically, the surface layer is very dark gray fine sand about 6 inches thick. The upper 10 inches of the subsurface layer is grayish brown fine sand, and the lower 15 inches is dark gray fine sand. The upper 20 inches of the subsoil is gray sandy clay loam, and the lower 15 inches is mottled gray, light gray, and yellowish red sandy clay loam. The substratum is gray fine sandy loam.

The Albany soils are somewhat poorly drained. Typically, the surface layer is grayish brown fine sand 7 inches thick. The upper 8 inches of the subsurface layer is pale brown fine sand; the next 15 inches is pale brown fine sand mottled with yellow and white; and the next 25 inches is white fine sand, mottled with brownish yellow. The subsoil is pale yellow loamy fine sand underlain by gray sandy clay loam mottled with yellowish brown.

Minor soils in this unit are the Blanton, Ocilla, Hurricane, Electra Variant, Surrency, and Plummer soils.

Most areas are in native woodland or are planted to pines.

11. Leon-Hurricane-Mandarin

Nearly level, poorly drained and somewhat poorly drained soils that are sandy to a depth of 80 inches or more and have slowly permeable layers stained with organic matter

This map unit consists mostly of broad, nearly level areas that are slightly higher than the flatwoods. It is mainly on the east to west ridge of the county along U.S. Highway 90. This unit is about 1 mile wide from Baker County to Watertown Lake.

Topographically, this unit represents the dividing line between drainage to the north and drainage to the south.

The natural vegetation is slash pine, running oak, longleaf pine, waxmyrtle, inkberry, sawpalmetto, dwarf huckleberry, and scattered turkey oak.

This map unit makes up about 7,546 acres, or 1.5 percent of Columbia County. It is about 65 percent Leon soils, 10 percent Hurricane soils, 7 percent Mandarin soils, and 18 percent minor soils.

Leon soils are poorly drained. Typically, the surface layer is black fine sand 8 inches thick. The subsurface layer is gray fine sand about 11 inches thick. The upper 8 inches of tne subsoil is black underlain by very dark brown fine sand that is coated with organic matter. The next 27 inches is dark yellowish brown fine sand. The lower part of the subsoil is dark brown underlain by black fine sand that is coated with organic matter.

The Hurricane soils are somewhat poorly drained. Typically, they are fine sand to a depth of 80 inches or more. The surface layer is very dark gray about 8 inches thick. The upper 10 inches of the subsurface layer is grayish brown; the next 14 inches is pale brown with yellowish brown and light gray mottles; the next 24 inches is light gray with gray mottles. The subsoil in the upper 9 inches is dark brown fine sand stained with black organic matter. Below that, it is black fine sand.

The Mandarin soils are somewhat poorly drained. Typically, they are fine sand to a depth of 80 inches or more. The surface layer is gray about 5 inches thick. The subsurface layer is light gray about 11 inches thick. The subsoil extends to a depth of 64 inches or more. To a depth of 26 inches it is very dark brown, dark reddish brown, and dark brown stained with organic matter. Below that, in sequence, 7 inches is dark yellowish brown, 12 inches is light yellowish brown, 14 inches is light gray, 5 inches is grayish brown, and the lowermost part is very dark brown.

Minor soils in this unit are the Leefield, Sapelo, Chipley, and Surrency soils. Also included are areas of Pamlico muck, loamy substratum, and Plummer muck, depressional.

Most of this map unit is planted to pines or is in native longleaf pine. A few areas are used for community development.

Soils of the Broad Swamps

This group consists of poorly drained and very poorly drained, nearly level soils. Some of the soils are sandy to a depth of 40 to 80 inches and are loamy below; some are organic to a depth of 16 to 51 inches and sandy over loamy below.

12. Plummer-Pamlico

Nearly level, poorly drained and very poorly drained soils that are sandy to a depth of 40 to 80 inches and loamy below or are organic to a depth of 16 to 51 inches and sandy over loamy below

This map unit consists mostly of nearly level soils in broad swamps and bays in the northern part of Columbia County. The area includes Sandlin Bay, Pinhook Swamp, Otter Bay, and Impassable Bay. Most of this area borders Baker County and the southern end of the Okefenokee Swamp.

The landscape consists of broad fetterbush and smilax swamps that contain organic materials highly variable in depth. Most of the area is under water for long periods of time. The soils in this area slope northward, and the surface runoff drains west to the Suwannee River or east to the St. Marys River. The Little Suwannee River is one of the main tributaries draining these swamps into the Suwannee River.

The natural vegetation is loblollybay, sweet bay, blackgum, cypress, smilax, fetterbush, Virginia willow, sweet pepperbush, buttonbush, inkberry, rushes, and sedges (fig. 5).

This map unit makes up about 70,426 acres or 14 percent of Columbia County. It is about 37 percent Plummer depressional soils; 28 percent Pamlico loamy substratum soils; and 35 percent minor soils.

Figure 5.—A typical area of the Plummer-Pamlico map unit. Most areas remain in native vegetation.

The Plummer soils are poorly drained and ponded. Typically, the surface layer is gray fine sand 5 inches thick. The subsurface layer is light gray fine sand to a depth of 57 inches. The subsoil is gray sandy clay loam

with yellow and brown mottles to a depth of 75 inches. The substratum is white fine sand. Some of these soils have a black muck surface layer about 8 inches thick.

The Pamlico soils are very poorly drained. Typically, the surface layer is black muck 24 inches thick. The upper part of the substratum is dark gray and dark grayish brown fine sand to a depth of 48 inches. The lower part of the substratum is dark gray sandy clay loam.

Minor soils in this unit are the Dorovan, Mascotte, Olustee, Pantego, Surrency, Pelham, and Sapelo soils.

Most of this map unit remains in native vegetation and is used as habitat for alligators and other reptiles, otter, mink, raccoon, bear, and wading birds.

Soils of the Flood Plains

This group consists of excessively drained and poorly drained, nearly level to level soils. Some soils are sandy throughout or are sandy to a depth of 20 to 80 inches and loamy or clayey below; others are clayey to a depth of 20 to 40 inches and loamy or clayey below. The soils are mainly along the major rivers in the extreme southern and northwestern parts of the county.

13. Plummer-Bigbee-Oleno

Nearly level, excessively drained and poorly drained soils subject to flooding; some are sandy to a depth of 80 inches or more; some are sandy to a depth of 20 to 80 inches and loamy or clayey below; others are clayey to a depth of 20 to 40 inches and loamy or clayey below

This map unit consists mostly of flood plains along the Suwannee, Santa Fe, and Ichetucknee Rivers and along Olustee Creek. These streams are in the extreme southern and northwestern parts of Columbia County.

The landscape consists of the natural levees, undulating areas that are influenced by water action, and flats along the major rivers in the county. Extreme variations in water level in the river affect the water table in the soils of this map unit.

The natural vegetation is shrub live oak, live oak, slash pine, huckleberry, blackgum, cypress, cabbage palmetto, red maple, hickory, poison ivy, and longleaf uniola.

This map unit makes up about 12,576 acres, or 2.5 percent of Columbia County. It is about 35 percent Plummer soils, 15 percent Bigbee soils, 10 percent Oleno soils, and 40 percent minor soils.

The Plummer soils are poorly drained. Typically, the surface layer is dark gray fine sand 4 inches thick. The subsurface layer is light gray fine sand to a depth of 55 inches. The subsoil is gray sandy clay loam.

The Bigbee soils are excessively drained. Typically, the surface layer is dark grayish brown fine sand about 7 inches thick. The lower layers are all fine sand. In sequence downward, 7 inches is yellowish brown, 16 inches is light yellowish brown, 18 inches is yellow, and the lowermost layer is white mottled with light yellowish brown and brownish yellow.

The Oleno soils are poorly drained. Typically, the surface layer is dark gray clay 6 inches thick. The next 26 inches is gray clay. Below this is grayish brown fine sandy loam 10 inches thick, 13 inches of gray fine sandy loam, 16 inches of dark gray fine sandy loam, and 6 inches of gray sandy clay loam underlain by greenish gray clay.

Minor soils in this unit are the occasionally flooded phases of the Chiefland-Pedro Variant complex and the Electra Variant soil. Also of minor extent are Leon, Albany, Blanton, Pelham, Alpin, Surrency, and Mascotte soils.

Most areas of this map unit are planted to pines. The wetter areas remain in native vegetation.

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 "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, Plummer fine sand, depressional, is one of several phases in the Plummer series.

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

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. The Blanton-Bonneau-Ichetucknee complex is an example.

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

Soil Descriptions

1—Albany fine sand, 0 to 5 percent slopes. This is a somewhat poorly drained, nearly level to gently sloping soil on broad flats bordering poorly defined drainageways and in undulating areas. The areas of this soil range from about 4 to more than 200 acres.

Typically, the surface layer is grayish brown fine sand about 7 inches thick. The subsurface layer is fine sand and extends to a depth of 55 inches. In the upper 8 inches, it is pale brown; in the next 15 inches, it is pale brown mottled with yellow and white; and in the next 25 inches, it is white with brownish yellow mottles. The upper 10 inches of the subsoil is pale yellow loamy fine sand and has yellowish brown and white mottles. Below that, the subsoil is gray sandy clay loam with yellowish brown mottles to a depth of 80 inches or more.

Included with this soil in mapping are small areas of Blanton, Chipley, Ocilla, and Plummer soils. Also included are small areas of somewhat wetter soils that have deposits of colluvial material over the original surface layer. These soils make up less than 15 percent of the map unit.

This Albany soil has a water table at a depth of 12 to 30 inches for 1 to 4 months in most years (fig. 6). The water table is at a depth of 30 to 50 inches most of the time and below a depth of 50 inches in the dry months. The available water capacity is low in the subsurface layer and in the lower part of the subsoil. It is medium in the surface layer and in the upper part of the subsoil. Permeability is rapid in the surface and subsurface layers, moderately rapid in the upper part of the subsoil, and moderate in the lower part of the subsoil. Natural

fertility is low. The content of organic matter is moderate in the surface layer and low in the subsurface layer and subsoil.

The natural vegetation consists of longleaf and slash pines and water oak. Inkberry, waxmyrtle, and sassafras are the main shrubs. Pineland threeawn is the dominant native grass.

Wetness and the hazard of erosion severely limit the use of the Albany soil for cultivated crops. Water control is needed, including drains which intercept surface runoff. Stripcropping that alternates row crops with close-growing crops, crop rotation, and minimum tillage are needed to control erosion. Windbreaks should be planted to reduce soil loss caused by wind erosion. Because of its low natural fertility, regular applications of fertilizer are needed on this soil.

The soil has moderate limitations for improved pasture grasses. Grazing should be controlled to maintain plant vigor for maximum yields.

The potential of this soil for production of pine trees is high. Equipment limitations, seedling mortality, and plant competition are the main management concerns. Slash and loblolly pines are the best trees to plant.

Wetness severely limits the use of this Albany soil for most sanitary facilities and for building sites.

This Albany soil is in capability subclass IIIw.

2—Albany fine sand, occasionally flooded. This is a somewhat poorly drained, nearly level to gently sloping soil on broad flats and low-lying, undulating terrain in flood-prone areas. This soil is flooded occasionally *(7)* for long periods after intense, heavy rainfall, and it has been flooded in March or April about once every 10 years. The areas of this soil range from 10 to 40 acres. The slope ranges from 0 to 5 percent.

Typically, the surface layer is grayish brown fine sand about 7 inches thick. The subsurface layer is fine sand and extends to a depth of 55 inches. In the upper 8 inches, it is pale brown; in the next 15 inches, it is pale brown with yellow and white mottles; and in the lower 25 inches, it is white with brownish yellow mottles. The subsoil is gray sandy clay loam with yellowish brown mottles, and it extends to a depth of 80 inches or more.

Included with this soil in mapping are small areas of occasionally flooded Blanton and Plummer soils. Also included are small areas of soils that are similar to the Albany soil but have stratified layers of sand or are underlain by clay. These soils make up about 20 percent of the map unit.

This Albany soil has a water table at a depth of 12 to 30 inches for 1 to 4 months in most years. The water table is at a depth of 30 to 50 inches most of the time and is below 50 inches in the driest months. The available water capacity is very low in the surface and subsurface layers, low in the upper part of the subsoil, and medium in the lower part of the subsoil. Permeability is rapid in the layers of sand and moderate in the subsoil. Natural fertility and the organic matter content are low.

The natural vegetation consists of longleaf and slash pines, water oak, sawpalmetto, inkberry, waxmyrtle, and huckleberry. Pineland threeawn is the dominant native grass.

Wetness, flooding, and low natural fertility are severe limitations for the use of this Albany soil for crops.

This soil has moderate limitations for improved pasture grasses. Grazing should be controlled to maintain plant vigor for maximum yields.

The potential of this soil for production of pine trees is high. Equipment limitations, seedling mortality, and plant competition are the main management concerns. Slash and loblolly pines are the best trees to plant.

Wetness and flooding are severe limitations to the use of this soil for sanitary facilities and building sites.

This Albany soil is in capability subclass IIIw.

3—Alpin fine sand, 0 to 5 percent slopes. This is an excessively drained, nearly level to gently sloping soil on broad, slightly elevated ridges. The areas of this soil range from 4 to about 2,000 acres and are circular to irregularly elongated.

Typically, the surface layer is grayish brown fine sand about 6 inches thick The subsurface layer is fine sand and extends to a depth of 52 inches. In the upper 9 inches, it is pale brown; in the next 12 inches, it is pale brown with common uncoated sand grains; in the next 11 inches, it is very pale brown with few uncoated sand grains; and in the lowermost 14 inches, it is very pale brown with light yellowish brown mottles. The subsoil extends to a depth of 80 inches or more. It is very pale brown fine sand and has common uncoated sand grains and common yellowish brown horizontal bands of loamy fine sand 0.1 to 0.5 inch thick.

Included with this soil in mapping are small areas of Blanton, Lakeland, Chipley, and Albany soils. Also included are small areas of soils that have limestone at a depth of 80 inches. These soils make up less than 20 percent of the map unit.

This Alpin soil does not have a water table within a depth of 80 inches at any time. The available water capacity is low. Permeability is rapid in the subsurface layer and moderately rapid in the surface layer and subsoil. Natural fertility is low. The organic matter content is moderately low in the surface layer and low in all layers below that.

The natural vegetation consists of scattered slash and longleaf pines and turkey, post, blackjack, and bluejack oaks. The understory vegetation consists of chinkapin, bluestem, low panicum, fringeleaf paspalum, and annual forbs. In most areas, the soil is planted to slash pine.

The low organic matter content, excessive nutrient leaching, lack of a water table, and low available water capacity of this Alpin soil very severely limit its use for cultivated crops. Intensive soil management is required if

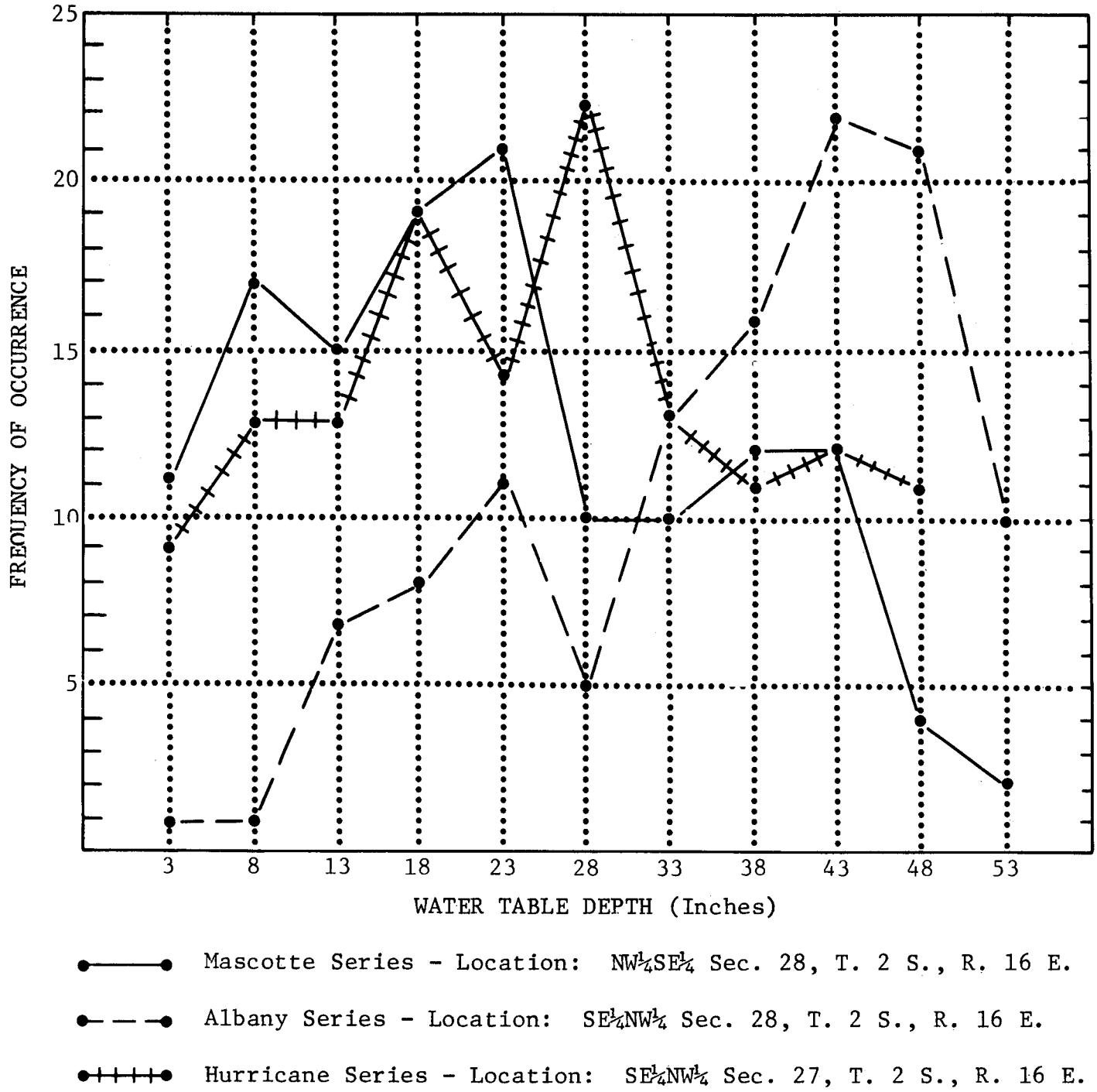


Figure 6.—Measured depth from soil surface to water table from 130 to 138 observations in the period 1972-77. In the Albany soil, for example, a high water table of 13 inches was observed 7 out of 130 observations.

the soil is cultivated. Strips of row crops should be alternated with strips of close-growing crops. Crop rotation should include close-growing plants at least three-fourths of the time. Soil-improving cover crops and all crop residue should be left on the ground. Windbreaks are needed to reduce wind erosion. Only a few crops produce good yields without irrigation. Irrigation of these crops is usually feasible where irrigation water is readily available. Regular applications of fertilizer are essential.

This soil has moderate limitations for pasture and hay crops. Deep-rooting plants, such as improved bermudagrass and bahiagrass, are well adapted to this soil, but yields are reduced by periodic drought. Regular fertilizing and liming are needed. Grazing should be controlled to maintain plant vigor for best yields.

This soil has moderately high potential for production of pines. Equipment limitations and seedling mortality are the main management concerns. Slash and loblolly pines are the best trees to plant.

The sandy texture severely limits the use of this soil for shallow excavations; otherwise, there are no limitations for building sites. Seepage slightly limits the use of the soil for septic tank absorption fields, but it severely limits its use for other sanitary facilities. Droughtiness can be a limitation for lawns and landscaping.

This Alpin soil is in capability subclass IVs.

4—Alpin fine sand, 5 to 12 percent slopes. This is an excessively drained, sloping to strongly sloping soil on side slopes of broad, slightly elevated ridges. The areas of this soil range from 2 to 40 acres and are circular to irregularly elongated.

Typically, the surface layer is dark gray fine sand about 3 inches thick. The subsurface layer is fine sand and extends to a depth of 65 inches. In the upper 25 inches, it is pale brown; in the next 14 inches, it is very pale brown; and in the lower 23 inches, it is very pale brown with few uncoated sand grains. The subsoil extends to a depth of 80 inches or more. It is very pale brown fine sand and has common uncoated sand grains and many light yellowish brown horizontal bands of fine sandy loam 0.1 to 0.5 inch thick.

Included with this soil in mapping are small areas of Blanton, Lakeland, Troup, Chipley, and Albany soils. These soils make up less than 15 percent of the map unit.

This Alpin soil does not have a water table within a depth of 80 inches at any time. The available water capacity is low. Permeability is rapid in the subsurface layer and moderately rapid in the surface layer and subsoil. Natural fertility is low. The organic matter content is moderately low in the surface layer and low below that.

The natural vegetation consists of scattered slash and longleaf pines and turkey, post, blackjack, and bluejack oaks. The understory vegetation consists of bluestem, low panicum, fringeleaf paspalum, and annual forbs. In most areas, the soil is planted to pines.

The sandy texture, steepness of slope, and susceptibility to erosion severely limit the use of this Alpin soil for cultivated crops.

This soil has moderate limitations for pasture. Deep-rooting plants, such as improved bermudagrass and bahiagrass, are moderately well adapted to the soil, but yields are reduced by periodic droughts. Regular applications of fertilizer and lime are needed. Grazing should be controlled to maintain plant vigor for high yields.

This soil has moderately high potential for production of pine trees. Equipment limitations and seedling mortality are the main management concerns. Slash and loblolly pines are the best trees to plant.

Seepage severely limits the use of this soil for most sanitary facilities. The slope moderately limits use for septic tank absorption fields. There are moderate limitations to use of the soil as building sites. The steepness of the slope is a severe limitation to use for small commercial buildings. The sandy texture severely limits the use of this soil for shallow excavations. Cut banks are likely to cave in.

This Alpin soil is in capability subclass VIs.

5—Alpin fine sand, occasionally flooded. This is an excessively drained, nearly level to gently sloping soil on narrow ridges in the flood-prone areas adjacent to rivers. These areas are flooded occasionally *(7)* for brief periods after unusually high rainfall. They have been flooded during March or April about once every 10 years. The areas of this soil range from 10 to about 200 acres and are circular to irregularly elongated. The slope ranges from 0 to 5 percent.

Typically, the surface layer is grayish brown fine sand about 4 inches thick. The subsurface layer is fine sand to a depth of 50 inches. In the upper 9 inches, it is pale brown; in the next 12 inches, it is pale brown with common uncoated sand grains; in the next 11 inches, it is very pale brown with few uncoated sand grains; and in the last 14 inches, it is very pale brown with light yellowish brown mottles. The subsoil extends to a depth of 80 inches or more. It is very pale brown fine sand and has common uncoated sand grains and common horizontal bands of yellowish brown loamy fine sand. The bands are 0.1 to 0.5 inch thick and about 3 to 5 inches apart.

Included with this soil in mapping are small areas of the occasionally flooded Blanton, Albany, Leon, and Electra Variant soils. Areas of the Bigbee soils are also included. These soils make up about 20 percent of the map unit.

This Alpin soil has a water table below a depth of 80 inches. The available water capacity is very low in the surface and subsurface layers and low in the subsoil.

Permeability is rapid in the surface and subsurface layers and moderately rapid in the subsoil. Natural fertility and the organic matter content are very low.

The natural vegetation consists of scattered slash pine, turkey oak, and post oak. Bluestem, low panicum, and fringeleaf paspalum are the dominant grasses.

Flooding and the sandy texture severely limit the use of this Alpin soil for cultivated crops.

This soil has moderate limitations for pasture and hay crops. Deep-rooting plants, such as improved bermudagrass and bahiagrass, are well adapted to the soil, but yields are reduced by periodic drought. Regular applications of fertilizer and lime are needed. Grazing should be controlled to maintain plant vigor for best yields.

This soil has moderately high potential for production of pine trees. Equipment limitations and seedling mortality are the main management concerns. Slash and loblolly pines are the best trees to plant.

Seepage and flooding severely limit the use of this soil for sanitary facilities. Flooding severely limits its use as a site for most buildings.

This Alpin soil is in capability subclass IVs.

6—Arents, 0 to 5 percent slopes. These are nearly level to gently sloping soils that have been reworked in earthmoving operations and are used dominantly as trench-type sanitary landfills. The individual areas of these soils range from 1 to 160 acres.

The upper 2 to 3 feet of these soils is a mixture of sandy materials interbedded with fragments or pieces of loamy subsoil material or weakly cemented sandy subsoil material, or both. This material is underlain by 2 to 20 feet of garbage and refuse. In some areas, the mixture of sandy materials is used as a daily cover for stratified layers of garbage.

Some areas of this map unit are former pits. In other areas, material has been dumped on the surface of undisturbed soils. Included in mapping are areas that do not have fragments or pieces of subsoil material and ponds or depressions that have been filled with various materials other than garbage and refuse.

Arents soils have a variable water table that is dependent upon the water table of the surrounding soils. Permeability is variable but generally ranges from very rapid to moderately rapid. Natural fertility is low. The content of organic matter and the available water capacity are variable.

This soil is not used for cultivated crops.

For esthetic purposes, grasses or pine trees can be established with high-level management. Commercial production, however, generally is not practical. Slash and loblolly pines are the best trees to plant.

Arents have not been assigned a capability subclass.

7—Bigbee fine sand. This is a nearly level, excessively drained soil on low terraces along rivers. The areas of this soil range from 10 to 80 acres and are circular to irregularly elongated.

Typically, the surface layer is dark grayish brown fine sand about 7 inches thick. The substratum is fine sand and extends to a depth of 80 inches or more. In the upper 7 inches, it is yellowish brown; in the next 16 inches, it is light yellowish brown with common uncoated sand grains; and in the next 18 inches, it is yellow with faint brownish yellow mottles and uncoated sand grains. In the lower 32 inches, the substratum is white with light yellowish brown and brownish yellow mottles.

Included with this soil in mapping are small areas of the occasionally flooded Electra Variant, Leon, Alpin, and Blanton soils. Also included are soils that are similar to the Bigbee soil but have weakly cemented, organic-coated layers that have tongues of white sand. These soils make up about 20 percent of the map unit.

This Bigbee soil has a water table at a depth of 20 to 40 inches for brief periods and at a depth of 40 to 70 inches for 1 to 2 months. A permanent water table is at a depth of more than 80 inches during the rest of the year. This soil is flooded occasionally for long periods during seasons of high rainfall. The available water capacity is low. Permeability is rapid. Natural fertility and the organic matter content are low.

The natural vegetation consists of shrub live oak willow oak, live oak, slash pine, huckleberry, and persimmon. The understory vegetation includes sawpalmetto, pineland threeawn, dwarf huckleberry, and sparkleberry.

Droughtiness and flooding severely limit the use of this soil for cultivated crops.

This soil has moderate limitations for pasture and hay crops. Deep-rooting plants, such as improved bermudagrass and bahiagrass, are well adapted to the soil, but yields are reduced by periodic droughts. Regular applications of fertilizer and lime are needed. Grazing should be controlled to maintain plant vigor for best yields.

This soil has high potential for production of slash and loblolly pines, but flooding is a hazard. After stands have been established for a few years, this soil produces high yields of timber.

Flooding and wetness severely limit the use of this soil for sanitary facilities. The sandy texture and flooding also severely limit its use for building sites.

This Bigbee soil is in capability subclass IIIs.

8—Blanton fine sand, 0 to 5 percent slopes. This is a moderately well drained, nearly level to gently sloping soil on broad ridges and undulating side slopes. The areas of this soil range from about 20 to 1,000 acres and are irregular in shape.

Typically, the surface layer is gray fine sand about 7 inches thick. The subsurface layer is very pale brown fine sand in the upper 30 inches and light gray fine sand in the lower 15 inches. The subsoil extends to a depth of

80 inches. In the upper 10 inches, it is light yellowish brown fine sandy loam with brownish yellow mottles; in the next 5 inches, it is very pale brown with strong brown and pale brown mottles; and in the lower part, it is light brownish gray fine sandy loam with strong brown mottles.

Included with this soil in mapping are small areas of Albany, Alpin, Chipley, Lakeland, Ocilla, Troup, and Bonneau soils. These soils make up less than 15 percent of the map unit.

This Blanton soil has a water table at a depth of 5 to 6 feet most of the year. In wet seasons, a perched water table is above the subsoil for less than a month. The available water capacity is medium in the surface layer and low in the subsurface layer and subsoil. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. Natural fertility and the organic matter content are low.

The natural vegetation consists of slash pine, live and blackjack oaks, ferns, huckleberry, sassafras, pineland threeawn, and other grasses and shrubs.

This Blanton soil has severe limitations for most cultivated crops. Droughtiness and rapid leaching of plant nutrients limit the choice of plants and reduce potential yields of adapted crops. Crop rotations should include close-growing cover crops at least two-thirds of the time. Soil-improving cover crops and all crop residue should be left on the ground. Minimum tillage helps control erosion and saves energy. Irrigation of high-value crops is usually feasible where water is readily available.

This soil has moderate limitations for pasture and hay crops. Deep-rooting Coastal bermudagrass and the improved bahiagrasses are well adapted to this soil, but yields are reduced by periodic droughts. Regular applications of fertilizer and lime are needed for best yields. Grazing should be controlled to maintain plant vigor and a good ground cover.

The potential of this soil for production of pine trees is moderately high. Equipment limitations, seedling mortality, and plant competition are the main management concerns. Slash and loblolly pines are the best trees to plant.

The sandy texture severely limits the use of this soil for sanitary facilities and shallow excavations. Wetness is a moderate limitation to use of the soil as septic tank absorption fields and for dwellings with basements. Droughtiness is a severe limitation in maintenance of lawns and landscaping.

This Blanton soil is in capability subclass IIIs.

9—Blanton fine sand, 5 to 8 percent slopes. This is a moderately well drained, sloping soil on undulating landscapes. The areas of this soil range from 20 to 200 acres and are irregular in shape.

Typically, the surface layer is gray fine sand 4 inches thick. The subsurface layer, which extends to a depth of about 49 inches, is very pale brown and light gray fine sand. The subsoil extends to a depth of 80 inches or more. In the upper 15 inches, it is pale brown sandy loam with yellow and strong brown mottles. The lower part of the subsoil is light gray fine sandy loam with strong brown mottles.

Included with this soil in mapping are small areas of Albany, Alpin, Chipley, Lakeland, and Ocilla soils. These soils make up less than 15 percent of the map unit.

This Blanton soil has a water table at a depth of 5 to 6 feet most of the year. A perched water table is above the subsoil for less than a month during wet seasons. The available water capacity is medium in the surface layer and low in the subsurface layer and subsoil. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. Natural fertility and the organic matter content are low.

The natural vegetation consists of slash and longleaf pines, live and blackjack oaks, ferns, huckleberry, sassafras, pineland threeawn, and other grasses and shrubs.

This Blanton soil has very severe limitations for most cultivated crops. Droughtiness, rapid leaching of plant nutrients, and slope greatly limit the choice of plants and reduce potential yields of adapted crops. Strips of row crops should be alternated with strips of close-growing crops. Crop rotation should include close-growing cover crops at least three-fourths of the time. Soil-improving cover crops and all crop residue should be left on the surface. This soil is too steep to be effectively irrigated. Minimum tillage helps control erosion and saves energy.

This soil has moderate limitations for pasture and hay crops. Deep-rooting Coastal bermudagrass and the improved bahiagrasses are well adapted to the soil, but yields are reduced by periodic droughts. Regular applications of fertilizer and lime are needed for best yields. Grazing should be controlled to maintain plant vigor and a good ground cover.

The potential of this soil for production of pine trees is moderately high. Equipment limitations, seedling mortality, and plant competition are the main management concerns. Slash and loblolly pines are the best trees to plant.

The sandy texture severely limits the use of this soil for sanitary facilities and shallow excavations. Wetness is a moderate limitation for septic tank absorption fields and for dwellings with basements. The slope moderately limits use of the soil for small commercial buildings. Droughtiness is a severe limitation in maintenance of lawns and landscaping.

This Blanton soil is in capability subclass IVs.

10—Blanton fine sand, occasionally flooded. This is a moderately well drained, nearly level to sloping soil on the flood plains of rivers and streams. It is flooded occasionally when heavy and prolonged rainfall causes an overflow of the rivers and streams. In the lower areas, the soil remains flooded for approximately 30

days each year. This soil has been flooded in March and April about once every 10 years *(7)*. The slope ranges from 0 to 8 percent.

Typically, the surface layer is light brownish gray fine sand about 7 inches thick. The subsurface layer is light gray fine sand in the upper 25 inches and is white fine sand in the lower 20 inches. The subsoil begins at a depth of 52 inches. In the upper 10 inches, it is light yellowish brown fine sandy loam; in the next 5 inches, it is very pale brown fine sandy loam with strong brown and pale brown mottles; and in the lower part it is gray fine sandy loam with strong brown mottles.

Included with this soil in mapping are small areas of Bigbee soils and some occasionally flooded areas of Albany and Alpin soils. Also included are soils that have clay and chunks of coral or sand in the substratum, otherwise they are similar to the Blanton soil. The included soils make up approximately 25 percent of the map unit.

This Blanton soil has a water table at a depth of 5 to 6 feet most of the year. In wet seasons, a perched water table is above the subsoil for less than a month. This soil is covered by floodwater for up to 30 days during years of intense rainfall. The available water capacity is medium in the surface layer and low in the subsurface layer and subsoil. Permeability is moderately rapid in the surface and subsurface layers and slow in the subsoil. Natural fertility is low. The organic matter content is moderate in the surface layer and very low below that.

The natural vegetation consists of slash pine, live and blackjack oaks, ferns, huckleberry, sassafras, pineland threeawn, and other grasses and shrubs.

The hazard of flooding and poor soil qualities severely limit the use of this soil for most cultivated crops.

The occasional flooding of this Blanton soil is a moderate limitation for pasture and hay crops. Deep-rooting Coastal bermudagrass and the improved bahiagrasses are well adapted to this soil, but yields are reduced by periodic droughts. Regular applications of fertilizer and lime are needed for best yields. Grazing should be controlled to maintain plant vigor and a good ground cover.

The potential of this soil for production of pine trees is moderately high. Equipment limitations, occasional flooding, seedling mortality, and plant competition are the main management concerns. Slash pine is the best tree to plant.

The sandy texture and flooding severely limit the use of this soil for sanitary facilities and building sites.

This Blanton soil is in capability subclass IVs.

11—Blanton-Bonneau-Ichetucknee complex, 2 to 5 percent slopes. This complex consists of nearly level to gently sloping soils on upland knolls and on broad, elevated, undulating karst landscapes. The areas of this complex mostly range from 5 to 500 acres, but some are as small as one-quarter acre. These soils are in areas that are so small or so intermingled that it was not practical to map them separately.

The Blanton soil makes up about 35 percent of this complex. Typically, the surface layer is gray fine sand about 7 inches thick. The upper 30 inches of the subsurface layer is very pale brown fine sand, and the lower 15 inches is light gray fine sand. The subsoil begins at a depth of 52 inches. In the upper 10 inches, it is light yellowish brown fine sandy loam; in the next 5 inches, it is very pale brown fine sandy loam with strong brown and pale brown mottles; and in the lower part, it is light brownish gray fine sandy loam with strong brown mottles.

The Blanton soil has a water table at a depth of 5 to 6 feet most of the year. In wet seasons, a perched water table is between depths of 60 and 72 inches for 1 to 3 months during most years. The available water capacity is medium in the surface layer and low in the subsurface layer and subsoil. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. Natural fertility and the organic matter content of this soil are both low.

The Bonneau soil makes up about 25 percent of this complex. Typically, the surface layer is grayish brown fine sand 7 inches thick. The upper 8 inches of the subsurface layer is yellowish brown fine sand and the lower 12 inches is brownish yellow fine sand. The subsoil extends to a depth of 80 inches or more. In the upper 9 inches, it is yellowish brown fine sandy loam; in the next 38 inches, it is mottled very pale brown, yellowish red, and grayish brown sandy clay loam; and in the lower part, it is mottled, gray and pink sandy clay loam.

The Bonneau soil has a water table at a depth of 48 to 72 inches for a few weeks during the normal rainy season of most years. In some areas, a perched water table is above the subsoil for a day or two after intense rainfall. The available water capacity is low. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. Natural fertility is moderate. The organic matter content is moderately low in the surface layer, low in the subsurface layer and upper part of the subsoil, and very low in the lower part of the subsoil.

The Ichetucknee soil makes up about 15 percent of the complex. Typically, the surface layer is gray fine sand about 5 inches thick. The subsurface layer is about 8 inches thick. It is light gray fine sand with very pale brown splotches. The subsoil is clay and extends to a depth of 55 inches. In the upper 26 inches, it is pale brown with gray, red, and yellow mottles; and in the lower 16 inches, it is yellowish red. It is underlain by soft limestone.

The Ichetucknee soil has a water table at a depth of 1.5 to 3 feet after intense rainfall. The available water capacity is medium in the surface and subsurface layers and lower part of the subsoil and is low in the upper part of the subsoil. Permeability is rapid in the surface and

subsurface layers and slow in the subsoil. Natural fertility is moderate. The organic matter content is moderate in the surface layer and moderately low in the subsurface layer and subsoil.

Included with this complex in mapping are a few small areas of Albany, Alpin, Chiefland, Pedro Variant, Chipley, Lakeland, and Ocilla soils. Not all of these soils are in each mapped area. These soils make up about 25 percent of the complex.

The natural vegetation of the complex consists of slash pine, live and blackjack oak, ash, ferns, huckleberry, sassafras, blackberry, pineland threeawn, and other grasses and shrubs.

Poor soil quality and rapid leaching of plant nutrients moderately limit the use of the Bonneau soil and severely limit the use of the Blanton soil for cultivated crops. Wetness, the hazard of erosion, and a restricted root zone very severely limit the use of the Ichetucknee soil for cultivated crops. Strips of row crops should be alternated with strips of close-growing crops. Soil-improving cover crops and all crop residue should be left on the ground. Irrigation of high-value crops is usually feasible in dry periods. Ground cover should be maintained on the Ichetucknee soil at least three-fourths of the time. Applications of fertilizer and lime are needed for best yields. Minimum tillage reduces erosion and saves energy.

The Bonneau soil is slightly limited for pasture and hay crops, and the Blanton and Ichetucknee soils are moderately limited. Deep-rooting Coastal bermudagrass and the improved bahiagrasses are well adapted, but yields are reduced by periodic droughts. Regular applications of fertilizer and lime are needed for best yields. Grazing should be controlled to maintain plant vigor and a good ground cover.

The potential of the Bonneau and Ichetucknee soils for the production of pine trees is high and that of the Blanton soil is moderately high. Seedling mortality and plant competition are the main management concerns. Slash and loblolly pines are the best trees to plant.

Wetness and the sandy texture severely limit the use of the soils of this complex for most sanitary facilities. The sandy texture severely limits the use of the Blanton soil for shallow excavations and also for lawns and landscaping. Wetness is a moderate limitation to use of the Blanton soil for septic tank absorption fields.

Wetness moderately limits the use of the Bonneau soil for shallow excavations, dwellings with basements, septic tank absorption fields, and area-type sanitary landfills. The Bonneau soil is well suited as daily cover for landfills. Droughtiness moderately limits the use of this soil for lawns and landscaping.

Wetness severely limits the use of the Ichetucknee soil for shallow excavations and dwellings with basements. It also moderately limits the use of this soil for dwellings without basements, small commercial buildings, and sanitary landfills and also for lawns and landscaping. Low soil strength severely limits use of the soil for local roads and streets.

These soils are in capability subclass IIIs.

12—Blanton-Bonneau-Ichetucknee complex, 5 to 8 percent slopes. This complex is on undulating landscapes. The areas of this complex mostly range from 3 to 40 acres, but some are as small as one-quarter acre. These soils are in areas that are so small or so intermingled that it was not practical to map them separately.

The Blanton soil makes up about 30 percent of the complex. Typically, the surface layer is gray fine sand 4 inches thick. The subsurface layer, which extends to a depth of about 49 inches, is very pale brown and white fine sand. The subsoil extends to a depth of 80 inches or more. In the upper 15 inches, it is pale brown sandy loam with yellow and strong brown mottles. In the lower part, it is light gray fine sandy loam with strong brown mottles.

The Blanton soil has a water table below a depth of 6 feet most of the year. A perched water table is above the subsoil for less than a month during wet seasons. The available water capacity is medium in the surface layer and low in the subsurface layer and subsoil. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. Natural fertility and the organic matter content are both low.

The Bonneau soil makes up about 25 percent of the complex. Typically, the surface layer is grayish brown fine sand 7 inches thick. The subsurface layer is pale brown fine sand to a depth of 24 inches and pale brown fine sand with very pale brown mottles to a depth of 30 inches. From the top, the subsoil is 3 inches of brownish yellow fine sandy loam; 15 inches of brownish yellow sandy clay loam; 12 inches of brownish yellow sandy clay loam with light yellowish brown and gray mottles; 12 inches of mottled brownish yellow, light gray, and red sandy clay loam with about 2 percent plinthite; and below that, light gray sandy clay with light yellowish brown and red mottles.

The Bonneau soil has a water table at a depth of 48 to 72 inches for a few weeks during most years. The available water capacity is low. Permeability is rapid in the surface and subsurface layers and slow in the subsoil. Natural fertility is moderate. The organic matter content is moderately low in the surface layer, low in the subsurface layer and upper part of the subsoil, and very low in the lower part of the subsoil.

The Ichetucknee soil makes up about 20 percent of the complex. Typically, the surface layer is grayish brown fine sand about 4 inches thick. The subsurface layer is dark grayish brown fine sand about 3 inches thick. The subsoil is clay and extends to a depth of 80 inches. It is yellowish brown in the upper 9 inches; mottled pale brown, yellowish brown, gray, and yellowish red to a depth of 38 inches; gray with strong brown and red

mottles to a depth of 55 inches; and mottled gray, yellowish brown, and red clay in the lower part.

The Ichetucknee soil has a water table at a depth of 1.5 to 3 feet after intense rainfall. The available water capacity is medium in the surface and subsurface layers and lower part of the subsoil, and it is low in the upper part of the subsoil. Permeability is moderately rapid in the surface and subsurface layers and very slow in the subsoil. Natural fertility is moderate. The organic matter content is moderate in the surface layer and moderately low in the subsurface layer and subsoil.

Included with this complex in mapping are a few small areas of Albany, Alpin, Chiefland, Pedro Variant, Chipley, Lakeland, and Ocilla soils. Not all of these soils are in each mapped area. These soils make up about 25 percent of the map unit.

The natural vegetation of the complex consists of slash pine, live and blackjack oaks, ash, ferns, huckleberry, sassafras, blackberry, pineland threeawn, and other grasses and shrubs.

The soils of this complex have very severe limitations for most cultivated crops. Droughtiness, rapid leaching of plant nutrients, and slope greatly limit the choice of plants and reduce potential yields of adapted crops. In addition, the Ichetucknee soil is restricted by wetness. Strips of row crops should be alternated with strips of close-growing crops. Crop rotation should include close-growing cover crops at least three-fourths of the time. Soil-improving cover crops and all crop residue should be left on the ground. The soils of this complex are too steep to be effectively irrigated. Because these soils erode easily, windbreaks, grassed waterways, and minimum tillage should be used. Applications of fertilizer and lime are also needed for best yields.

The soils have moderate limitations for pasture and hay crops. Deep-rooting Coastal bermudagrass and the improved bahiagrasses are well adapted to these soils, but yields are reduced by periodic droughts. Regular applications of fertilizer and lime are needed for best yields. Grazing should be controlled to maintain plant vigor and a good ground cover.

The potential of the Bonneau and Ichetucknee soils for production of pine trees is high and that of the Blanton soil is moderately high. Seedling mortality and plant competition are the main management concerns. Slash and loblolly pines are the best trees to plant.

The sandy texture and wetness severely limit the use of the soils for most sanitary facilities. The sandy texture severely limits the use of the Blanton soil for shallow excavations and also for lawns and landscaping. The steep slopes and wetness moderately limit the use of this soil for dwellings with basements and small commercial buildings.

Wetness moderately limits the use of the Bonneau soil for shallow excavations, dwellings with basements, septic tank absorption fields, and area-type sanitary landfills. The Bonneau soil is well suited to use as daily cover for landfills. Steepness of slope moderately limits the use of this soil for small commercial buildings. Droughtiness moderately limits its use for lawns and landscaping.

Wetness severely limits the use of the Ichetucknee soil for shallow excavations and dwellings with basements. It moderately limits use for dwellings without basements, small commercial buildings, and area-type sanitary landfills and also for lawns and landscaping. Low soil strength severely limits use for local roads and streets.

These soils are in capability subclass IVs.

13—Bonneau fine sand, 2 to 5 percent slopes. This is a moderately well drained, gently sloping soil on uplands and on knolls in the uplands. The areas of this soil range from 3 to 200 acres and are circular.

Typically, the surface layer is grayish brown fine sand about 7 inches thick. The subsurface layer is fine sand about 20 inches thick. In the upper 8 inches, it is yellowish brown, and below that, it is brownish yellow with very pale brown splotches. The subsoil extends to a depth of 80 inches. In the upper 9 inches, it is yellowish brown fine sandy loam; in the next 22 inches, it is very pale brown, yellowish red, and grayish brown sandy clay loam; in the next 16 inches, it is very pale brown, yellowish red, and grayish brown sandy clay loam with pockets of fine sandy loam; and in the lower part it is gray and pink sandy clay loam.

Included with this soil in mapping are small areas of Lucy, Ocilla, Blanton, Goldsboro, and Ichetucknee soils. These soils make up less than 20 percent of the map unit.

This Bonneau soil has a water table at a depth of 48 to 72 inches for 1 or 2 months during rainy periods in most years. Otherwise, the water table is below a depth of 72 inches. The available water capacity is low in the surface and subsurface layers and upper part of the subsoil and medium in the lower part of the subsoil. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. Natural fertility is moderate. The organic matter content is very low.

The natural vegetation consists of slash and longleaf pines; laurel, live, and water oaks; black cherry; wild persimmon; sassafras; maple; and hickory. The understory vegetation includes partridgepea, blackberry, foxtail, pawpaw, broomsedge bluestem, sumac, low panicum, and mint.

The thick sandy surface layer of this Bonneau soil moderately limits its use for cultivated crops. It can be cultivated safely with ordinary good farming methods, but droughtiness and rapid leaching of plant nutrients limit the choice of crops and reduce potential yields of adapted crops. With good management, such crops as corn, soybeans, watermelons, peanuts, and tobacco can be grown. Strips of row crops should be alternated with strips of cover crops. Crop rotation should include cover

crops at least half the time. These cover crops and all residue should be left on the ground. Good seedbed preparation and regular applications of fertilizer and lime are required for best yields. Irrigation of some high-value crops, such as tobacco, is usually feasible where irrigation water is readily available. Minimum tillage reduces erosion and helps store moisture for plants.

The soil has slight limitations for pasture. Deep-rooting plants, such as Coastal bermudagrass and bahiagrass, are well adapted to the soil. It produces well when fertilizer and lime are applied. Grazing should be controlled to maintain plant vigor for maximum yields and to maintain a good ground cover.

This soil has high potential for production of pine trees. Equipment limitations and seedling mortality are the main management concerns. Loblolly and slash pines are the best trees to plant.

The high water table severely limits the use of this soil for trench-type sanitary landfills. It moderately limits the soil's use for septic tank absorption fields, area-type sanitary landfills, shallow excavations, and dwellings with basements. Because of the sandy texture, seepage is a severe hazard and limits the use of the soil for sewage lagoons. This soil is well suited to use as daily cover for landfills. Droughtiness is a moderate limitation for lawns and landscaping.

This Bonneau soil is in capability subclass IIs.

14—Bonneau fine sand, 5 to 8 percent slopes. This is a moderately well drained, sloping soil on short hillsides in the uplands. The areas range from 3 to 40 acres and are circular.

Typically, the surface layer is grayish brown fine sand about 5 inches thick. The subsurface layer is fine sand about 17 inches thick. The upper 7 inches is yellowish brown; the next 7 inches is light yellowish brown; the lower 3 inches is pale brown. The subsoil in the upper 6 inches is yellowish brown sandy clay loam. Below that, yellowish brown, pale brown, and strong brown mottled sandy clay loam extends to a depth of 36 inches. Below that, sandy clay loam with yellowish brown, brownish yellow, yellowish red, and light brownish gray mottles extends to a depth of 80 inches or more.

Included with this soil in mapping are small areas of the Ichetucknee, Ocilla, Goldsboro, and Lucy soils. These included soils make up less than 20 percent of the map unit.

This Bonneau soil has a perched water table at a depth of 48 to 72 inches for 1 to 2 months during rainy periods in most years. Otherwise, the water table is at a depth of more than 72 inches. The available water capacity is low in the surface and subsurface layers and medium in the subsoil. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. The natural fertility is moderate, and the organic matter content is very low.

The natural vegetation consists of slash and longleaf pine; laurel, live, and water oak; black cherry; wild persimmon; sassafras; maple; and hickory. The understory vegetation includes partridgepea, blackberry, foxtail, pawpaw, broomsedge bluestem, sumac, low panicum, and mint.

The thick sandy surface layer and the hazard of erosion are severe limitations to use of this Bonneau soil for cultivated crops. The soil requires special management. Droughtiness and rapid leaching of plant nutrients severely limit the use of this soil for most row crops. The steepness of the slope makes cultivation difficult and increases the hazard of erosion. Strips of cultivated row crops should be alternated with wider strips of close-growing, soil-improving crops. Crop rotation should include close-growing crops at least two-thirds of the time. All crops should be fertilized and limed. Soil-improving cover crops and residue of all other crops should be left on the ground. Minimum tillage and windbreaks reduce soil erosion.

This soil has moderate limitations for pasture. Deep-rooting plants, such as Coastal bermudagrass and bahiagrass, are well adapted to the soil. Fertilizer and lime help produce good stands of grass. Grazing should be controlled to maintain plant vigor and to maintain a good protective ground cover.

This soil has high potential for production of pine trees. Equipment limitations and seedling mortality are the main management concerns. Loblolly and slash pines are the best trees to plant.

The high water table severely limits the use of this soil for trench-type sanitary landfills. It moderately limits the soil's use for septic tank absorption fields, area-type sanitary landfills, shallow excavations, and dwellings with basements. Because of the sandy texture, seepage is a severe hazard and limits the use of the soil for sewage lagoons. This soil is well suited to use as daily cover for landfills. Droughtiness is a moderate limitation for lawns and landscaping. The steepness of slope moderately limits the use of the soil for small commercial buildings.

This Bonneau soil is in capability subclass IIIe.

15—Bonneau-Blanton complex, 2 to 5 percent slopes. This complex consists of gently sloping, moderately well drained soils on the uplands. These soils are in areas that are so small and form such an intricate pattern that it was not practical to map them separately. The areas of this complex range from 8 to 540 acres.

The Bonneau soil makes up 40 to 50 percent of the complex. Typically, the surface layer is grayish brown fine sand about 7 inches thick. The subsurface layer is fine sand about 20 inches thick. The upper 8 inches is yellowish brown, and the lower 12 inches is brownish yellow. The subsoil extends to a depth of 80 inches. The upper 9 inches is yellowish brown fine sandy loam; the next 22 inches is mottled very pale brown, yellowish red, and grayish brown sandy clay loam. That part is

underlain by 16 inches of very pale brown, yellowish red, and grayish brown sandy clay loam with pockets of fine sandy loam. From a depth of 74 to 80 inches, the subsoil is gray and pink sandy clay loam.

The Bonneau soil is rapidly permeable in the surface and subsurface layers and moderately permeable in the subsoil. The available water capacity is low. The organic matter content is moderately low in the surface layer, low in the subsurface layer and upper part of the subsoil, and very low below that. Natural fertility is very low. This soil has a water table at a depth of 48 to 72 inches for 1 to 2 months in most years under normal conditions. The rest of the year, the water table is below 72 inches.

The Blanton soil makes up 35 to 45 percent of the complex. Typically, the surface layer is gray fine sand about 7 inches thick. The subsurface layer is fine sand about 45 inches thick. The upper 30 inches is very pale brown with common medium white splotches, and the lower 15 inches is light gray with very pale brown mottles. The subsoil extends to a depth of 80 inches or more. The upper 10 inches is light yellowish brown fine sandy loam with few fine brownish yellow mottles; the next 5 inches is very pale brown fine sandy loam with many medium strong brown and common medium pale brown mottles; and the lower 13 inches is light brownish gray fine sandy loam with many medium strong brown mottles.

The Blanton soil is rapidly permeable in the surface and subsurface layers and moderately permeable in the subsoil. The available water capacity is medium in the surface layer and low in the subsurface layer and subsoil. Natural fertility and the organic matter content are low. This soil has a water table at a depth of 5 to 6 feet during rainy periods in most years.

About 25 percent of the complex is small areas of Albany, Alpin, Chiefland, Chipley, Lakeland, Lucy, Ocilla, Pedro Variant, and Ichetucknee soils. Not all of these soils are in each mapped area.

The natural vegetation consists of slash and longleaf pine; water, live, and laurel oak; wild cherry; blackberry; ferns; and pineland threeawn. Most areas of this soil are cultivated, but many areas are planted to pines or pasture grasses.

Droughtiness, rapid leaching of nutrients, and low natural fertility moderately limit the use of the Bonneau soil and severely limit the use of the Blanton soil for cultivated crops. With good management, crops that are adapted to this soil, such as corn, peanuts, watermelon, tobacco, and soybeans, can be grown. Strips of row crops should be alternated with strips of cover crops. Crop rotation should include close-growing cover crops at least two-thirds of the time. Cover crops and all other crop residue should be left on the ground. Irrigation of some high-value crops is usually feasible where water is readily available. Minimum tillage and windbreaks are needed to reduce wind erosion during the planting season.

The Bonneau soil has slight limitations for pasture, and the Blanton soil has moderate limitations. Deep-rooting grasses, such as Coastal bermudagrass and the improved bahiagrasses, are well adapted to the soils, but yields are reduced by periodic droughts. Regular applications of fertilizer and lime are needed. Grazing should be controlled to maintain plant vigor for maximum yields and to maintain a good ground cover.

The potential for production of pine trees is high on the Bonneau soil and moderately high on the Blanton soil. Equipment limitations, seedling mortality, and plant competition are the main management concerns. Loblolly and slash pines are the best trees to plant.

The high water table and the sandy texture are moderate to severe limitations to use of the soils for most sanitary facilities. The Bonneau soil, however, is well suited to use as daily cover for landfills. The high water table and the sandy texture moderately limit the use of these soils for shallow excavations, dwellings with basements, and lawns and landscaping.

These soils are in capability subclass IIs.

16—Bonneau-Blanton complex, 5 to 8 percent slopes. This complex consists of sloping, moderately well drained soils on uplands. The areas of the Bonneau and Blanton soils are so small and form such an intricate pattern that it was not practical to map them separately. The areas of the complex range from 6 to 35 acres.

The Bonneau soil makes up 40 to 50 percent of the complex. Typically, the surface layer is grayish brown fine sand about 7 inches thick. The subsurface layer is fine sand 23 inches thick. The upper 17 inches is pale brown, and the lower 6 inches is pale brown with very pale brown mottles. The subsoil extends to a depth of 80 inches or more. The upper 3 inches is brownish yellow fine sandy loam; the next 15 inches is brownish yellow sandy clay loam; the next 12 inches is brownish yellow sandy clay loam with light yellowish brown and light gray mottles; the next 12 inches is mottled brownish yellow, light gray, and red sandy clay loam with about 2 percent plinthite; and the lowermost 8 inches is light gray sandy clay loam with light yellowish brown and red mottles.

The Bonneau soil is rapidly permeable in the surface and subsurface layers and moderately permeable in the subsoil. The available water capacity is low. The natural fertility is low. The organic matter content is moderately low in the surface layer, low in the subsurface layer and upper part of the subsoil, and very low below that. This soil has a water table at a depth of 48 to 72 inches for 1 to 2 months during rainy seasons in most years under normal conditions. The rest of the year, the water table is below 72 inches.

The Blanton soil makes up 35 to 45 percent of the complex. Typically, the surface layer is gray fine sand about 4 inches thick. The subsurface layer is fine sand about 45 inches thick. It is very pale brown and white.

The subsoil extends to a depth of 80 inches or more. The upper 15 inches is pale brown fine sandy loam with yellow and strong brown mottles, and the lower 16 inches is light gray fine sandy loam with strong brown mottles.

The Blanton soil is moderately rapidly permeable in the surface and subsurface layers and slowly permeable in the subsoil. The available water capacity is medium in the surface layer and low in the subsurface layer and subsoil. Natural fertility and the organic matter content are low. The Blanton soil has a water table at a depth of 5 to 6 feet during rainy periods in most years.

About 25 percent of the complex is small areas of Albany, Alpin, Lucy, Chiefland, Chipley, Lakeland, Ocilla, Pedro Variant, and Ichetucknee soils. Not all of these soils are in each mapped area.

The natural vegetation consists of slash and longleaf pine; water, live, and laurel oak; wild cherry; blackberry; ferns; and pineland threeawn. In most areas, the soils of this complex are planted to pines, but in many areas they are cultivated for crops.

Rapid leaching of plant nutrients, droughtiness, the hazard of erosion, and low soil fertility severely limit the use of the Bonneau and Blanton soils for cultivated crops. With very good management, high-value crops that are adapted to the soils can be grown. Strips of row crops should be alternated with strips of close-growing cover crops. Crop rotation should include cover crops at least two-thirds of the time. Cover crops and all other crop residue should be left on the ground. Regular applications of fertilizer and lime are needed. These soils are generally too steep for effective irrigation. Minimum tillage and windbreaks are needed to reduce wind erosion.

The Bonneau and Blanton soils have moderate limitations for pasture. Deep-rooting grasses, such as Coastal bermudagrass and improved bahiagrasses, are well adapted to the soils, but yields can be reduced by periodic drought. Regular applications of fertilizer and lime are needed. Grazing should be controlled to maintain plant vigor for maximum yields and to maintain a good ground cover.

The potential of the Bonneau soil for production of pine trees is high, and that of the Blanton soil is moderately high. Equipment limitations, seedling mortality, and plant competition are the main management concerns. Slash and loblolly pines are the best trees to plant.

The high water table and the sandy texture are moderate to severe limitations to the use of these soils for most sanitary facilities and building sites. The Bonneau soil is well suited to use as daily cover for landfills. The high water table and the sandy texture are only slight limitations to the use of these soils for dwellings without basements and for local roads and streets.

These soils are in capability subclass IIIs.

17—Chiefland-Pedro Variant complex, 0 to 5 percent slopes. This complex consists of nearly level to gently sloping, well drained soils on an upland karst landscape in the southern part of the county. The areas of these soils are so small or so intermingled that it was not practical to map them separately. The areas of this complex range from 5 to 800 acres.

The Chiefland soil makes up about 45 percent of the complex. Typically, the surface layer is brown fine sand about 8 inches thick. The subsurface layer is pale brown fine sand to a depth of 33 inches. The subsoil is strong brown fine sandy loam that extends to a depth of 39 inches. It is underlain by limestone.

The Chiefland soil has no water table within a depth of 72 inches. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. The available water capacity is very low in the surface and subsurface layers and medium in the subsoil. The natural fertility and organic matter content are very low.

The Pedro Variant soil makes up about 35 percent of the complex. Typically, the surface layer is gray fine sand about 3 inches thick. The subsurface layer is dark brown fine sand about 5 inches thick. The subsoil is dark brown sandy clay loam about 3 inches thick. It is underlain by about 3 inches of soft weathered limestone. Below that, hard limestone extends to a depth of 80 inches or more.

The Pedro Variant soil has no water table within a depth of 72 inches. Permeability is rapid in the surface and subsurface layers and moderately rapid in the subsoil. The available water capacity is very low in the surface and subsurface layers and medium in the subsoil. The natural fertility and organic matter content are very low.

Soils of minor extent make up about 20 percent of the complex. These include Alpin, Lakeland, Troup, and Albany soils. Not all of these soils are in each mapped area. Small areas of rock outcrops and sinkholes are common.

The natural vegetation is laurel, water, and live oak; hickory; wild persimmon; slash, loblolly, and spruce pine; wild grape; red maple; ash; smilax; poison-ivy; sweetgum; ferns; and redcedar.

Droughtiness and poor soil quality severely limit the use of the Chiefland soil for cultivated crops. Droughtiness, poor soil quality, and shallowness to limestone very severely limit use of the Pedro Variant soil for crops. Crops such as corn or soybeans can be grown if shallow areas are avoided. Close-growing crops should be kept on the land at least three-fourths of the time. All cover-crop residue should be left on the ground. Good seedbed preparation, fertilization, and irrigation are needed for best yields.

The soils have moderate limitations for pasture and hay crops. Droughtiness and poor soil quality are the main management concerns. Applications of fertilizer are

needed for best yields. Improved bermudagrass and bahiagrass are moderately well suited to these soils.

These soils have moderately high potential for production of pine trees. Equipment limitations and seedling mortality are the main management concerns. Slash pine is the most suitable tree to plant.

The sandy texture and the shallowness to bedrock severely limit the use of these soils for sanitary facilities. Shallowness severely limits use of the Pedro Variant soil for building site development and moderately limits use of the Chiefland soil for dwellings with basements. The sandy texture severely limits the Chiefland soil for shallow excavations and for lawns and landscaping.

These soils are in capability subclass IIIs.

18—Chiefland-Pedro Variant complex, 5 to 8 percent slopes. This complex consists of sloping, well drained soils on an upland karst landscape in the southern part of the county. The individual areas of each soil are so small or so intermingled that it was not practical to map them separately at the scale selected for mapping. The areas of this complex range from 5 to 50 acres.

The Chiefland soil makes up about 45 percent of the complex. Typically, the surface layer is brown fine sand about 8 inches thick. The subsurface layer is pale brown fine sand to a depth of 30 inches. The subsoil is strong brown fine sandy loam that extends to a depth of 35 inches. It is underlain by limestone.

The Chiefland soil has no water table within a depth of 72 inches. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. The available water capacity is very low in the surface and subsurface layers and medium in the subsoil. Natural fertility and the organic matter content are very low.

The Pedro Variant soil makes up about 35 percent of the complex. Typically, the surface layer is gray fine sand about 3 inches thick. The subsurface layer is dark brown fine sand about 5 inches thick. The subsoil is dark brown sandy clay loam about 3 inches thick. It is underlain by about 3 inches of soft weathered limestone. Below that, hard limestone extends to a depth of 80 inches or more.

The Pedro Variant soil has no water table within a depth of 72 inches. Permeability is rapid in the surface and subsurface layers and moderately rapid in the subsoil. The available water capacity is very low in the surface and subsurface layers and medium in the subsoil. Natural fertility and the organic matter content are very low.

Soils of minor extent make up about 20 percent of the complex. These include small areas of the Alpin, Lakeland, Troup, and Albany soils. Not all of these soils are in each mapped area. Small areas of rock outcrop and sinkholes are common.

The natural vegetation is laurel oak, water oak, live oak, hickory, wild persimmon, slash pine, loblolly pine, spruce pine, wild grape, red maple, ash, smilax, poison-ivy, sweetgum, ferns, and redcedar.

Droughtiness, poor soil quality, and slope very severely limit the use of the soils for cultivated crops. Furthermore, the shallowness to limestone in the Pedro Variant soil is a severe limitation. Strips of row crops should be alternated with strips of close-growing crops. Close-growing crops should be kept on the land at least three-fourths of the time. All cover crop residue should be left on the ground. Good seedbed preparation, fertilization, and irrigation are needed for best yields.

The soils have moderate limitations for pasture and hay crops. Seeding and maintenance may be hindered in areas of shallow soils. Applications of fertilizer are needed for best yields. Coastal bermudagrass and bahiagrass are moderately well adapted to these soils.

These soils have moderately high potential for production of pine trees. Equipment limitations and seedling mortality are the main management concerns. Slash pine is the most suitable tree to plant.

The sandy texture and the shallowness to bedrock severely limit the use of these soils for sanitary facilities. On the Pedro Variant soil, shallowness is a severe limitation to use for building sites. On the Chiefland soil, shallowness is a moderate limitation for dwellings with basements. The sandy texture severely limits the use of the Chiefland soil for shallow excavations and for lawns and landscaping. Steep slopes moderately limit the use of the Chiefland soil for small commercial buildings.

These soils are in capability subclass IVs.

19—Chiefland-Pedro Variant complex, occasionally flooded. This complex consists of nearly level to sloping soils that are within 3 miles of rivers and creeks interspersed with numerous sinkholes. These soils are flooded periodically from river overflow after unusually high rainfall. There have been three major floods since 1948. They occurred in the period April to June. The areas of these soils are so small or so intermingled that it was not practical to map them separately. The areas of this complex range from 5 to 80 acres.

The Chiefland soil makes up about 41 percent of the complex. Typically, the surface layer is about 5 inches of dark grayish brown fine sand. The subsurface layer is light brownish gray fine sand to a depth of 23 inches. The upper 3 inches of the sandy clay loam subsoil is dark brown, and the lower part is strong brown. It is underlain by limestone.

The Chiefland soil has no water table within a depth of 72 inches. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. The available water capacity is very low in the surface and subsurface layers and medium in the subsoil. The natural fertility and organic matter content are very low.

The Pedro Variant soil makes up about 39 percent of the complex. Typically, the surface layer is gray fine sand about 3 inches thick. The fine sand subsurface

layer is dark brown about 5 inches thick. The subsoil is dark brown sandy clay loam about 3 inches thick. It is underlain by about 3 inches of soft weathered limestone. Below that, hard limestone extends to a depth of 80 inches or more.

The Pedro Variant soil has no water table within a depth of 72 inches. Permeability is rapid in the surface and subsurface layers and moderately rapid in the subsoil. The available water capacity is very low in the surface and subsurface layers and medium in the subsoil. The natural fertility and organic matter content are low.

Soils of minor extent make up about 20 percent of the complex. These include Alpin, Lakeland, Troup, and Albany soils. Not all of these soils are in each mapped area. Small areas of rock outcrop and sinkholes are common.

The natural vegetation is laurel oak, water oak, live oak, hickory, wild persimmon, slash pine, loblolly pine, spruce pine, wild grape, red maple, ash, smilax, poison-ivy, sweetgum, ferns, and redcedar.

Droughtiness, poor soil quality, and the hazard of flooding very severely limit the use of the soils for cultivated crops. Furthermore, shallowness to limestone in the Pedro Variant soil is a severe limitation. Crops such as corn or soybeans can be grown if shallow areas are avoided. High-value crops should not be grown because of possible losses caused by flooding. Close-growing crops should be kept on the land at least three-fourths of the time. All cover-crop residue should be left on the ground. Good seedbed preparation, fertilization, and irrigation are needed for best yields.

The soils have moderate limitations for pasture and hay crops. Seeding may be hindered in areas of shallow soils. Applications of fertilizer are needed for best yields. Improved bermudagrass and bahiagrass are moderately well adapted to these soils.

These soils have moderately high potential for production of pine trees. Equipment limitations and seedling mortality are the main management concerns. Slash pine is the most suitable tree to plant.

Flooding, the shallowness to bedrock, and the sandy texture severely limit the use of these soils for sanitary facilities and building sites.

These soils are in capability subclass IVs.

20—Chipley fine sand, 0 to 5 percent slopes. This is a moderately well drained, nearly level to gently sloping soil in somewhat depressed areas and on flats in the uplands. The areas range from 3 to 800 acres and are circular to irregularly elongated.

Typically, the surface layer is gray fine sand about 7 inches thick. Fine sand extends to a depth of 80 inches. In sequence downward, 23 inches is very pale brown and has yellow mottles; the next 10 inches is light gray and has very pale brown mottles; the next 20 inches is very pale brown and has brownish yellow, white, and yellowish red mottles; and the lowermost 20 inches is white with brownish yellow and yellow mottles.

Included with this soil in mapping are small areas of Blanton, Alpin, Lakeland, Albany, and Hurricane soils. These soils make up less than 15 percent of the map unit.

This Chipley soil has a water table at a depth of 20 to 40 inches for 2 to 4 months in most years. The water table is usually at a depth of 40 to 60 inches during the rest of the year. It recedes, however, to a depth of more than 60 inches during very dry periods. The available water capacity is very low, and permeability is rapid throughout the soil. Natural fertility and the organic matter content are low.

The natural vegetation consists of longleaf and slash pine and scattered bluejack, post, live, and laurel oak. Pineland threeawn is the dominant grass. There are some areas of Florida bluestem and low panicums.

This Chipley soil has severe limitations for cultivated crops. Droughtiness and rapid leaching of plant nutrients limit the choice of plants and reduce potential yields of adapted crops. The high water table, which is within 40 inches of the surface in wet seasons, affects the availability of water in the root zone and provides water through capillary rise to supplement the low available water capacity of the soil. In very dry seasons, the water table drops well below the root zone and little capillary water is available to plants. Soil management should include planting alternate strips of row crops and close-growing crops. Crop rotations should include close-growing crops at least two-thirds of the time. All crops should be limed and fertilized. Soil-improving cover crops and all crop residue should be left on the ground. Irrigation of high-value crops is usually feasible where irrigation water is readily available. Tile drains or other kinds of drains are needed to protect some crops from damage caused by the high water table during the growing season. Minimum tillage and windbreaks are needed to reduce wind erosion.

This soil has moderate limitations for pasture and hay. Such plants as Coastal bermudagrass and bahiagrass are well adapted to this soil, but they require applications of fertilizer and lime. Grazing should be controlled to maintain plant vigor for maximum yields.

This soil has high potential for production of pine trees. Equipment limitations and plant competition are the main management concerns. Slash and loblolly pines are the best trees to plant.

The sandy texture and the high water table severely limit the use of this soil for sanitary facilities, shallow excavations, dwellings with basements, and lawns and landscaping. The high water table moderately limits the use of this soil as a site for other kinds of buildings.

This Chipley soil is in capability subclass IIIw.

21—Dorovan muck. This is a very poorly drained, nearly level organic soil in large swamps and

drainageways. The areas range from 50 to 1,000 acres and are circular to irregular in shape. The slope is less than 1 percent.

Typically, the surface layer is very dark brown muck about 14 inches thick. It has 45 percent fiber unrubbed. The underlying layers are dark reddish brown muck with 30 percent fiber unrubbed in the upper 36 inches and 25 percent fiber unrubbed below 50 inches.

Included with this soil in mapping are small areas of Pamlico muck, loamy substratum; Plummer muck, depressional; and Surrency soils. These soils generally border the Dorovan soil and make up about 15 percent of the map unit.

This Dorovan soil has a water table at or above the surface for 6 to 12 months during most years. The available water capacity is very high, and permeability is moderate. Natural fertility is moderate, and the organic matter content is very high.

The natural vegetation consists of cypress, sweetgum, black tupelo, fetterbush, and smilax.

Excessive wetness very severely limits the use of the Dorovan soil for cultivated crops. Unless an extensive water-control program is carried out, this soil cannot be used for the crops that are common to the area. Drainage outlets generally are not available. If water can be controlled, this soil is suited to some vegetable crops or ornamental plants. It should be saturated when the cropping season is over to minimize soil loss caused by oxidation. Applications of phosphate and potash fertilizers that contain minor elements are needed.

This Dorovan soil has severe limitations for pasture grasses unless an extensive water-control program is carried out. Applications of fertilizer high in potassium, phosphorus, and minor elements are needed. Grazing should be controlled for maximum yields. The soil should be kept saturated to minimize oxidation of organic materials.

The potential of this soil for production of trees is moderate. Seedling mortality and equipment limitations are the main management concerns. Baldcypress is the most suitable tree to plant.

Flooding, ponding, and the high content of organic matter severely limit the use of this soil for sanitary facilities and building site development.

This Dorovan soil is in capability subclass VIIw.

22—Electra Variant fine sand, 0 to 5 percent slopes. This is a somewhat poorly drained, nearly level to gently sloping soil on low ridges adjacent to drainageways and around swamps or depressions. The areas range from 7 to 300 acres and are irregularly elongated in shape.

Typically, the surface layer is gray fine sand about 4 inches thick. The fine sand subsurface layer extends to a depth of 38 inches. The upper 20 inches is white with brown streaks; the next 10 inches is light gray with dark grayish brown streaks; and the lower 4 inches is light brownish gray with dark grayish brown streaks. The subsoil extends to a depth of 80 inches. The upper part is dark brown fine sand 13 inches thick; the next 2 inches is dark yellowish brown fine sand; the next 4 inches is yellowish brown fine sandy loam with pale brown mottles; and the lower 23 inches is light brownish gray fine sandy loam with red and brownish yellow mottles.

Included with this soil in mapping are small areas of Albany, Plummer, Mascotte, Sapelo, Leon, Hurricane, and Pelham soils. Also included are some soils that are similar to the Electra Variant soil but have iron concretions in the subsurface layer and in the subsoil. These soils make up about 20 percent of the area.

This Electra Variant soil has a water table at a depth of 25 to 40 inches for about 4 months during most years. The water table recedes to a depth of more than 40 inches the rest of the year. The available water capacity is low in the surface layer, very low in the subsurface layer, and medium in the subsoil. Permeability is rapid in the surface layer, moderately rapid in the subsurface layer, moderate in the sandy part of the subsoil, and slow in the loamy part of the subsoil. The organic matter content is moderately low in the surface layer, very low in the subsurface layer, moderate in the upper part of the subsoil, and very low in the lower part. Natural fertility is low.

The natural vegetation consists of slash pine, running oak, and sawpalmetto. Low panicums and pineland threeawn are the dominant grasses. In most areas, the soil is used as woodland.

Low natural fertility and a seasonal high water table severely limit the use of this soil for cultivated crops. The available water capacity is very low, and response to fertilizer is slight. Soil management should include applications of lime and fertilizer and irrigation. Additions of organic supplements are needed for fair crop yields.

This soil has moderate limitations for pasture. Grasses, such as improved bermudagrass and bahiagrass, produce fair growth if fertilized. Clovers are not adapted to this soil. The low natural fertility and droughtiness are the main management concerns.

This soil has a moderate potential for production of trees, and droughtiness is the main limitation for this use. Management problems include severe seedling mortality and moderate equipment limitations. Slash and sand pines are the best trees to plant.

The sandy texture and the high water table severely limit the use of this soil for sanitary facilities. The high water table moderately to severely limits the use of this soil for building sites. This soil is well suited to lawns and landscaping.

This Electra Variant soil is in capability subclass VIs.

23—Electra Variant fine sand, occasionally flooded. This is a somewhat poorly drained, nearly level to gently sloping soil on flood plains along rivers, creeks,

and other drainageways. This soil is flooded occasionally during March and April from abnormally heavy and prolonged rainfall over most of the Suwannee River and Santa Fe River drainage area *(7)*. The lowlands remain flooded for about 30 days; the depressions that drain by percolation and seepage remain flooded for longer periods. Major floods occurred in March and April of 1948, 1959, and 1973. The areas of this soil range from 10 to 50 acres and are irregularly elongated in shape. The slope ranges from 0 to 5 percent.

Typically, the surface layer is gray fine sand about 2 inches thick. The fine sand subsurface layer extends to a depth of 39 inches. The upper 6 inches is light gray, the next 28 inches is white, and the lowermost 3 inches is grayish brown. The upper part of the subsoil is fine sand and extends to a depth of 54 inches. In the upper 11 inches, it is dark brown; and in the next 4 inches, it is dark yellowish brown. A layer of brown sandy loam 4 inches thick is between the upper and lower parts of the subsoil. The lower part of the subsoil extends to a depth of 80 inches or more. In the upper 3 inches, it is light yellowish brown fine sandy loam; in the next 13 inches, it is gray sandy clay loam; and in the lowermost 6 inches, it is gray sandy clay loam with yellowish brown mottles.

Included with this soil in mapping are small areas of Plummer muck, depressional; Bigbee and Mascotte soils; and Leon and Albany soils in areas that are occasionally flooded. Also included are soils that are similar to the Electra Variant soil but have iron concretions in the subsurface layer and subsoil. These soils make up about 20 percent of the area.

This Electra Variant soil has a water table at a depth of 25 to 40 inches for about 4 months in most years. The water table recedes to a depth of more than 40 inches the rest of the year. This soil is flooded by the river during abnormal rainy conditions. The available water capacity is very low in the surface and subsurface layers and medium in the subsoil. The available water capacity is low in the layer between the upper and lower parts of the subsoil. Permeability is rapid in the surface layer and moderately rapid in the subsurface layer. It is moderate in the upper part of the subsoil and slow in the lower part of the subsoil, but it is moderately rapid in the layer between the upper and lower parts of the subsoil. Organic matter content is moderately low in the surface layer; very low in the subsurface layer, in the lower parts of the subsoil, and in the layer between the upper and lower parts of the subsoil; and moderate in the upper part of the subsoil. Natural fertility is very low.

The natural vegetation consists of slash pine, running oak, huckleberry, and sawpalmetto. Low panicums and pineland threeawn are the dominant grasses. In most areas, the soil is used as woodland.

Very low natural fertility, flooding, and a seasonal high water table severely limit the use of this soil for cultivated crops.

This soil has moderate limitations for improved pasture. Grasses, such as improved bermudagrass and bahiagrass, produce fair growth if fertilizer is used. Clovers are not adapted to this soil.

The potential of this soil for production of trees is moderate. Droughtiness is the main limitation for this use. Management problems include severe seedling mortality and moderate equipment limitations. Slash and sand pines are the best trees to plant.

Flooding and the sandy texture are severe limitations to use of this soil for sanitary facilities and building sites.

This Electra Variant soil is in capability subclass VIs.

24—Fort Meade Variant loamy fine sand, 0 to 5 percent slopes. This is a well drained, nearly level to gently sloping soil on uplands. The areas range from 5 to 40 acres and are circular to irregularly elongated.

Typically, the loamy fine sand surface layer is 16 inches thick. The upper 7 inches is very dark gray, and the lower 9 inches is dark brown. The fine sand subsoil extends to a depth of 80 inches. The upper 17 inches is dark brown, and the lower part is yellowish brown.

Included with this soil in mapping are small areas of the Ocilla, Lucy, Troup, and Chipley soils. Also included are soils that are similar to the Fort Meade Variant soil, but some have a surface layer that ranges to 30 inches, in thickness, some are seasonally saturated to a depth of 50 to 72 inches, and some have a dark colored buried surface layer at a depth of more than 50 inches. The included soils make up about 20 percent of the map unit.

This Fort Meade Variant soil has no water table within a depth of 72 inches during most years. The available water capacity is medium. Permeability is rapid. Natural fertility is low. The organic matter content is moderately low in the surface layer and low in the subsoil.

The natural vegetation consists of slash and loblolly pine; laurel, turkey, and blackjack oak; dogwood; magnolia; and hickory. In most areas, the soil is planted to corn, tobacco, and peanuts.

This Fort Meade Variant soil has moderate limitations for cultivated crops. Droughtiness and rapid leaching of plant nutrients are the main limitations. Crop rotation, good management of cover crops and crop residue, irrigation, liming, and fertilization are needed to improve the soil.

This soil has slight limitations for improved pasture. Deep-rooting grass plants grow well if they are regularly fertilized and limed.

This soil has a moderately high potential for production of slash, loblolly, and longleaf pines. Plant competition is the main management concern. Slash pine is the best tree to plant.

The sandy texture severely limits the use of this soil for most sanitary facilities. The limitations are slight for septic tank absorption fields and building site development. Because of the sandy texture, cutbanks in shallow excavations can cave in.

This Fort Meade Variant soil is in capability subclass IIIs.

25—Goldsboro loamy fine sand, 2 to 5 percent slopes. This is a moderately well drained, gently sloping soil on knolls and ridges in the uplands. The areas range from 1 to 40 acres and are circular to irregularly elongated.

Typically, the surface layer is grayish brown loamy fine sand about 6 inches thick. The loamy fine sand subsurface layer extends to a depth of 13 inches and is light yellowish brown. The subsoil extends to a depth of 80 inches or more. The upper 5 inches is light yellowish brown fine sandy loam with yellowish brown mottles. The next 5 inches is light yellowish brown sandy clay loam with brownish yellow mottles. The next 7 inches is light yellowish brown sandy clay loam with light gray and yellowish brown mottles. The next 15 inches is brownish yellow sandy clay loam with light gray and yellowish brown mottles. The lower 35 inches is light yellowish brown sandy clay with light gray and yellowish brown mottles.

Included with this soil in mapping are small areas of Bonneau, Ocilla, and Lucy soils and of a soil that is similar to the Goldsboro soil but is somewhat poorly drained. Also included are soils that are similar to the Goldsboro soil but have iron, phosphatic, and limestone nodules. In some areas the Goldsboro soil has a thinner surface layer and the slope ranges from 2 to 8 percent. The included soils make up about 20 percent of the map unit.

This Goldsboro soil has a water table at a depth of 2 to 3 feet after heavy rains for less than a month in most years. It is at a depth of 3 to 5 feet for 1 to 4 months and at a depth of more than 5 feet the remainder of the year. The available water capacity is low in the surface and subsurface layers and medium in the subsoil. Permeability is moderately rapid in the surface and subsurface layers, moderate in the upper part of the subsoil, and moderately slow in the lower part of the subsoil. Natural fertility is moderate. The organic matter content is low.

The natural vegetation consists of loblolly, slash, and longleaf pine; laurel and live oak; sweetgum; and flowering dogwood. The understory vegetation includes American beautyberry, common greenbrier, Virginia creeper, and wild blackberry Grasses include pineland threeawn, panicums, and bluestems.

This Goldsboro soil has slight limitations for cultivated crops. Most areas are used for cultivated crops. The variety of crops adapted to this soil is somewhat limited by occasional wetness. The soil reponds moderately well to fertilizers. Erosion control is needed. Crop rotations should keep cover crops on the land at least one-half of the time. Crop residue and soil-improving cover crops should be left on the ground. Good seedbed preparation and fertilization and liming are needed for maximum yields.

This soil has slight limitations for pasture and hay crops. Fertilizer, lime, and controlled grazing are needed to maintain plant vigor and a good ground cover. Clovers, tall fescue, improved bermudagrass, and bahiagrass are well adapted to this soil.

The potential of this soil for production of trees is high. Plant competition is the main management concern. Slash and loblolly pines are the best trees to plant.

The high water table is a moderate to severe limitation to use of the soil for building sites and sanitary facilities. There are slight limitations to use of this soil for lawns and landscaping. This soil is fairly suited to use as daily cover for landfills.

This Goldsboro soil is in capability subclass IIe.

26—Hurricane fine sand. This is a somewhat poorly drained, nearly level soil on flats and in areas adjacent to depressions and poorly defined drainageways. The areas range from 10 to 200 acres and are circular to elongated. The slope ranges from 0 to 2 percent.

Typically, the surface layer is very dark gray fine sand about 8 inches thick. The fine sand subsurface layer extends to a depth of 56 inches. The top 10 inches is grayish brown, the next 14 inches is pale brown, and the lower 24 inches is light gray. The subsoil is dark brown fine sand, about 9 inches thick, over black fine sand that extends to a depth of 80 inches or more. The black color of the subsoil is due to the organic matter coating the sand grains.

Included with this soil in mapping are small areas of Albany, Chipley, Leon, Plummer, and Sapelo soils. Also included are soils that are similar to the Hurricane soil but have a loamy subsurface layer. The included soils make up less than 15 percent of the map unit.

This Hurricane soil has a water table at a depth of 20 to 30 inches for 1 to 4 months during most years. Occasionally it rises above 20 inches for short periods. It recedes to a depth of 45 inches or more during dry periods. (See fig. 6, p. 21.) The available water capacity is low throughout. Permeability is rapid in the surface and subsurface layers and moderately rapid in the subsoil. Natural fertility is low. The organic matter content is medium in the surface layer, very low in the subsurface layer, and medium in the subsoil.

The natural vegetation consists of slash pine, water oak and live oak, sawpalmetto, waxmyrtle, pineland threeawn, chalky bluestem, dwarf huckleberry, inkberry, and fetterbush.

Wetness is a severe limitation to use of the soil for cultivated crops; however, many areas are used for crops. Comprehensive water control is needed if the soil is to be used as highly productive cropland. The sandy surface and subsurface layers of this soil allow rapid leaching of nutrients needed by the plants. Also, in dry periods, very little moisture is available to the plants.

Wind erosion is an additional hazard. Minimum tillage reduces erosion and saves energy.

This soil has slight limitations for pasture and hay crops. Improved bermudagrass and bahiagrass grow well if well managed. A drainage system to remove the excess surface water in times of high rainfall is needed. Regular applications of fertilizer and lime are also needed. Grazing should be carefully controlled to maintain plant vigor for best yields.

This soil has high potential for production of pine trees. Equipment limitations and seedling mortality are the main management concerns. Slash pine is the best tree to plant.

The sandy texture and the high water table are moderate to severe limitations to the use of this soil for sanitary facilities and building sites.

This Hurricane soil is in capability subclass IIIw.

27—Ichetucknee fine sand, 2 to 5 percent slopes. This is a somewhat poorly drained, gently sloping soil on small knolls and undulating terrain on erosional uplands. The areas range from 5 to 70 acres and are irregularly shaped.

Typically, the surface layer is gray fine sand about 5 inches thick. The subsurface layer is light gray fine sand with very pale brown splotches about 8 inches thick. The clay subsoil extends to a depth of 55 inches. The upper 26 inches is pale brown with gray, red, and brownish yellow mottles, and the lower 16 inches is yellowish red. Limestone bedrock is at a depth of 55 inches.

Included with this soil in mapping are small areas of Bonneau and Goldsboro soils. Also included are areas of soils that are similar to the Ichetucknee soil, but some have a clayey surface layer, some are saturated for 2 to 4 months because of hillside seepage, and some have bedrock within a depth of 40 inches. The included soils make up about 25 percent of the map unit.

This Ichetucknee soil has a perched water table at a depth of 1 1/2 to 3 feet for 1 to 4 months. The soil is saturated after heavy rains. The available water capacity is medium in the surface and subsurface layers and in the lower part of the subsoil. It is low in the upper part of the subsoil. Permeability is rapid in the surface and subsurface layers and slow in the subsoil. Natural fertility is moderate. The organic matter content is moderate in the surface layer and moderately low in the subsurface layer and subsoil.

The natural vegetation consists of laurel oak and water oak, ironwood, slash pine, wild cherry, poison-ivy, sparkleberry, wild grape, and blackberry. In many areas, the soil is planted to bahiagrass or Coastal bermudagrass.

Wetness, the hazard of erosion, and a restricted root zone very severely limit the use of this soil for cultivated crops. Erosion control and drainage are needed. The soil is not suitable for terracing, so erosion control requires the use of vegetative cover. Row crops should be planted in narrow strips that alternate with wider strips of cover crops. Cover crops should be left on the land at least three-fourths of the time. All crop residue should be left on the ground. Applications of fertilizer and lime are needed for best yields. Minimum tillage reduces erosion and saves energy.

This soil has moderate limitations for pasture. Coastal bermudagrass and bahiagrass are moderately adapted to this soil. They need applications of fertilizer and lime and protection from overgrazing to maintain good plant growth and to maintain a good plant cover.

This soil has high potential for the production of trees. Equipment limitations are the main management concerns. Slash and loblolly pines are the best trees to plant.

The clayey texture and the high water table moderately to severely limit the use of this soil for sanitary facilities and building sites.

This Ichetucknee soil is in capability subclass IVe.

28—Ichetucknee fine sand, 5 to 8 percent slopes. This is a somewhat poorly drained, sloping soil on upland hillsides. The areas of this soil range from 3 to 20 acres and are irregularly shaped.

Typically, the surface layer is grayish brown fine sand about 4 inches thick. It is underlain by 3 inches of dark grayish brown fine sand. The subsoil is yellowish brown clay in the top 9 inches; mottled, pale brown, yellowish brown, gray, and yellowish red clay in the next 22 inches; gray clay with brown and red mottles in the next 17 inches; and mottled gray, yellowish brown, and red clay to a depth of 75 inches. Limestone bedrock is at a depth of 75 inches.

Included with this soil in mapping are small areas of Goldsboro and Ocilla soils. Also included are small areas of poorly drained, sloping soils that have a clayey surface layer and some soils that have bedrock within a depth of 40 inches. In many of these areas, the surface layer is clay because the original sandy surface layer has eroded away. The included soils make up about 20 percent of the map unit.

This Ichetucknee soil has a perched water table at a depth of 1 1/2 to 3 feet for 1 to 2 months. This soil is usually saturated because of seepage. The available water capacity is medium in the surface and subsurface layers and in the lower part of the subsoil. It is low in the upper part of the subsoil. Permeability is rapid in the surface and subsurface layers and slow in the subsoil. Natural fertility is moderate. The organic matter content is moderate in the surface layer and moderately low in the subsurface layer and subsoil.

The natural vegetation consists of laurel oak and water oak, ironwood, slash pine, wild cherry, poison-ivy, sparkleberry, wild grape, and blackberry. Most areas of this soil are planted to pine or are used as improved permanent pasture.

The steep slopes severely limit the use of this soil for cultivated crops. Permanent vegetative cover should be maintained on this soil.

This soil has severe limitations for pasture and hay. Grasses that are adapted to this soil, such as Coastal bermudagrass and bahiagrass, grow moderately well if carefully managed. Grazing must be restricted to maintain a dense cover.

This soil has high potential for production of trees. Equipment limitations are the main management concerns. Slash and loblolly pines are the best trees to plant.

The high water table and the clayey texture are moderate to severe limitations to use of this soil for sanitary facilities and building sites.

This Ichetucknee soil is in capability subclass VIe.

29—Lakeland fine sand, 0 to 5 percent slopes. This is an excessively drained, nearly level to gently sloping soil on broad, slightly elevated ridges. The areas range from 8 to 1,500 acres.

Typically, the surface layer is grayish brown fine sand about 6 inches thick. Below that, in sequence, there is, to a depth of 20 inches, light yellowish brown fine sand; to a depth of 55 inches, very pale brown fine sand with light yellowish brown splotches; and to a depth of 80 inches or more, very pale brown fine sand with yellow mottles.

Included with this soil in mapping are small areas of Alpin, Blanton, Troup, and Chipley soils. Also included are soils that are similar to the Lakeland soil except that they have limestone deposits within a depth of 80 inches. The included soils make up less than 10 percent of the map unit.

This Lakeland soil does not have a water table within a depth of 80 inches at any time. The available water capacity is low. Permeability is rapid. Natural fertility and the content of organic matter are very low.

The natural vegetation consists of blackjack, turkey, and post oaks, poison oak, pricklypear, persimmon, cherry, sumac, slash pine, and chinkapin.

This Lakeland soil has very severe limitations for cultivated crops. Intensive soil management is necessary. Droughtiness and rapid leaching of plant nutrients reduce the variety of crops that can be grown and also reduce the potential yields of adapted crops. Crop rotations should include close-growing cover crops at least three-fourths of the time. All crop residue should be left on the ground. Irrigation and fertilization and liming are usually feasible. Minimum tillage reduces erosion and reduces the loss of moisture in the surface layer.

This soil has moderate limitations for improved pasture. Deep-rooting plants, such as coastal bermudagrass and bahiagrass, are well adapted to this soil, but yields are reduced by periodic drought. Regular applications of fertilizer and lime are needed for best yields.

The Lakeland soil has a moderately high potential for production of slash and longleaf pines. Equipment limitations, seedling mortality, and droughtiness are the main management concerns. Slash and loblolly pines are the best trees to plant.

The sandy texture severely limits the use of this soil for most sanitary facilities. The limitations to use of the soil as septic tank absorption fields are slight. Because of the sandy texture, cutbanks in shallow excavations can cave in. Droughtiness is a limitation to use of the soil for lawns and landscaping.

This Lakeland soil is in capability subclass IVs.

30—Lakeland fine sand, 5 to 12 percent slopes. This is an excessively drained, sloping to strongly sloping soil on broad, slightly elevated ridges and around depressions. The areas range from about 5 to 40 acres and are irregularly shaped.

Typically, the surface layer is brown fine sand about 3 inches thick. The subsurface layer is fine sand and extends to a depth of 80 inches or more. The upper 41 inches is brownish yellow; the next 29 inches is brownish yellow with common uncoated sand grains; and the lowermost 7 inches is light yellowish brown with many uncoated sand grains.

Included with this soil in mapping are small areas of the Alpin, Blanton, and Chipley soils. Also included are soils that are similar to the Lakeland soil except that they have deep limestone within a depth of 80 inches. The included soils make up less than 10 percent of the map unit.

This Lakeland soil does not have a water table within a depth of 80 inches. The available water capacity is low throughout the soil. Permeability is rapid. The natural fertility and organic matter content are very low.

The natural vegetation consists of blackjack, turkey, and post oak; poison-oak; pricklypear; persimmon; cherry; sumac; chinkapin; and longleaf and slash pine.

Droughtiness, the very low fertility, the steepness of the slope, and the hazard of erosion severely limit the use of this soil for cultivated crops.

This soil has moderate limitations for pasture. Deep-rooting plants, such as Coastal bermudagrass and bahiagrass, are well adapted to this soil, but yields are reduced by periodic droughts. Regular applications of fertilizer and lime are needed, and grazing should be controlled to maintain plant vigor for the highest yields.

The Lakeland soil has a moderately high potential for production of pine trees. Equipment limitations, seedling mortality, and plant competition are the main management concerns. Slash and loblolly pines are the best trees to plant.

Slope and the sandy texture are moderate to severe limitations to use of the soil for sanitary facilities and building site development.

This Lakeland soil is in capability subclass VIs.

31—Leefield fine sand. This is a nearly level, somewhat poorly drained soil on small flats and in gently undulating areas. The areas range from 3 to 40 acres and are mostly circular. The slope ranges from 0 to 2 percent.

Typically, the fine sand surface layer is 8 inches thick. The upper 5 inches is dark gray, and the lower 3 inches is dark grayish brown. The fine sand subsurface layer is 19 inches thick. The upper 12 inches is yellowish brown; the next 7 inches is light yellowish brown with light gray and yellowish brown mottles. The subsoil extends to a depth of 80 inches or more. From 27 to 31 inches it is light yellowish brown sandy loam; the next 14 inches is pale brown sandy clay loam; the next 20 inches is light gray sandy clay loam; and the lowermost 15 inches is brownish yellow, gray, light gray, and red mottled sandy clay loam.

Included with this soil in mapping are small areas of the Albany, Pelham, Mascotte, and Ocilla soils. Also included are soils that are similar to the Leefield soil but have organic-stained layers below the surface layer. The included soils make up less than 15 percent of the map unit.

This Leefield soil has a water table at a depth of 18 to 30 inches for about 4 months during most years. The water table is at a depth of 30 to 60 inches for about 4 months and is below a depth of 60 inches during the remainder of the year. The available water capacity is low in the surface and subsurface layers and medium in the subsoil. Permeability is rapid in the surface layer, moderate in the subsurface layer, and moderately slow in the subsoil. The natural fertility and organic matter content are low.

The natural vegetation consists of live, water, and laurel oak; slash pine; inkberry; waxmyrtle; bluestem; pineland threeawn, and smilax.

Wetness severely limits the use of this Leefield soil for cultivated crops. This soil is suited to some cultivated crops, but the choice of crops is limited by the high water table. Tile drains or open ditches are needed to remove excess water during the rainy seasons. Row crops should be rotated with cover crops. Cover crops should be grown at least two-thirds of the time. Soil-improving cover crops and all other crop residue should be left on the soil. Good seedbed preparation and applications of fertilizer and lime are required for best yields.

This soil has slight limitations for pasture. Such grasses as Coastal bermudagrass and bahiagrass grow well with good management. Most legumes are moderately adapted to this soil. Regular applications of fertilizer and lime and a carefully controlled grazing system maintain plant vigor for best yields.

The potential of this soil for production of pine trees is moderately high. Equipment limitations and seedling mortality are the main management concerns. Slash pine and loblolly pine are the best trees to plant.

The high water table and the sandy texture are moderate to severe limitations for use of this soil for sanitary facilities and building sites.

This Leefield soil is in capability subclass IIw.

32—Leon fine sand. This is a poorly drained, nearly level soil in broad flatwoods and in areas adjacent to wet depressions and drainageways on the uplands. The areas range from 2 to 900 acres and are irregularly shaped. The slope ranges from 0 to 2 percent.

Typically, the surface layer is black fine sand about 8 inches thick. The fine sand subsurface layer extends to a depth of 19 inches and is gray. The fine sand subsoil extends to a depth of 80 inches or more. The upper part of the subsoil extends to a depth of 27 inches. The upper 4 inches is black, and the next 4 inches is very dark brown. This layer is coated with organic matter. The lower part of the subsoil is dark yellowish brown to a depth of 54 inches and, below that, dark brown fine sand over black fine sand that is coated with organic matter.

Included with this soil in mapping are small areas of Electra Variant, Mascotte, Sapelo, Plummer, and Hurricane soils. Also included are small areas of soils that are similar to the Leon soil, but some are in higher positions on the landscape and are better drained and some soils are ponded during wet periods. The included soils make up less than 15 percent of the map unit.

This Leon soil has a water table at a depth of 10 to 40 inches for more than 9 months in most years. The water table is at a depth of less than 10 inches for 1 to 4 months during periods of heavy rains but recedes to a depth of more than 40 inches during very dry seasons. The available water capacity is high in the surface layer, very low in the subsurface layer, medium in the layer between the upper and lower parts of the subsoil, and low in the upper and lower parts of the subsoil. Permeability is rapid in the surface layer and moderate to moderately rapid in the rest of the soil. Natural fertility is low. The organic matter content is high in the surface layer, moderately low in the subsurface layer, and moderate in the subsoil.

The natural vegetation consists of longleaf and slash pine, dwarf huckleberry, gallberry, sawpalmetto, fetterbush, waxmyrtle, deertongue, blackberry, and brackenfern. Grasses include chalky and broomsedge bluestem, indiangrass, panicum, pineland threeawn, and sedges.

Wetness, restricted root zone, and low natural fertility very severely limit the use of this Leon soil for cultivated crops. The choice of crops is limited unless very intensive management is followed. With good water control and soil improvement these soils are suited to a few crops, such as vegetables. Row crops should be rotated with soil-improving cover crops, which should be grown at least three-fourths of the time. Minimum tillage

reduces moisture loss during droughty periods. All crop residue and soil-improving cover crops should be left on the soil. Seedbed preparation should include bedding of rows. Fertilizer and lime are needed for best yields. Irrigation may be needed in dry seasons.

This soil has moderate limitations for pasture and hay crops. Coastal bermudagrass, improved bahiagrass, and several legumes are adapted to this soil. Water control is needed for plant establishment and to remove excess water during heavy rains. Regular applications of fertilizer and lime are needed, and grazing should be controlled to maintain plant vigor for best yields.

This soil has a moderate potential for production of pine trees. Excessive wetness is the main limitation. Equipment limitations, seedling mortality, windthrow hazard, and plant competition are the main management concerns. Trees should be planted in bedded rows. Slash pine is the best tree to plant.

The sandy texture and the high water table severely limit the use of this soil for sanitary facilities and building sites.

This Leon soil is in capability subclass IVw.

33—Leon fine sand, occasionally flooded. This is a poorly drained, nearly level soil in broad areas in the flatwoods along river flood plains. The areas range from 10 to 100 acres and are irregularly elongated. The slope ranges from 0 to 2 percent.

Typically, the surface layer is grayish brown fine sand about 3 inches thick. The fine sand subsurface layer extends to a depth of 12 inches and is light brownish gray. The fine sand subsoil extends to a depth of 23 inches. The upper 4 inches is very dark gray; the next 4 inches is dark brown; and the lower 3 inches is very dark grayish brown. The fine sand substratum extends to a depth of 80 inches or more. The upper 3 inches is dark brown, the next 28 inches is yellowish brown, and the lower 26 inches is very pale brown.

Included with this soil in mapping are small areas of Bigbee, Pelham, Plummer, Electra Variant, and Mascotte soils. These soils make up less than 25 percent of the map unit.

This Leon soil has a water table within 10 inches of the surface for 1 to 4 months in most years. The water table is at a depth of 10 to 40 inches during the rest of the year, except during very dry seasons when it recedes to a depth of more than 40 inches. The available water capacity is high in the surface layer, very low in the subsurface layer, medium in the layer between the upper and lower parts of the subsoil, and low in the upper and lower parts of the subsoil. Permeability is rapid in the surface layer and moderate to moderately rapid in the rest of the soil. The natural fertility is low. The organic matter content is high in the surface layer, moderately low in the subsurface layer, and moderate in the subsoil.

The natural vegetation consists of longleaf and slash pine, dwarf huckleberry, gallberry, sawpalmetto, waxmyrtle, deertongue, blackberry, fetterbush, huckleberry, and brackenfern. Grasses include chalky and broomsedge bluestem, indiangrass, panicum, pineland threeawn, and sedges.

Flooding, wetness, restricted root zone, and low natural fertility very severely limit the use of this Leon soil for cultivated crops. The choice of crops is limited unless very intensive management is followed. With good water control and soil improvement these soils are suited to a few crops, such as vegetables. Row crops should be rotated with soil-improving cover crops that are kept on the land at least three-fourths of the time. All other crop residue should be left on the soil. Seedbed preparation should include bedding of rows. Fertilizer and lime are needed. Irrigation may be needed in dry seasons. Minimum tillage reduces moisture loss during droughty periods.

This soil has moderate limitations for pasture and hay crops. Coastal bermudagrass, improved bahiagrass, and several legumes are moderately adapted to this soil. Water control is needed for plant establishment and to remove excess water during heavy rains. Regular applications of fertilizer and lime are needed, and grazing should be controlled to maintain plant vigor for best yields.

This soil has a moderate potential for production of pine trees. Excessive wetness is the main limitation. Equipment limitations, seedling mortality, windthrow hazard, and plant competition are the main management concerns. Trees should be planted in bedded rows. Slash pine is the best tree to plant.

Flooding, the high water table, and the sandy texture severely limit the use of this soil for sanitary facilities and building sites.

This Leon soil is in capability subclass IVw.

34—Lucy loamy fine sand, 2 to 5 percent slopes. This is a well drained, gently sloping soil on broad upland ridges. The areas range from 5 to 40 acres and are irregular in shape.

Typically, the surface layer is dark brown loamy fine sand about 6 inches thick. The subsurface layer, in sequence downward, is yellowish brown loamy sand, strong brown loamy fine sand, and strong brown loamy sand. The fine sandy loam subsoil is yellowish red and extends to a depth of 80 inches or more.

Included with this soil in mapping are small areas of Blanton, Bonneau, Orangeburg, and Troup soils. Also included are small areas of soils that are similar to the Lucy soil but have rock within a depth of 60 inches. The included soils make up about 15 percent of the map unit.

The water table is below a depth of 72 inches at all times. The available water capacity is medium in the surface layer, low in the subsurface layer, and medium in the subsoil. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. Natural fertility and the organic matter content are low.

The natural vegetation consists of maple, hickory, southern red oak and live oak, white ash, and smilax. Most areas are cultivated or are planted to pasture.

This Lucy soil has moderate limitations for cultivated crops. It can be cultivated safely with ordinary good farming methods, but droughtiness and rapid leaching of plant nutrients limit the choice of crops and the potential yields of crops that are adapted to this soil. With good management, crops, such as corn, soybeans, peanuts, and tobacco, can be grown. Crop rotations should include cover crops at least half the time. The cover crops and all residue of other crops should be left on the ground. Good seedbed preparation and regular applications of fertilizer and lime are needed for best yields. Irrigation of some high-value crops is usually feasible where irrigation water is readily available.

This soil has slight limitations for pasture and hay crops. Grasses produce well when the soil is fertilized and limed. Grazing should be controlled to maintain plant vigor for maximum yields and for a good ground cover.

This soil has moderately high potential for production of trees. Seedling mortality, equipment limitation, and plant competition are the main management concerns. Slash, longleaf, and loblolly pines are the best trees to plant.

Seepage severely limits the use of this soil for sewage lagoons and area-type sanitary landfills. The limitations are moderate for shallow excavations. Cutbanks are subject to cave in. Droughtiness is a limitation to use of the soil for lawns and landscaping.

This Lucy soil is in capability subclass IIs.

35—Lucy loamy fine sand, 5 to 8 percent slopes. This is a well drained, sloping soil on broad to narrow sides of upland ridges. The areas range from 5 to 40 acres and are irregular in shape.

Typically, the surface layer is dark brown loamy fine sand about 6 inches thick. The subsurface layer is yellowish brown loamy fine sand 10 inches thick. Below this is strong brown loamy fine sand to a depth of 20 inches. The subsoil extends to a depth of 80 inches or more. The upper 7 inches is strong brown fine sandy loam. It is underlain by yellowish red sandy clay loam.

Included with this soil in mapping are small areas of Blanton, Bonneau, Orangeburg, and Troup soils. Also included are small areas of soils that are similar to the Lucy soil, but some have rock within a depth of 60 inches and some are sandy clay loam to a depth of 20 inches. The included soils make up about 20 percent of the map unit.

The water table is at a depth of more than 72 inches at all times. The available water capacity is medium in the surface layer, low in the subsurface layer, and medium in the subsoil. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. The natural fertility and the organic matter content are low.

The natural vegetation consists of maple, hickory, southern red oak, live oak, white ash, and smilax. Most areas are cultivated or are planted to pasture.

Poor soil qualities and the erosion hazard severely limit the use of this Lucy soil for cultivated crops. Droughtiness and rapid leaching of plant nutrients severely limit the use of this soil for most row crops. Because of the hazard of erosion, row crops should be planted in strips that alternate with wider strips of close-growing, soil-improving crops. Close-growing crops should be kept on the land at least two-thirds of the time. Applications of fertilizer and lime and irrigation are needed, particularly for high-value crops. Using minimum tillage reduces erosion and conserves moisture.

This soil has moderate limitations for pasture and hay. Good stands of grass can be produced by fertilizing and liming the soil. Controlled grazing is needed to maintain plant vigor and to provide a good protective ground cover. In the more sloping areas, erosion control practices are needed.

This soil has moderately high potential for the production of trees. Seedling mortality, equipment limitations, and plant competition are the main management concerns. Slash, longleaf, and loblolly pines are the best trees to plant.

Seepage severely limits the use of this soil for sewage lagoons and area-type sanitary landfills. The limitations are moderate for shallow excavations. Cutbanks are subject to cave in. The slope moderately limits the use of this soil for small commercial buildings. Droughtiness moderately limits the use of the soil for lawns and landscaping.

This Lucy soil is in capability subclass IIIs.

36—Mandarin fine sand. This is a somewhat poorly drained, nearly level soil in slightly elevated flatwood areas. The individual areas are mostly irregular in shape and range from 20 to 200 acres. The slope ranges from 0 to 2 percent.

Typically, the surface layer is gray fine sand about 5 inches thick. The subsurface layer is light gray fine sand about 11 inches thick. The upper part of the subsoil is very dark brown, dark reddish brown, and dark brown fine sand that extends to a depth of 26 inches. The sand grains in this layer are well coated with organic matter. The next 7 inches is dark yellowish brown fine sand, and below that, there is light yellowish brown, light gray, and grayish brown fine sand to a depth of 64 inches. The lower part of the subsoil extends to a depth of 80 inches. It is very dark brown fine sand, and the sand grains are coated with organic matter.

Included with this soil in mapping are small areas of Albany, Chipley, Leon, Mascotte, Pelham, Plummer, Hurricane, and Sapelo soils. These soils make up about 15 percent of the map unit.

The water table is at a depth of 20 to 40 inches for 4 to 6 months and at a depth of more than 40 inches for 6

to 8 months. The water table may rise above 20 inches during rainy periods. Permeability is rapid in the surface and subsurface layers and in the layer between the upper and lower parts of the subsoil. It is moderate in the subsoil. The available water capacity and the organic matter content are very low in the surface and subsurface layers and moderate in the subsoil. Natural fertility is very low.

The natural vegetation consists of slash pine, running oak, and sawpalmetto. Low panicums and pineland threeawn are the dominant grasses. All areas of this soil are used as woodland.

Very low fertility and droughtiness in the rooting zone very severely limit the use of this Mandarin soil for cultivated crops. Crop residue and cover crops should be left on the ground. Regular applications of lime and fertilizer are needed, along with irrigation in dry seasons.

This soil has moderate limitations for pasture. Grasses, such as Coastal bermudagrass and bahiagrass, produce fair growth if fertilized. Clovers are not adapted to this soil.

The potential of this soil for production of trees is moderate. Droughtiness is the main limitation. Management problems include severe seedling mortality and moderate equipment limitations. Slash pine and sand pine are the best trees to plant.

The high water table and the sandy texture are moderate to severe limitations to use of this soil for sanitary facilities and building site development.

The Mandarin soil is in capability subclass VIs.

37—Mascotte fine sand. This is a poorly drained, nearly level soil around wet depressions on the uplands and throughout the flatwoods. The areas range from 3 to 1,000 acres and are irregularly elongated in shape. The slope ranges from 0 to 2 percent.

Typically, the surface layer is black fine sand about 6 inches thick. It has many uncoated sand grains. The subsurface layer is gray fine sand that extends to a depth of 15 inches. The upper part of the subsoil is fine sand that is coated with organic matter, and it extends to a depth of 25 inches. The upper 4 inches is black, and the next 6 inches is dark reddish brown. A 12-inch-thick layer of fine sand separates the upper and lower parts of the subsoil. It is yellowish brown in the upper 10 inches and black in the lower 2 inches. The lower part of the subsoil extends to a depth of 67 inches. The upper 18 inches is light brownish gray fine sandy loam with brownish yellow and yellowish brown mottles; the next 12 inches is gray fine sandy loam with reddish yellow mottles. Below that, the substratum is light olive gray loamy sand and extends to a depth of 80 inches or more.

Included with this soil in mapping are small areas of Leon, Ocilla, Olustee, Pelham, and Sapelo soils. These soils make up less than 20 percent of the map unit.

This Mascotte soil has a water table within a depth of 10 inches for 1 to 4 months during most years. The water table is at a depth of 10 to 40 inches for up to 6 months. It recedes to a depth of more than 40 inches during the driest seasons for 1 to 3 months. (See fig. 6, p. 21.) The available water capacity is low in the surface and subsurface layers, in the layer between the upper and lower parts of the subsoil, and in the substratum. It is high in the upper part of the subsoil and medium in the lower part. Permeability is rapid in the surface layer, moderate in the subsurface layer, and rapid in the upper part of the subsoil and in the layer between the upper and lower parts of the subsoil. It is moderate in the substratum and in the lower part of the subsoil. The organic matter content is moderately low, and natural fertility is low.

The natural vegetation consists of longleaf pine and slash pine, dwarf huckleberry, inkberry, fetterbush, waxmyrtle, sawpalmetto, blackberry, brackenfern, and deertongue. Grasses include chalky and broomsedge bluestems, indiangrass, panicums, pineland threeawn, and sedges. Most areas of this soil are used for woodland.

Wetness severely limits the use of this Mascotte soil for cultivated crops. Few crops are adapted to this soil unless intensive water control is used. If a water-control system to remove excess water in wet seasons and provide subsurface irrigation in dry seasons is used, this soil is well suited to many kinds of flower and vegetable crops. This soil responds well to fertilizer and responds rapidly to artificial drainage. Good management includes crop rotations and water control. Crop rotations should include close-growing, soil-improving crops that are kept on the land at least two-thirds of the time. Crop residue should be left on the soil. Fertilizer and lime should be added according to the need of the crop.

This soil has moderate limitations for pasture and hay. Coastal bermudagrass and bahiagrass are moderately well adapted to this soil. Drainage is needed to remove excess surface water in times of heavy rains, and the soil needs regular applications of lime and fertilizer. Grazing should be carefully controlled to maintain healthy plants for the highest yields.

This soil has moderately high potential for production of slash, loblolly, and longleaf pines. Excessive water in the soil is the main limitation. Seedbed rows should be bedded. Equipment limitations, seedling mortality, and plant competition are the main management concerns. Slash and loblolly pines are the best trees to plant.

The high water table and the sandy texture severely limit the use of this soil for sanitary facilities and building sites.

This Mascotte soil is in capability subclass IVw.

38—Mascotte fine sand, depressional. This is a nearly level, poorly drained soil in concave depressions and drainageways. The areas range from 25 to 250

acres and are irregularly elongated in shape. The slope ranges from 0 to 2 percent.

Typically, the surface layer is black fine sand 6 inches thick. It has few uncoated sand grains. The subsurface layer is gray fine sand that extends to a depth of 20 inches. The upper part of the subsoil to a depth of 36 inches is fine sand. The upper 4 inches is very dark brown with sand grains coated with organic matter; the next 6 inches is dark brown with most sand grains coated with organic matter; and the lower 6 inches is dark brown with weakly cemented, dark grayish brown mottles. The lower part of the subsoil extends to a depth of more than 80 inches. The upper 8 inches is light brownish gray fine sandy loam with light gray, very pale brown, and reddish brown mottles; the next 18 inches is light gray sandy clay loam with reddish brown, gray, light yellowish brown, and very pale brown mottles; and the lower 18 inches is mottled gray, very pale brown, yellowish brown, and yellowish red fine sandy loam.

Included with this soil in mapping are small areas of Leon, Pelham, Plummer, Sapelo, and Surrency soils. These soils make up less than 15 percent of the map unit.

This Mascotte soil is ponded for up to 6 months in most years during the rainy season. At other times, the water table is within a depth of 15 inches for 6 to 8 months during most years. It recedes to a depth of more than 40 inches for very short periods during dry seasons. The available water capacity is very low to low in the surface and subsurface layers and medium in the subsoil. Permeability is rapid in the surface and subsurface layers, moderately rapid in the upper part of the subsoil and slow in the lower part of the subsoil. The organic matter content is moderate, and natural fertility is low.

The natural vegetation consists of waxmyrtle, inkberry, fetterbush, scattered sawpalmetto, slash pine, and a few cypress trees. Understory plants include pineland threeawn and brackenfern.

Prolonged ponding and the lack of suitable outlets for water-control systems severely limit the use of this Mascotte soil for cultivated crops and for improved pasture grasses.

This soil has moderate potential for production of pine trees. The main management concerns are equipment limitations and seedling mortality. Where outlets are available, a good water control system can be used to remove excess water. Slash pine is the best tree to plant.

Ponding and the sandy texture severely limit the use of this soil for sanitary facilities and building sites.

This Mascotte soil is in capability subclass VIIw.

39—Mascotte fine sand, occasionally flooded. This is a poorly drained, nearly level soil on the flood plains of rivers and streams. This soil is flooded occasionally as a result of heavy and prolonged rains *(7)*. A sharp rise in the water level causes the rivers and streams to overflow. The lowlands remain flooded for approximately 30 days and the depressions, which drain by percolation and seepage, for longer periods. This soil has been flooded in March or April in about 1 year out of every 10.

Typically, the surface layer is dark gray fine sand about 3 inches thick. It has many uncoated sand grains. The subsurface layer is light gray fine sand and extends to a depth of 19 inches. The upper part of the subsoil is fine sand and extends to a depth of 34 inches. The upper 3 inches is dark brown, and most sand grains are coated with organic matter; the next 6 inches is brown, and most sand grains are coated with organic matter; and the lower 6 inches is brown with grayish brown sand pockets and brownish organic matter coated sand grains. A 4-inch-thick layer of fine sand separates the upper and lower parts of the subsoil. It is light brownish gray with brown mottles. The lower part of the subsoil extends to a depth of more than 80 inches. The upper 7 inches is light brownish gray fine sandy loam with light gray, very pale brown, and reddish brown mottles; the next 14 inches is light gray sandy clay loam with reddish brown, gray, light yellowish brown, and very pale brown mottles; and the next 21 inches is mottled gray, very pale brown, yellowish brown, and strong brown sandy clay loam.

Included with this soil in mapping are small areas of Pelham, Plummer, and Leon soils, and occasionally flooded Electra Variant soils. Also included are small areas of soils that are similar to the Mascotte soil but have a clayey subsoil with mica flakes and chunks of coral or that are in small depressions and are ponded for several months during rainy seasons. The included soils make up less than 25 percent of the map unit.

This Mascotte soil has a water table within a depth of 10 inches for 1 to 4 months during most years. The water table is at a depth of 10 to 40 inches for up to 6 months and at a depth of more than 40 inches the remainder of the year.

The available water capacity is very low in the surface and subsurface layers, in the layer between the upper and lower parts of the subsoil, and in the substratum. It is medium in the upper and lower parts of the subsoil. Permeability is rapid in the surface and subsurface layers and in the layer between the upper and lower parts of the subsoil. It is moderately rapid in the upper part of the subsoil and slow in the lower part. The organic matter content is moderately low, and natural fertility is low.

The natural vegetation consists of longleaf and slash pine, huckleberry and dwarf huckleberry, blueberry, gallberry, fetterbush, waxmyrtle, sawpalmetto, blackberry, brackenfern, and deertongue. Grasses include chalky and broomsedge bluestems, indiangrass, panicum, pineland threeawn, and sedges.

Wetness and occasional flooding severely limit the use of this Mascotte soil for cultivated crops.

This soil has moderate limitations for pasture and hay crops. Coastal bermudagrass and bahiagrass are moderately well adapted to this soil. Drainage is needed to remove excess surface water during heavy rains. Regular applications of lime and fertilizer are needed, and grazing should be carefully controlled to maintain plant vigor for high yields.

This soil has moderately high potential for production of slash, loblolly, and longleaf pines. Excessive water in the soil is the main limitation. Trees should be planted in bedded rows. Equipment limitations, seedling mortality, plant competition, and the hazard of flooding are the main management concerns. Slash and loblolly pines are the best trees to plant.

The high water table, flooding, and sandy texture severely limit the use of this soil for sanitary facilities and building sites.

This Mascotte soil is in capability subclass Vw.

40—Ocilla fine sand, 0 to 5 percent slopes. This is a somewhat poorly drained, gently sloping soil on undulating landscapes in the uplands. The areas range from 10 to 200 acres and are circular to irregularly elongated.

Typically, the surface layer is dark gray fine sand about 9 inches thick. The fine sand subsurface layer extends to a depth of 32 inches. In sequence, the upper 10 inches is grayish brown, the next 7 inches is light brownish gray, and the next 6 inches is pale brown. The subsoil extends to a depth of 68 inches. The upper 20 inches is mottled light brownish gray, strong brown, and pale brown fine sandy loam. The lower 16 inches is gray fine sandy loam with strong brown and pale brown mottles. The substratum, to a depth of 80 inches or more, is light gray clay with strong brown and yellowish red mottles.

Included with this soil in mapping are small areas of Albany, Blanton, Bonneau, Pelham, and Plummer soils. Also included are areas of soils that are similar to the Ocilla soil but that have ironstone fragments on the surface or have as much as 20 percent coarse fragments in the profile. The included soils make up about 25 percent of this map unit.

This Ocilla soil has a water table at a depth of 15 to 30 inches for 2 to 6 months in most years. It is below a depth of 60 inches for 3 months in most years, and it is at a depth of 30 to 60 inches the remainder of the year. The available water capacity is low in the surface and susurface layers and medium in the subsoil. Permeability is rapid in the surface and subsurface layers, moderate in the subsoil, and very slow in the substratum. Natural fertility and the organic matter content are low.

The natural vegetation consists of laurel oak, longleaf pine, and slash pine. The understory vegetation includes waxmyrtle, inkberry, fetterbush, smilax, and pineland threeawn.

This Ocilla soil has severe limitations for cultivated crops. The high water table adversely affects plant growth and trafficability in wet seasons. Small, shallow depressions are particularly subject to this problem. Proper management of surface water is needed to overcome these limitations. The rapid permeability of the surface and subsurface layers also limits the use of this soil for cultivated crops. These sandy layers have a low available water capacity. The sandy surface is also subject to wind and water erosion. Close-growing crops and cover crops help to control erosion. This soil responds moderately well to proper applications of lime and fertilizer. Windbreaks and minimum tillage reduce erosion.

This soil has moderate limitations for pasture and hay. Such pasture plants as Coastal bermudagrass and bahiagrass are well adapted to this soil. Applications of fertilizer and lime and controlled grazing are needed to maintain plant vigor for maximum yields.

This soil has moderately high potential for production of trees. Trafficability for site preparation may be poor in wet years. Slash and loblolly pines are the best trees to plant.

The high water table and the sandy texture are moderate to severe limitations to the use of this soil for most sanitary facilities and for building sites. Wetness may cause some problems, but this soil is fairly suited to use as daily cover for landfills.

This Ocilla soil is in capability subclass IIIw.

41—Oleno clay. This is a poorly drained, nearly level soil on the flood plains of rivers and creeks. The areas range from 20 to 600 acres and are elongated in shape. The concave slopes are less than 2 percent.

Typically, the surface layer and subsoil are alternating layers of dark gray and gray clay to a depth of 32 inches. Below that depth, in sequence, there is 10 inches of grayish brown fine sandy loam, 13 inches of gray fine sandy loam, 16 inches of dark gray fine sandy loam, and 6 inches of gray sandy clay loam. Below that, greenish gray clay extends to a depth of 80 inches or more.

Included with this soil in mapping are small areas of Surrency and Plummer soils. Also included are small areas of soils that are similar to the Oleno soil but have limestone within a depth of 20 inches. The included soils make up about 20 percent of the map unit.

This Oleno soil has a water table at a depth of 6 to 18 inches for 6 to 8 months and at a depth below 18 inches during the remainder of the year. This soil is flooded by the river or creek for periods of up to a month in about 1 year in 10. The available water capacity is very high. Permeability is slow in the upper layers and moderate in the lower layers. Natural fertility and the organic matter content are moderate.

The natural vegetation consists of black tupelo, cypress, sweetgum, cabbage palmetto, red maple,

sweetbay magnolia, and hickory. The understory plants include poison-ivy and longleaf uniola.

The clayey surface, high water table, and flooding severely limit the use of this Oleno soil for cultivated crops.

This soil has very severe limitations for use as pasture. It needs good management, including extensive seedbed preparation and drainage.

This soil, under high-level management, has high potential for production of slash pine. However, it may not be economically feasible to grow trees on this soil. Furthermore, the flooding hazard has to be considered. Slash and loblolly pines are the best trees to plant.

Flooding and the high water table severely limit the use of this soil for sanitary facilities and building sites.

This Oleno soil is in capability subclass Vw.

42—Olustee fine sand, thick surface. This is a poorly drained, nearly level soil in flatwood areas. The areas range from 15 to 1,200 acres. The slope ranges from 0 to 2 percent.

Typically, the fine sand surface layer is about 18 inches thick. The upper 5 inches is black, and the lower part is very dark gray. The upper part of the subsoil is dark reddish brown fine sand about 5 inches thick. This layer is coated with organic matter. The middle part, from a depth of 23 to 37 inches, is light gray fine sand. The lower part of the subsoil to a depth of 63 inches is light brownish gray fine sandy loam. The substratum is light brownish gray loamy fine sand to a depth of 80 inches or more.

Included with this soil in mapping are small areas of Mascotte and Pelham soils. These soils make up about 25 percent of the map unit.

This Olustee soil has a water table at the surface for periods of up to 1 month during rainy seasons in most years. The water table is at a depth of 10 to 20 inches for 1 to 4 months and at a depth below 40 inches during dry seasons. The available water capacity is low in the surface layer and in the upper and lower parts of the subsoil and very low in the other layers. Permeability is moderate in the upper and lower parts of the subsoil and rapid in the other layers. The organic matter content is moderately low, and natural fertility is low.

The natural vegetation consists of slash pine and longleaf pine, sawpalmetto, inkberry, waxmyrtle, pineland threeawn, pitcherplant, beaked panicum, fetterbush, and chalky and broomsedge bluestem.

Wetness severely limits the use of this Olustee soil for cultivated crops. The choice of crops is limited unless intensive water control is used. If the wetness is eliminated, this soil is suited to truck crops, corn, and soybeans. It responds well to fertilizer and to artificial drainage. Good management includes crop rotation and water control Crop rotations should include close-growing, soil-improving crops, and such crops should be grown at least two-thirds of the time. All crop residue should be left on the soil. Fertilizer and lime should be added according to the needs of the crop.

This soil has moderate limitations for pasture and hay crops. Bermudagrass and bahiagrass are moderately well adapted to this soil and grow well if properly managed. Drainage is needed to remove excess surface water, and the soil needs regular applications of lime and fertilizer. Grazing should be carefully controlled to maintain plant vigor for highest yields.

This soil has a moderately high potential for production of slash and loblolly pines. Excessive wetness is the main limitation. Equipment limitations, seedling mortality, and plant competition are the main management concerns. Sites have to be prepared with care, and bedding generally is required. Slash pine and loblolly pine are the best trees to plant.

The high water table and the sandy texture severely limit the use of this soil for sanitary facilities and building sites.

This Olustee soil is in capability subclass IIIw.

43—Orangeburg loamy fine sand, 2 to 5 percent slopes. This is a well drained, gently sloping soil on knolls and side slopes of uplands. The areas range from about 5 to 50 acres and are irregular in shape.

Typically, the surface layer is brown loamy fine sand about 8 inches thick. The subsoil extends to a depth of 80 inches. In the upper 5 inches, it is yellowish red sandy loam; in the next 38 inches, it is yellowish red sandy clay loam underlain by sandy clay; and in the lower 29 inches, it is mottled strong brown, yellowish red, and gray sandy clay loam.

Included with this soil in mapping are small areas of Troup, Ocilla, Goldsboro, and Bonneau soils. Also included are small areas of soils that are similar to the Orangeburg soil, but some have hard, acid, silica-cemented rock within a depth of 30 inches, some have a sandy loam subsoil, and some have clay surface and subsurface layers. The included soils make up about 25 percent of the map unit.

This Orangeburg soil does not have a water table within a depth of 72 inches. The available water capacity is low in the surface layer and high in the subsoil. Permeability is moderately rapid in the surface layer and upper part of the subsoil and moderate in the lower part of the subsoil. Natural fertility is moderate, and the organic matter content is low.

The natural vegetation consists of water oak and laurel oak, hickory, southern redcedar, red maple, sweetgum, slash pine, longleaf pine, and spruce pine.

This Orangeburg soil has slight limitations for cultivated crops. The hazard of erosion is the main management concern. Under good management, corn, tobacco, soybeans, watermelons, and peanuts produce high yields. Strips of row crops should be alternated with strips of cover crops. Crop rotations should include cover crops at least half the time. Soil-improving cover crops

and all crop residue should be left on the soil. Maximum yields require good seedbed preparation and regular applications of fertilizer and lime. Minimum tillage and windbreaks are needed to reduce erosion and conserve moisture.

This soil has slight limitations for pasture and hay crops. Pasture grasses, such as Coastal bermudagrass and improved bahiagrasses, are well adapted to this soil. They need fertilizer and lime. Controlled grazing helps to maintain plant vigor for highest yields and to maintain a good ground cover.

This soil has high potential for production of pine trees with proper management and site preparation. There are no serious management problems. Slash and loblolly pines are the best trees to plant.

This soil has few limitations for sanitary facilities and building sites. Slope and seepage moderately limit the use of this soil for sewage lagoons.

This Orangeburg soil is in capability subclass IIe.

44—Orangeburg loamy fine sand, 5 to 8 percent slopes. This is a well drained, sloping soil on upland hillsides. The areas range from about 5 to 25 acres and are irregular in shape.

Typically, the surface layer is brown loamy fine sand about 7 inches thick. The subsurface layer is yellowish brown loamy fine sand 5 inches thick over yellowish brown fine sandy loam 3 inches thick. The subsoil is sandy clay loam to a depth of 38 inches. It is yellowish brown with yellow mottles. From a depth of 38 to 51 inches, it is strong brown sandy clay over mottled gray, very pale brown, yellow, and yellowish brown sandy clay.

Included with this soil in mapping are small areas of Troup, Ocilla, Goldsboro, and Bonneau soils. Also included are small areas of soils that are similar to the Orangeburg soil, except that some have hard, acid silica cemented rock within a depth of 30 inches, and some have clay surface and subsurface layers. The included soils make up about 20 percent of the map unit.

This Orangeburg soil generally does not have a water table within a depth of 72 inches. However, the soil may have a perched water table at a depth of 3 to 5 feet for a day or two during rainy seasons. The available water capacity is low in the surface layer and high in the subsoil. Permeability is moderately rapid in the surface layer and upper part of the subsoil and moderate in the lower part of the subsoil. Natural fertility is moderate, and the organic matter content is low.

The natural vegetation consists of water oak and laurel oak, hickory, southern redcedar, maple, sweetgum, slash pine, longleaf pine, and spruce pine.

This Orangeburg soil has moderate limitations for cultivated crops. The hazard of erosion is the main management concern. A wide variety of cultivated crops is well adapted to this soil. Intensive erosion control is needed. Crops should be planted in strips alternating with strips of cover crops. Crop rotations should include cover crops on the soil at least two-thirds of the time. Soil-improving cover crops and all crop residue should be left on the soil. Good seedbed preparation and fertilization and liming are required for maximum yields. Minimum tillage and windbreaks are needed to reduce erosion and to conserve moisture.

This soil has slight limitations for pasture and hay crops. Grasses, such as Coastal bermudagrass and improved bahiagrasses, are well adapted to this soil. Regular applications of fertilizer and lime are needed, and grazing should be controlled to maintain plant vigor for high yields and to maintain a good ground cover.

This soil has high potential for production of pine trees. The hazard of erosion during seedbed preparation is the main management concern. Slash and loblolly pines are the best trees to plant.

This soil has few limitations for sanitary facilities and building sites. Slope and seepage moderately limit the use of this soil for sewage lagoons and small commercial buildings.

This Orangeburg soil is in capability subclass IIIe.

45—Pamlico muck, loamy substratum. This is a very poorly drained, nearly level soil along tributaries of major streams and in drainageways, depressions, and swamps. The areas range from 10 to 300 acres and are circular to irregular in shape. The slope is 1 percent or less.

Typically, the surface layer is black muck to a depth of 24 inches. The substratum is dark grayish brown fine sand to a depth of 48 inches and, below that, dark gray sandy clay loam to a depth of 80 inches or more.

Included with this soil in mapping are small areas of Surrency and Plummer soils. Also included are soils that are similar to the Pamlico soil but have an organic layer more than 40 inches thick. The included soils make up about 25 percent of the map unit.

This Pamlico soil has a water table at a depth of less than 10 inches, or it is covered with water for more than 6 months during most years. The available water capacity is high. Permeability is moderately rapid in the upper 24 inches, rapid in the next 24 inches, and slow below a depth of 48 inches. Natural fertility is moderate. The organic matter content is very high in the organic layer and low in the mineral layers.

The natural vegetation consists of sweetgum, loblollybay, slash pine, waxmyrtle, fetterbush, greenbrier, and wild blackberry.

The high water table and lack of adequate drainage outlets are severe limitations to use of this soil for cultivated crops or improved pasture.

This soil has moderate potential for the production of trees. Equipment limitations and seedling mortality are severe. After seedlings have been established, the fluctuating water reduces survival and growth. Water tupelo is the best tree to plant.

The high water table, flooding, and high organic matter content severely limit the use of this soil for sanitary facilities and building sites.

This Pamlico soil is in capability subclass VIIw.

46—Pamlico, loamy substratum-Dorovan complex. This complex consists of nearly level, organic soils on large submerged wetlands in the northern part of the county. It consists mainly of Pamlico muck, loamy substratum, and Dorovan soils. The soils making up the complex are intermingled in such an intricate pattern that it was not practical to map them separately. The mapped areas range from 200 to 1,800 acres.

A typical mapped area is about 40 percent Pamlico muck, loamy substratum; 35 percent Dorovan soils; about 15 percent Plummer muck, depressional; and about 10 percent Mascotte fine sand, occasionally flooded. The proportion of each soil, however, varies in each mapped area. The poorly drained Plummer soil generally is on the outer edges of the swamps, and the poorly drained Mascotte soil is on knolls in the swamps in an irregular pattern.

Typically, Pamlico muck, loamy substratum, has a black muck surface layer 24 inches thick. The substratum is 24 inches of dark grayish brown fine sand over dark gray sandy loam, which extends to a depth of 80 inches or more.

This Pamlico soil has a water table at a depth of less than 10 inches, or it is covered with water for more than 6 months during most years. The available water capacity is high. Permeability is moderately rapid in the upper 24 inches, rapid in the next layer, and moderately slow below a depth of 48 inches. Natural fertility is moderate.

Typically, Dorovan soils have a very dark brown muck surface layer about 14 inches thick. Below that, dark reddish brown muck extends to a depth of 80 inches or more.

The Dorovan soils have a water table at or above the surface for 6 to 12 months during most years. The available water capacity is very high. Permeability is moderate.

The natural vegetation on the soils of this complex consists dominantly of pond cypress, sweetgum, black tupelo, fetterbush, greenbrier, sweet pepperbush, and blueberry.

Excess wetness and insufficient drainage outlets severely limit the use of these soils for pasture or cultivated crops. These soils are used mainly as habitat for wetland wildlife.

Commercial trees are sparse in most areas, and in some areas there are no trees. The potential productivity for trees is moderate. Slash pine, loblolly pine, water tupelo, and bald cypress are the best trees to plant.

The high water table, flooding, ponding, and high organic matter content severely limit the use of the soils for sanitary facilities and building sites.

These soils are in capability subclass VIIw.

47—Pantego fine sandy loam. This is a very poorly drained, nearly level soil in depressional areas and drainageways. The areas range from 3 to 40 acres and are mostly circular. The slope is less than 1 percent.

Typically, the surface layer is 17 inches thick. The upper 12 inches is black fine sandy loam, and the lower 5 inches is black loamy fine sand. The subsurface layer is 1 inch thick. It is grayish brown fine sand. The subsoil extends to a depth of 80 inches or more. It is light gray and dark gray sandy clay loam with coarse yellowish brown and yellowish red mottles.

Included with this soil in mapping are small areas of Surrency and Plummer soils. Also included are soils that have a sandy surface layer, soils that have clay within a depth of 60 inches, and soils that have rock within a depth of 80 inches. These soils make up less than 15 percent of the map unit.

This Pantego soil has a water table at the surface for 6 months or more during most years. The water table may recede to a depth of 40 to 60 inches during dry periods. This soil is ponded for short periods during rainy seasons. The available water capacity is high. Permeability is moderately rapid in the surface layer and moderate in the subsoil. The natural fertility and the organic matter content are moderate.

The natural vegetation consists of maidencane, water oak, sweetgum, tupelo-gum, and waxmyrtle.

The high water table and lack of drainage outlets severely limit the use of this Pantego soil for cultivated crops or for improved pasture.

This soil has very high potential for production of pine trees, but a water-control system is necessary. Sweetgum, American sycamore, and water tupelo are the best trees to plant. Equipment limitations and seedling mortality are the main management concerns.

The high water table severely limits the use of this soil for sanitary facilities and building sites.

This Pantego soil is in capability subclass VIw.

48—Pelham fine sand. This is a nearly level, poorly drained soil in shallow depressions, on broad low-lying flats in the flatwoods, and in nearly level areas on the uplands. The areas range from 5 to 100 acres and are irregularly shaped. The slope ranges from 0 to 2 percent.

Typically, the surface layer is very dark gray fine sand about 6 inches thick. The subsurface layer is fine sand. In the upper 10 inches it is grayish brown, and in the next 15 inches it is dark gray. The subsoil extends to a depth of 66 inches or more. In the upper 20 inches it is gray sandy clay loam with yellowish brown, brownish yellow, light yellowish brown, gray, and light gray mottles; and in the next 15 inches it is mottled gray, light gray, and yellowish red sandy clay loam. The substratum is gray fine sandy loam with yellowish red mottles.

Included with this soil in mapping are small areas of Plummer, Surrency, Ocilla, Albany, and Mascotte soils. Also included are soils that have a loamy subsoil within a depth of 20 inches and soils that have clay in the upper 20 inches of the subsoil. The included soils make up about 25 percent of the map unit.

This Pelham soil has a water table at a depth of 6 to 18 inches for about 3 months in most years. The water table is at or above the surface for brief periods after heavy rains. The available water capacity is high. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. Natural fertility is low. The organic matter content is moderate in the surface layer and low in all other layers.

The natural vegetation consists of slash pine and loblolly pine, cypress, blackgum, pineland threeawn, chalky bluestem, waxmyrtle, inkberry, sawpalmetto, and live oak.

Wetness and low fertility severely limit the use of this Pelham soil for cultivated crops. A good water-control system is needed before this soil can be used for cultivated crops. Crop rotations are needed and should include close-growing, soil-improving crops. Seedbed preparation should include bedded rows. Regular applications of fertilizer and lime are needed. All crop residue should be left on the soil.

Wetness and low fertility moderately limit the use of this soil for improved pasture grasses. Good drainage and regular applications of lime and fertilizer are needed. This soil produces high yields of pasture and hay crops if properly managed.

This soil has high potential for production of slash and loblolly pines. The severe equipment limitation and seedling mortality restrict the use of this soil for commercial trees. A good water control system is needed, and rows should be bedded before trees are planted. Loblolly and slash pines are the best trees to plant.

The high water table severely limits the use of this soil for sanitary facilities and building sites.

This Pelham soil is in capability subclass Vw.

49—Pelham fine sand, occasionally flooded. This is a nearly level, poorly drained soil in shallow depressions and along tributaries of creeks and rivers. This soil is flooded occasionally for long periods after unusually high rainfall *(7)*. This soil has been flooded in March or April in about 1 year in 10. The areas range from 5 to 25 acres and are irregularly shaped. The slope ranges from 0 to 2 percent.

Typically, the surface layer is black fine sand about 8 inches thick. The subsurface layer is fine sand. In the upper 4 inches it is grayish brown, in the next 8 inches it is dark grayish brown, and in the next 9 inches it is light gray. The subsoil extends to a depth of 80 inches or more. In the upper 3 inches it is light brownish gray sandy loam with light gray sand pockets, in the next 24 inches it is gray sandy clay loam with yellowish brown and yellow and reddish brown mottles, and in the lower 24 inches it is light gray sandy clay loam with reddish brown and brownish yellow mottles.

Included with this soil in mapping are small areas of Albany, Mascotte, Plummer, and Surrency soils. Also included are soils that have a loamy subsoil within a depth of 20 inches and some soils that have clay in the upper 20 inches of the subsoil. The included soils make up about 25 percent of the map unit.

This Pelham soil has a water table at a depth between 6 and 18 inches for about 3 months each year. The water table is at or above the surface of the soil for long periods after flooding. The available water capacity is medium in the surface and subsurface layers and in the subsoil. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. Natural fertility and the organic matter content are low.

The natural vegetation consists of slash and loblolly pine, cypress, blackgum, pineland threeawn, chalky bluestem, waxmyrtle, huckleberry, inkberry, sawpalmetto, and live oak.

This soil has severe limitations for cultivated crops because of wetness, flooding, and low fertility.

Wetness and low fertility moderately limit the use of this Pelham soil for improved pasture grasses. Good drainage and regular applications of lime and fertilizer are needed. This soil produces high yields of pasture and hay if properly managed.

This soil has high potential for production of slash and loblolly pines. The severe equipment limitation and severe seedling mortality restrict the use of this soil for commercial trees. Water control and bedded rows are needed. Loblolly and slash pines are the best trees to plant.

The high water table and flooding severely limit the use of this soil for sanitary facilities and building sites.

This Pelham soil is in capability subclass Vw.

50—Pits. This map unit consists of areas from which soil and underlying material have been removed, chiefly for use in road construction or for foundations. The areas vary from less than 1 acre to 40 acres. The excavations locally are called borrow pits. Excavations in wet soils are used mainly for livestock watering and as fishponds.

Included with Pits in mapping are areas of waste materials, mostly mixtures of sand, sandy loam, sandy clay loam, and clay, that have been piled or scattered around the edges of the pits.

Some pits have been excavated to a depth below the normal water table and are ponded much of the time. Most pit areas have been abandoned. They have little value for agriculture or for pine trees.

Pits have not been assigned to a capability subclass.

51—Plummer fine sand. This is a poorly drained, nearly level soil in broad flat areas or in areas adjoining drainageways and ponds. The areas range from 5 to 100 acres and are irregularly shaped. The slope is 0 to 2 percent.

Typically, the surface layer is fine sand. The upper 4 inches is very dark gray mixed with uncoated sand grains, and the next 5 inches is dark grayish brown with very dark gray mottles. The subsurface layer is gray fine sand in the upper 18 inches and white fine sand from a depth of 27 to 56 inches. The subsoil is light gray fine sandy loam underlain by sandy clay loam that extends to a depth of 80 inches or more.

Included with this soil in mapping are small areas of Hurricane, Pelham, and Albany soils. Also included are areas of soils that are similar to the Plummer soil but that have a clayey subsoil, have phosphatic pebbles and iron concretions, or have weakly cemented organic layers in the subsurface layer. The included soils make up less than 20 percent of the map unit.

This Plummer soil has a water table within 15 inches of the surface for 6 to 8 months during most years. The water table recedes to a depth of more than 40 inches during very dry periods. The available water capacity is medium in the surface layer, low in the subsurface layer, and very low in the subsoil. Permeability is rapid in the surface and subsurface layers and moderately slow in the subsoil. Natural fertility and the organic matter content are low.

The natural vegetation consists of waxmyrtle, inkberry, fetterbush, scattered sawpalmetto, and slash and longleaf pine. Native grasses include pineland threeawn and brackenfern.

Wetness and low available water capacity very severely limit the use of this Plummer soil for cultivated crops. A good water-control system is needed before these soils can be used for cultivated crops. The water-control system should be designed to remove excess surface and subsurface water during heavy rains. Seedbed preparation should include bedding of rows. Row crops should be rotated with close-growing crops, which should be grown at least three-fourths of the time. All crop residue and cover crops should be left on the soil. Regular applications of fertilizer and lime are needed.

This soil has moderate limitations for improved pasture grasses. Good management, including water control, controlled grazing, and applications of fertilizer and lime, is needed.

This soil has high potential for production of pine trees, but water control is needed to reach the potential. Equipment limitations and seedling mortality are the main management concerns. A good water control system is needed to remove excess water, and rows should be bedded before trees are planted. Loblolly and slash pines are the best trees to plant.

The high water table and the sandy texture severely limit the use of this soil for sanitary facilities and building sites.

This Plummer soil is in capability subclass IVw.

52—Plummer fine sand, depressional. This is a nearly level, poorly drained soil in depressions. The areas range from 5 to 80 acres and are circular or irregularly shaped. The slope is less than 2 percent.

Typically, the surface layer is gray fine sand about 5 inches thick. The subsurface layer is light gray fine sand and extends to a depth of 57 inches. The subsoil extends to a depth of 75 inches. It is gray sandy clay loam with yellow, strong brown, and very pale brown mottles. The substratum is white fine sand and extends to a depth of more than 80 inches.

Included with this soil in mapping are small areas of Surrency and Pelham soils. Also included are soils that are similar to the Plummer soil, but some have a clayey subsoil, some have phosphatic pebbles and iron concretions, and others have weakly cemented organic-stained layers in the subsurface layer. The included soils make up less than 15 percent of the map unit.

This Plummer soil has a water table at or above the surface layer for 4 to 6 months. It is within a depth of 15 inches for 6 to 8 months during most years. It recedes to a depth of more than 40 inches during dry periods. The available water capacity is low in the surface and subsurface layers and medium in the subsoil. Permeability is rapid in the surface and subsurface layers and moderately slow in the subsoil. Natural fertility is low.

The natural vegetation consists of waxmyrtle, inkberry, fetterbush, scattered sawpalmetto, slash and longleaf pine, and a few cypress trees. Native grasses include pineland threeawn and brackenfern.

Prolonged wetness and ponding severely limit use of this soil for cultivated crops or improved pasture grasses.

This soil has moderate potential for production of pine trees. Equipment limitations and seedling mortality are management concerns. A good water-control system is needed to remove excess water, where outlets are available, before trees can be planted.

Ponding and the sandy texture severely limit the use of this soil for sanitary facilities and building sites.

This Plummer soil is in capability subclass Vw.

53—Plummer fine sand, occasionally flooded. This is a poorly drained, nearly level soil on the flood plains of rivers and streams. This soil is flooded occasionally after heavy and prolonged rains *(7)* A sharp rise in the water level causes the rivers and streams to overflow. The lowlands remain flooded for approximately 30 days and the depressions, which drain by percolation and seepage, for longer periods. This soil has been flooded in March or April in about 1 year out of 10. The slope is less than 2 percent.

Typically, the surface layer is dark gray fine sand about 4 inches thick. The subsurface layer is light gray fine sand to a depth of 55 inches. The subsoil is gray sandy clay loam and has pockets of sandy clay. This layer extends to a depth of 80 inches or more.

Included with this soil in mapping are small areas of Mascotte, Pelham, and Electra Variant soils. Also included are small areas of soils that are similar to the Plummer soil, but some do not have a loamy subsoil, some have a clay subsoil, some have slopes ranging up to 12 percent, and some have ironstone fragments in the profile. The included soils make up about 25 percent of the map unit.

This Plummer soil has a water table within a depth of 15 inches for 6 to 8 months during most years. The water table recedes to a depth of more than 40 inches during very dry periods. The available water capacity is low in the surface and subsurface layers and medium in the subsoil. Permeability is rapid in the surface and subsurface layers and moderately slow in the subsoil. Natural fertility and the organic matter content are low.

The natural vegetation consists of waxmyrtle, inkberry, fetterbush, sawpalmetto, huckleberry, sweetgum, sparkleberry, and slash pine. Native grasses include pineland threeawn and brackenfern.

Wetness, flooding, and low available water capacity severely limit the use of this soil for cultivated crops.

This soil has moderate limitations for improved pasture grasses. Good management includes water control, controlled grazing, and applications of fertilizer and lime.

This soil has high potential for production of pine trees, but water control is needed to reach the potential. Equipment limitations and seedling mortality are the main management concerns. A good water control system is needed to remove excess water, and rows should be bedded before trees are planted. Loblolly and slash pines are the best trees to plant.

Flooding, the high water table, and the sandy texture severely limit the use of this soil for sanitary facilities and building sites.

This Plummer soil is in capability subclass IVw.

54—Plummer muck, depressional. This is a nearly level, poorly drained soil in concave depressions and poorly defined drainageways. The areas range from 5 to 300 acres and are irregular in shape. The slope is less than 2 percent. This soil is similar to the Plummer fine sand soils in all characteristics, except that the dark colored surface layer is thicker than typical. This difference does not affect use and behavior of this soil.

Typically, the surface layer is covered with about 8 inches of partially decayed sphagnum moss and muck. This layer is many roots, leaves, and twigs. The muck is about 60 percent fiber. The mineral surface layer is black fine sand about 5 inches thick. The subsurface layer is fine sand and extends to a depth of 55 inches. The upper 7 inches is light brownish gray. The next 43 inches is dark grayish brown. The subsoil is light brownish gray fine sandy loam and extends to a depth of 80 inches or more.

Included with this soil in mapping are small areas of Surrency, Pamlico, and Pelham soils. Also included are soils that are similar to the Plummer soil, but some have a sandy texture to a depth of 80 inches or more or have an organic-stained subsurface layer. The included soils make up about 25 percent of the map unit.

This soil has a water table within a depth of 15 inches for periods of up to 6 months during most years. The water table is ponded during spring and summer. The available water capacity is high in the surface layer, low in the subsurface layer, and medium in the subsoil. Permeability is moderately rapid to rapid in the surface and subsurface layers and moderately slow in the subsoil. Natural fertility is moderate.

The natural vegetation consists of waxmyrtle, inkberry, fetterbush, scattered sawpalmetto, brackenfern, sweetgum, and cypress.

Prolonged ponding and a lack of drainage outlets are severe limitations to use of this soil for cultivated crops or improved pasture grasses.

This soil has moderate potential for production of pine trees. Seedling mortality and equipment limitations are the main management concerns.

Ponding severely limits the use of this soil for sanitary facilities and building sites.

This Plummer soil is in capability subclass Vw.

55—Plummer, depressional-Pamlico, loamy substratum complex. This complex consists of nearly level, mineral and organic soils in large submerged wetlands in the northern part of the survey area. It consists mainly of Plummer muck, depressional; Pamlico muck, loamy substratum; and Dorovan muck. These soils are intermingled in such an intricate pattern that it was not practical to map them separately. The mapped areas range from 200 to 1,800 acres.

A typical area of this complex is about 40 percent Plummer muck, depressional; 25 percent Pamlico muck, loamy substratum; 15 percent Dorovan muck; 10 percent Mascotte fine sand, occasionally flooded; and 10 percent other soils. The proportion of each soil, however, varies in each mapped area.

Included with this soil in mapping are small areas of Surrency, Mascotte, Pantego, and Pelham soils. The Mascotte soils are in depressions. Also included are areas of soils that are similar to Plummer soils, but that are sandy to a depth of 80 inches or more or have an organic-stained subsurface layer. The included soils make up about 20 percent of the map unit.

The soils in this complex have water at or above the surface for 6 or more months.

Typically, the Plummer soil has about 8 inches of partially decayed sphagnum moss and muck on the surface. This layer has many roots, leaves, and twigs.

The muck is about 60 percent fiber. The mineral surface layer is black fine sand about 5 inches thick. This dark colored surface layer is thicker than is typical for Plummer soils, but this difference does not affect the use or behavior of this soil. The subsurface layer is fine sand and extends to a depth of 55 inches. The upper 7 inches is light brownish gray. The next 43 inches is dark grayish brown. The subsoil is light brownish gray fine sandy loam and extends to a depth of 80 inches or more.

The available water capacity is high in the surface layer, low in the subsurface layer, and medium in the subsoil. Permeability is rapid in the surface and subsurface layers and moderately slow in the subsoil.

Typically, the Pamlico soil has a surface layer of black muck 24 inches thick. The substratum is 24 inches of dark grayish brown fine sand over dark gray sandy clay loam, which extends to a depth of 80 inches or more.

The available water capacity is high. Permeability is moderately rapid in the upper 24 inches, rapid in the next layer, and slow below a depth of 48 inches. Natural fertility is moderate.

Typically, the Dorovan soil has a very dark brown muck surface layer about 14 inches thick. Below that, dark reddish brown muck extends to a depth of 80 inches or more.

The available water capacity is very high. Permeability is moderate.

The natural vegetation consists dominantly of pond cypress, slash pine, sweetgum, black tupleo, fetterbush, greenbrier, sweet pepperbush, and blueberry.

Excess wetness and insufficient drainage outlets severely limit the use of these soils for pasture or cultivated crops. The soils are used as habitat for wetland wildlife.

Commercial trees are sparse in most areas, and in some areas there are no trees at all. The soils in this map unit have moderate potential for the production of trees. Water tupelo is the best tree to plant.

Ponding, flooding, the high water table, and the high organic matter content severely limit the use of these soils for sanitary facilities and building sites.

These soils are in capability subclass VIIw.

56—Sapelo fine sand. This is a nearly level, poorly drained soil in the flatwoods. The areas are mostly irregular in shape and range from 5 to 500 acres. The slope is 0 to 2 percent.

Typically, the surface layer is black fine sand about 4 inches thick. The subsurface layer is gray fine sand about 7 inches thick. The upper part of the subsoil to a depth of 17 inches is very dark brown fine sand. The sand grains in this layer are coated with organic matter. The next layer is 33 inches of fine sand that separates the upper and lower parts of the subsoil. It is pale yellow in the upper part and light gray in the lower part. The lower part of the subsoil, from 50 to 80 inches or more, is sandy clay loam. The upper 12 inches is light gray, and the lower part is gray with olive yellow and yellowish red mottles.

Included with this soil in mapping are small areas of Mascotte, Leon, and Pelham soils. Also included are small areas of poorly drained soils that are underlain by limestone, soils that have a loamy sand or coarse sand subsoil and substratum, and soils that have a clay subsoil. The included soils make up about 15 percent of the map unit.

The water table is at a depth of 15 to 30 inches for 2 to 4 months during most years. Permeability is rapid in the surface and subsurface layers, moderate in the upper and lower parts of the subsoil, and rapid in the layer between the upper and lower parts of the subsoil. The available water capacity and the organic matter content are low in the surface and subsurface layers and moderate to low in the subsoil. Natural fertility is very low.

The natural vegetation consists of slash pine, sawpalmetto, waxmyrtle, pineland threeawn, chalky bluestem, dwarf huckleberry, inkberry, and fetterbush.

Wetness and very low natural fertility severely limit the use of this Sapelo soil for cultivated crops. The choice of crops is limited unless intensive water control is used. With a water-control system that is designed to remove excess water in wet seasons and provide subsurface irrigation in dry seasons, these soils are well suited to many kinds of flower and vegetable crops. Also needed are crop rotations that include close-growing, soil-improving crops at least two-thirds of the time. These crops and the residue of all other crops should be left on the soil. Fertilizer and lime should be applied according to the needs of the crop. Minimum tillage helps conserve moisture in dry seasons and reduces erosion.

The soil has moderate limitations for pasture and hay crops. Coastal bermudagrass and bahiagrass are moderately well adapted to this soil and grow moderately well if they are well managed. Drainage to remove excess surface water in times of high rainfall and regular applications of fertilizer and lime are needed. Grazing should be carefully controlled to maintain healthy plants for high yields.

This soil has moderately high potential for production of pine trees. Equipment limitations and seedling mortality are the main management concerns. Slash and loblolly pines are the best trees to plant.

The high water table and the sandy texture severely limit the use of this soil for sanitary facilities and building sites.

This Sapelo soil is in capability subclass IVw.

57—Surrency fine sand. This is a very poorly drained, nearly level soil in depressions, near shallow ponds, and along drainageways. The areas range from 3 to 200 acres and are circular to elongated. Concave slopes are less than 1 percent.

Typically, the surface layer is fine sand about 16 inches thick. The upper 8 inches is black, and the lower 8 inches is very dark gray. The subsurface layer is gray fine sand about 22 inches thick. The subsoil is grayish brown sandy clay loam with yellowish brown mottles. It extends to a depth of 80 inches or more.

Included with this soil in mapping are small areas of Plummer, Pantego, and Pelham soils. Also included are small areas of soils that are similar to the Surrency soil but have an organic surface layer less than 16 inches thick. The included soils make up about 10 percent of the map unit.

This soil has a water table at or above the surface for most of the year, and ponding is common. The available water capacity is high in the surface layer, medium in the subsurface layer, and low in the subsoil. Permeability is moderately rapid to rapid in the surface and subsurface layers and moderate in the subsoil. Natural fertility and the organic matter content are moderate.

The natural vegetation consists of cypress, blackgum, sweetbay, magnolia, maidencane, and other water-tolerant plants.

The high water table severely limits the use of this Surrency soil for cultivated crops and improved pasture grasses. Adequate outlets for artificial drainage systems are not available.

This soil has high potential for production of slash and loblolly pine if a water-control system is installed. Seedling mortality, plant competition, and equipment limitations severely restrict the use of this soil for commercial tree production. Sweetgum, American sycamore, and water tupelo are the best trees to plant.

Ponding and the sandy texture severely limit the use of this soil for sanitary facilities and building sites.

This Surrency soil is in capability subclass Vlw.

58—Surrency fine sand, occasionally flooded. This is a very poorly drained, nearly level soil on the flood plains of rivers and streams. This soil is flooded occasionally as a result of heavy and prolonged rains that cause the rivers and streams to overflow *(7)*. The soil remains flooded for 30 days or more. This soil has been flooded in March or April in about 1 year out of 10. The slope is less than 1 percent.

Typically, the fine sand surface layer is about 16 inches thick. The upper 8 inches is black, and the lower 8 inches is very dark gray. The subsurface layer is about 22 inches of gray fine sand. The subsoil is grayish brown sandy clay loam with yellowish brown mottles. It extends to a depth of 80 inches or more.

Included with this soil in mapping are small areas of Pelham and Plummer soils. Also included are small areas of soils that are similar to the Surrency soil but have clay, sand, or chunks of coral in the substratum. The included soils make up about 25 percent of the map unit.

This soil has a water table at or above the surface for most of the year. In addition to the apparent water table, this soil is covered by floodwater occasionally. The available water capacity is high in the surface layer, low in the subsurface layer, and medium in the subsoil. Permeability is moderately rapid tc rapid in the surface and subsurface layers and moderate in the subsoil. Natural fertility and the organic matter content are moderate.

The natural vegetation consists of cypress, blackgum, sweetbay, magnolia, maidencane, and other water-tolerant plants.

The high water table and flooding severely limit the use of this Surrency soil for cultivated crops and improved pasture grasses. The high water table is at the surface even in the driest periods.

This soil is not well suited to tree production because of wetness, flooding, and lack of drainage outlets; however, it has high potential for production of trees if these limitations are overcome. Sweetgum, American sycamore, and water tupelo are the best trees to plant.

Ponding and flooding severely limit the use of this soil for sanitary facilities and building sites.

This Surrency soil is in capability subclass Vlw.

59—Troup fine sand, 2 to 5 percent slopes. This is a well drained, gently sloping soil on broad ridges and undulating terrain. The areas range from 20 to 400 acres and are irregular in shape.

Typically, the surface layer is dark brown fine sand about 8 inches thick. The upper 30 inches of the subsurface layer is reddish yellow loamy sand, and the lower 14 inches is strong brown loamy sand. The subsoil extends to a depth of 80 inches. The upper 6 inches is strong brown fine sandy loam; the next 9 inches is yellowish red sandy clay loam; and the lower 13 inches is yellowish red sandy clay loam with brown mottles.

Included with this soil in mapping are small areas of Blanton, Chiefland, Fort Meade Variant, Ocilla, Lucy, and Orangeburg soils. These soils make up less than 15 percent of the map unit.

This Troup soil does not have a water table within a depth of 72 inches. The available water capacity is low in the surface and subsurface layers and medium in the subsoil. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. Natural fertility and the organic matter content are low.

The natural vegetation consists mainly of slash pine, live and blackjack oak, hickory, fern, huckleberry, sassafras, and pineland threeawn.

This Troup soil has severe limitations for most cultivated crops. Droughtiness and moderate leaching of plant nutrients limit the choice of plants and reduce potential yields of crops adapted to this soil. Crop rotations should include close-growing cover crops at least two-thirds of the time. Soil-improving cover crops and all crop residue should be left on the ground.

Irrigation of high-value crops is usually feasible if water is readily available. The soil responds well to applications of fertilizer and lime and produces high yields if properly managed. Minimum tillage reduces erosion and moisture loss.

The soil has moderate limitations for pasture and hay crops. Deep-rooting Coastal bermudagrass and the improved bahiagrasses are well adapted to this soil, but yields are reduced by periodic droughts. Regular applications of fertilizer and lime are needed. Grazing should be controlled to maintain plant vigor and a good ground cover.

The potential of this soil for production of pine trees is moderately high. Equipment limitations and seedling mortality are the main management concerns. Slash, loblolly, and longleaf pines are the best trees to plant.

The sandy texture severely limits the use of this soil for most kinds of sanitary facilities. The limitations are only slight for septic tank absorption fields and building sites. In shallow excavations, the cutbanks can cave in. Droughtiness limits the use of the soil for lawns and landscaping.

This Troup soil is in capability subclass IIIs.

60—Troup fine sand, 5 to 8 percent slopes. This is a well drained, sloping soil on broad ridges and undulating terrain. The areas of this soil range from 20 to 100 acres and are irregular in shape.

Typically, the surface layer is dark brown fine sand about 5 inches thick. The upper 30 inches of the loamy sand subsurface layer is reddish yellow, and the lower 15 inches is strong brown. The subsoil extends to a depth of 80 inches. The upper 10 inches is strong brown fine sandy loam. The lower part is yellowish red sandy clay loam. There are brown and yellowish brown mottles in the lower 15 inches.

Included with this soil in mapping are small areas of Blanton, Fort Meade Variant, Ocilla, Bonneau, and Lucy soils. These soils make up less than 15 percent of the map unit.

This Troup soil does not have a water table within a depth of 6 feet. The available water capacity is low in the surface and subsurface layers and medium in the subsoil. Permeability is rapid in the surface and subsurface layers and moderately rapid in the subsoil. Natural fertility and the organic matter content are low.

The natural vegetation consists mainly of slash and longleaf pine, hickory, live and blackjack oak, fern, huckleberry, sassafras, and pineland threeawn.

This Troup soil has severe limitations for most cultivated crops. Droughtiness, moderate leaching of plant nutrients, and slope severely limit the choice of plants and reduce potential yields of crops adapted to this soil. Strips of row crops should be alternated with strips of close-growing cover crops. Crop rotation should include close-growing cover crops at least three-fourths of the time. Soil-improving cover crops and all crop residue should be left on the ground. This soil is too steep to be effectively irrigated; however, the crops respond favorably to fertilizer and lime.

The soil has moderate limitations for pasture and hay crops. Deep-rooting Coastal bermudagrass and the improved bahiagrasses are well adapted to this soil, but yields are reduced by periodic droughts. Regular applications of fertilizer and lime are needed. Grazing should be controlled to maintain plant vigor and a good ground cover.

The potential of this soil for production of pine trees is moderately high. Equipment limitations and seedling mortality are the main management concerns. Slash, loblolly, and longleaf pines are the best trees to plant.

The sandy texture severely limits the use of this soil for most kinds of sanitary facilities. The limitations are slight for septic tank absorption fields and building sites. In shallow excavations, the cutbanks can cave in. Droughtiness limits the use of the soil for lawns and landscaping. Slope moderately limits the use of the soil for small commercial buildings.

This Troup soil is in capability subclass IVs.

61—Udorthents, 0 to 2 percent slopes. These soils are near abandoned phosphate mining areas. They formed in refuse that was washed from the phosphate and limestone during mining operations. The refuse was deposited over the nearby soils to a thickness of 20 to 50 inches or more. Individual areas are mainly irregular in shape and range from 5 to 35 acres in size. The slope is less than 2 percent.

The texture and thickness of the soil layers vary, but one of the more common profiles has a very dark gray silt loam surface layer about 1 inch thick. The next layer is pale brown silty clay loam about 9 inches thick. It is underlain by 22 inches of very pale brown silty clay. The next 16 inches is light gray clay. Below this to a depth of 80 inches or more is an undisturbed buried soil that is mostly very dark gray and light yellowish brown fine sand.

Included in mapping are small areas of Alpin, Blanton, and Bonneau soils. These soils make up less than 5 percent of the map unit.

The water table is at a depth of 60 to 72 inches for 1 to 2 months during most years. A perched water table is at the surface for short periods after heavy rains. The available water capacity is high in the silty and clayey overburden and low in the buried sandy soil. Permeability is slow in the overburden and rapid in the sandy buried soil. Natural fertility of the surface and subsurface layers is medium. The organic matter content is moderate.

The natural vegetation consists of slash and loblolly pine, sweetgum, laurel oak, waxmyrtle, wild plum, wiregrass, and sawgrass.

These soils have severe limitations for cultivated crops. However, the variability of the composition and thickness of the overburden make it difficult to rate the

soils. The areas where the overburden is very thin can be used for cultivated crops if properly managed. The major problem is difficulty with land preparation because of the sticky and plastic clayey surface layer.

These soils have slight limitations for improved pasture grasses. Seedbed preparation may be a problem because of the thick clayey surface layer; however, after grasses have been established, good yields can be expected with proper management.

These soils have moderately high potential for production of pine trees. Equipment limitations and plant competition are the main management concerns. Slash pine is the best tree to plant.

The high water table and fine texture are severe limitations to use for most sanitary facilities but are only slight limitations to use for area-type sanitary landfills. The fine texture and high shrink-swell potential are moderate to severe limitations for building site development.

Udorthents are in capability subclass IVw.

Prime Farmland

In this section, prime farmland is defined and discussed, and the prime farmland soils in Columbia County 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 producing food, feed, forage, fiber, and oilseed crops. Such soils have properties that are favorable for the economic production of sustained high yields of crops. The soils need only to be treated and managed using acceptable farming methods. The moisture supply, of course, must be adequate, and the growing season has to be sufficiently long. Prime farmland soils produce the highest yields with minimal inputs of energy and economic resources, and farming these soils results in the least damage to the environment.

Prime farmland soils may presently be in use as cropland, pasture, or woodland, or they may be in other uses. They either are used for producing food or fiber or are available for these uses. Urban or built-up land and water areas cannot be considered prime farmland.

Prime farmland soils usually get 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 subject to frequent flooding during the growing season. The slope ranges mainly from 0 to 6 percent.

Soils that have a high water table, are subject to flooding, or are droughty may qualify as prime farmland soils if the limitations or hazards are overcome by drainage, flood control, or irrigation. Onsite evaluation is necessary to determine the effectiveness of corrective measures. More information on the criteria for prime farmland soils can be obtained at the local office of the Soil Conservation Service.

The supply of high-quality farmland in Columbia County is limited. About 2,760 acres, or much less than 1 percent of the county, is prime farmland. The areas are mainly in map unit 6 of the general soil map. This land is used predominantly for corn, soybeans, and tobacco.

A recent trend in land use in some parts of the county has been the loss of some prime farmlands to community development. This loss of prime farmland puts pressure on marginal lands, which are farmed although they generally are more erodible, droughty, and difficult to cultivate and usually are less productive.

The following map units, or soils, make up prime farmland in Columbia County. This list does not constitute a recommendation for a particular land use. The extent of each listed map unit is shown in table 4. The location of each map unit is shown on the detailed soil maps in the back of the publication. The soil qualities that affect use and management are described in the section, "Detailed Soil Map Units."

25 Goldsboro loamy fine sand, 2 to 5 percent slopes
43 Orangeburg loamy fine sand, 2 to 5 percent slopes
44 Orangeburg loamy fine sand, 5 to 8 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 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 behavior characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

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

Contractors can use this survey to locate sources of sand, roadfill, and topsoil. They can use it to identify areas where bedrock, 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, state conservation agronomist, Soil Conservation Service, helped prepare this section.

General management needed for crops and pasture is suggested in this section. The crops or pasture plants best suited to the soils, including some not commonly grown in the survey area, are identified; the system of land capability classification used by the Soil Conservation Service is explained; and the estimated yields of the main crops and hay and pasture plants are listed for each soil.

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

In 1980, approximately 115,000 acres in Columbia County were used for crops and pasture, according to the 1980 Rural Development Committee Report of the Soil Conservation Service, estimates by the Columbia County Extension Service, and statistics from the Florida Crop and Livestock Reporting Service. The acreage includes that in improved pasture; field crops, mainly corn, peanuts, tobacco, and soybeans; and special crops, such as watermelons, sweet corn, field peas, and small acreages of blueberries, grapes, and pecans.

The potential of the soils in Columbia County for increased food production is good. About 70,000 acres of potentially good cropland is now used as woodland and about 25,000 acres as pasture. The woodland and pasture areas could be used as cropland but would need intensive conservation measures to control soil blowing on sandy soils and control the fluctuating water table. In addition to the reserve capacity represented by these areas, food production could be increased considerably by extending the latest technology to all cropland in the county.

Acreage in crops, pasture, and woodland has gradually decreased as more and more land is used for urban development. In 1967, there was about 9,000 acres of urban and built-up land in the county *(3)*, and this acreage has steadily increased since then.

Soil erosion is a problem on about three-fourths of the cropland and pasture in Columbia County. If the slope is more than 2 percent, erosion is a hazard, especially in areas of the well drained and moderately well drained Bonneau, Chiefland, Blanton, and Goldsboro soils, the somewhat poorly drained Ocilla and Albany soils, and the poorly drained Pelham and Plummer soils.

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, soil erosion on farmland results in sediment entering streams. Control of erosion minimizes the pollution of streams by sediment

and improves the quality of water for municipal use, for recreation use, and for fish and wildlife.

On the Chiefland and Pedro Variant soils and in some areas of the Ichetucknee soils, it is difficult to prepare a good seedbed and to till the soil because of clay spots and limestone boulders

Erosion control practices provide a protective surface cover, reduce runoff, and increase the rate of infiltration. A cropping system that keeps vegetative cover on the soil for extended periods can hold erosion losses to amounts that will not reduce the productive capacity of the soils. On livestock farms, which require pasture and hay, the legume and grass forage crops in the cropping system reduce erosion on sloping land and also provide nitrogen and improve tilth for the following crop.

Minimizing tillage and leaving crop residues on the surface increase infiltration and reduce the hazards of runoff and erosion. No-tillage for corn and soybeans is effective in reducing erosion on sloping land. These practices can be adapted to most soils in the survey area.

Most of the soils in the survey area are so sandy or their slopes are so short and irregular that contour tillage or terracing is not practical. Stripcropping and diversions, which reduce the length of slope and also reduce runoff and erosion, are most practical on deep, well drained soils that have regular slopes. Diversions and sod waterways also reduce runoff and erosion and can be adapted to most soils in the survey area.

Wind erosion is a major hazard on the sandy soils in the survey area. Strong winds can damage soils and tender crops in a few hours in open, unprotected areas where the soil is dry and bare. Maintaining a vegetative cover and surface mulch minimizes wind erosion.

Wind erosion is damaging for several reasons. It reduces soil fertility by removing finer soil particles and organic matter; damages or destroys crops by sandblasting; spreads diseases, insects, and weed seeds; and creates health hazards and cleaning problems. Control of wind erosion minimizes duststorms and improves the quality of air for more healthful living conditions.

Field windbreaks of adapted trees and shrubs, such as Carolina laurelcherry, sand pine, slash pine, southern redcedar, and Japanese privet, and strip crops of small grains are effective in reducing wind erosion and crop damage. Field windbreaks and strip crops are narrow plantings made at right angles to the prevailing wind and at specific intervals across the field. The intervals depend on the erodibility of the soil and the susceptibility of the crop to damage from sandblasting.

Environmental plantings help to beautify and screen houses and other buildings and to abate noise. The plants, mostly evergreen shrubs and trees, are closely spaced. To insure plant survival, a healthy planting stock of suitable species should be planted properly on a well-prepared site and maintained in good condition.

Additional information on planning windbreaks and screens and planting and caring for trees and shrubs can be obtained from local offices of the Soil Conservation Service or the Cooperative Extension Service or from a nursery. Information about erosion control practices for each kind of soil is contained in the "Water and Wind Erosion Control Handbook—Florida," which is available at local offices of the Soil Conservation Service.

Soil drainage is a major management need on about 25 percent of the acreage used for crops and pasture in the county. Some soils are naturally so wet that the production of crops common to the area is generally not practical. These are the poorly drained Leon, Mascotte, Pelham, Pantego, and Sapelo soils and the very poorly drained Pamlico, Dorovan, and Surrency soils. These soils make up about 200,000 acres.

Unless artificially drained, some of the somewhat poorly drained soils are wet enough in the root zone to cause damage to most crops during most years. Included in this category are the Albany, Hurricane, and Ocilla soils, which make up about 44,000 acres of the survey area.

Also, unless artificially drained, some of the poorly drained Mascotte, Leon, Plummer, and Sapelo soils are wet enough to cause some damage to pasture plants. These soils also have a low available water capacity and are droughty during dry periods. They need subsurface irrigation for adequate pasture production.

The very poorly drained Pamlico, Dorovan, Plummer, and Surrency soils are very wet during the rainy periods and have water standing on the surface in most areas. The production of good quality pasture on these soils is not possible without artificial drainage. A combination of surface drainage and irrigation is needed on these soils for intensive pasture production.

Information on drainage and irrigation for each kind of soil in the county is available at the local offices of the Soil Conservation Service.

Soil fertility is naturally low on most soils in the survey area. Most of the soils have a sandy surface layer and are light colored. Many of the soils have a loamy subsoil. Included in this category are the Albany, Blanton, Bonneau, Goldsboro, Leesfield, Lucy, Ocilla, Orangeburg, Pelham, and Plummer soils. the Chiefland and Pedro Variant soils have an acid surface layer and are underlain by calcareous limestone that is mildly to moderately alkaline. Most of the soils have a surface layer that is strongly acid to very strongly acid and require applications of ground limestone to raise the pH level sufficiently for good crop growth. Nitrogen, potassium, and available phosphorus levels are naturally low in most of these soils. On all soils, additions of lime and fertilizer should be based on the results of soil tests, the needs of the crop, and 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 the infiltration of water into the soil. Soils with good tilth are easily cultivated with common tillage equipment and provide a good seedbed.

Most of the soils in the survey area have a sandy or loamy fine sand surface layer that is light in color and low to moderate in organic matter content. Exceptions are the Dorovan, Oleno, Pamlico, and Plummer soils and Udorthents.

The Dorovan, Pamlico, and Plummer soils are organic soils or have an organic surface layer. Generally, the structure of the surface layer of most soils in the survey area is weak. When soils that are dry and low in organic matter content receive intense rainfall, the colloidal matter cements and forms a slight crust, particularly if a plowpan is present. The crust is slightly hard when it is dry, and it is slightly impervious to water. Once the crust forms, it reduces infiltration and increases runoff. Regular additions of crop residue, manure, and other organic material improve soil structure and reduce crust formation.

Fall plowing is generally not advisable. If sloping soils, which make up about one-fourth of the cropland in the survey area, are plowed at this time, they are subject to damaging erosion. Gullies caused by erosion are common on unprotected soils. Also, about three-fourths of the county's cropland is sandy and subject to soil blowing. Tons of soil are lost each year in the survey area as a result of wind erosion during the spring plowing season (fig. 7).

Figure 7.—Windblown sediment from a cultivated area of Blanton fine sand, 0 to 5 percent slopes.

Field crops grown in the survey area include corn, soybeans, peanuts, and tobacco. Grain sorghum, sunflower, potato, and sugarcane acreage could be increased if economic conditions were favorable.

Rye and wheat are the common close-growing crops. Oats and triticale can also be grown.

The major special crop grown commercially in the survey area is watermelons. A small acreage is in squash, blueberries, grapes, pecans, and field peas. If economic conditions are favorable, the acreage of blueberries, apples, pears, strawberries, grapes, blackberries, nursery sod, cabbage, cauliflower, turnips, collards, and mustard greens can be increased.

Deep soils that have good natural drainage are especially well suited to many vegetables and small fruits. If irrigated, about 45,000 acres of the Goldsboro, Fort Meade Variant, Troup, Orangeburg, and Bonneau soils that have slopes of less than 8 percent are very well suited to vegetables and small fruits. In addition, if adequately drained, about 40,000 acres of the Ocilla, Ichetucknee, Pelham, Olustee, Hurricane, and Albany soils are very well suited to vegetables and small fruits.

Information and suggestions for growing special crops can be obtained from the local offices of the Cooperative Extension Service and the Soil Conservation Service.

Pasture in the survey area is used to produce forage for beef and dairy cattle. Bahiagrass and improved bermudagrass are the major pasture plants grown in the survey area (fig. 8). Seeds can be harvested from bahiagrass for improved pasture plantings as well as for commercial purposes. Many cattlemen seed small grains on cropland and overseed rye in pastures in the fall for winter and spring grazing. In bermudagrass pastures, excess grass is harvested as hay during the summer for feeding during the winter. Also, hay is made from harvested peanuts during the fall for feeding during the winter.

The well drained and moderately well drained Alpin, Lakeland, Bonneau, Fort Meade Variant, Blanton, Chipley, Bigbee, and Chiefland soils are well suited to bahiagrass and improved bermudagrass. With good management, hairy indigo and Alyce clover can be grown during the summer and fall.

The somewhat poorly drained Albany, Ocilla, and Hurricane soils are well suited to bahiagrass and to improved bermudagrass if grown with legumes, such as sweetclover, and if adequate amounts of lime and fertilizer are applied.

If drained where needed, the Pelham, Plummer, Leon, Mascotte, Olustee, Electra Variant, Ichetucknee, Mandarin, and Sapelo soils are well suited to bahiagrass and hemarthriagrass pasture. Subsurface irrigation increases the length of the growing season and total forage production. With adequate amounts of lime and fertilizer, the soils are well suited to legumes, such as white clover.

Pasture in many parts of the county is greatly depleted by continuous excessive grazing. Pasture yields are increased by irrigation, by applications of fertilizer and lime, and by growing legumes.

Differences in the amount and kind of pasture yields are related closely to the kind of soil. Management of pasture is based on the interrelationship of soils, pasture plants, lime, fertilizer, and moisture.

Information and suggestions for pasture can be obtained at local offices of the Cooperative Extension Service and the Soil Conservation Service.

Yields Per Acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 5. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors.

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

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green-manure crops; and harvesting that insures the smallest possible loss.

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

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

Crops other than those shown in table 5 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Soil Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops,

Figure 8.—Harvesting Coastal bermudagrass hay in an area of Blanton fine sand, 0 to 5 percent slopes. High yields of good quality hay can be obtained with proper management.

the risk of damage if they are used for crops, and the way they respond to management. The grouping does not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor does it consider possible major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for woodland and for engineering purposes.

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

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

Class I soils have few limitations that restrict their use.

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

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

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

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

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

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

Class VIII soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

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

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

Capability units are soil groups within a subclass. The soils in a capability unit are enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity. Capability units are generally designated by adding an Arabic numeral to the subclass symbol, for example, IIe-4 or IIIe-6.

The acreage of soils in each capability class and subclass is shown in table 6. The capability classification of each map unit is given in the section "Detailed Soil Map Units."

Woodland Management and Productivity

Hal Brockman, forester, Soil Conservation Service, and Cherry Wadsworth, Columbia County forester, Florida Division of Forestry, prepared this section.

Approximately 350,000 acres, or 70 percent of the total land area, in Columbia County is woodland. There are three distinct ownership classes—national forest, large corporate holdings, and small privately owned tracts. The acreage of commercial woodland in Columbia County is decreasing because of conversion to urban and agricultural uses.

The soils and climate of Columbia County are suitable for trees. Most of the forested areas are on the Mascotte, Olustee, Sapelo, Blanton, and Bonneau soils. The Blanton and Bonneau soils produce most of the timber in the southern part of the county. The Mascotte soils produce most of the timber in the flatwoods (fig. 9).

Most woodland is managed for needle-leaved trees. These include slash, longleaf, and loblolly pines and southern baldcypress. Common broad-leaved trees include water, laurel, and live oaks, sweetgum, and blackgum.

The Osceola National Forest covers 157,232 acres, of which approximately half is in Columbia County, north and east of Lake City. The Mascotte, Olustee, Pamlico, and Sapelo soils are the main soils in the forest. The main trees are longleaf and slash pines, baldcypress, and bay. Others include live and laurel oak, blackgum, sweetbay, redbay, and loblollybay. The Osceola Forest is managed mainly for sawlog production. Stands are thinned as needed to produce sawlog-sized trees.

Wildlife management for deer, quail, and the red-cockaded woodpecker is a main objective of all woodland activities. Most of the forest is also leased for cattle grazing. Grazing plans are coordinated with timber operations. New forest stands are regenerated naturally or are planted with genetically improved seedlings.

Corporate-owned and -managed forest lands dominate the northern area of the county. Some are also located in the southeast and southwest sections of the county. These are primarily intensive pulpwood production areas. Slash pine is the principal species grown. Management consists of pulpwood rotations followed by clearcutting, intensive site preparation, and tree planting.

Small privately owned woodland areas are scattered throughout the county. Much of this land is in plantations for the pulpwood and sawlog market. Slash pine has been the dominant tree planted. Trees occurring in natural stands include loblolly and longleaf pines, baldcypress, sweetgum, blackgum, water and laurel oak, sweetbay, redbay, and loblollybay.

An excellent market exists for forest products in Columbia County. The major market is for pulpwood. The demand for trees large enough for the chipping-saw and sawlog mills is increasing. The wide variety of wood-processing mills within 70 miles of Lake City creates a greater demand for wood.

This soil survey can help all woodland owners make the management decisions necessary to increase production and yields on their lands. Because of the favorable soil and climatic conditions, the opportunity for expanding the woodland area in Columbia County is very good. More detailed information on woodland management can be obtained at the local office of the Soil Conservation Service, the Florida Division of Forestry, or the Florida Cooperative Extension Service.

Table 7 can be used by woodland owners or forest managers in planning the use of soils for wood crops. Only those soils suitable for wood crops are listed. The table lists the ordination symbol (woodland suitability) for each soil. Soils assigned the same ordination symbol require the same general management and have about the same potential productivity.

The first part of the *ordination symbol,* a number, indicates the potential productivity of the soils for important trees. The number 1 indicates very high productivity; 2, high; 3, moderately high; 4, moderate;

Figure 9.—Slash pine harvested for pulpwood in an area of Mascotte fine sand. This soil produces most of the timber in the flatwoods.

and 5, low. The second part of the symbol, a letter, indicates the major kind of soil limitation. The letter *w* indicates excessive water in or on the soil; *c*, clay in the upper part of the soil; and *s*, sandy texture. The letter *o* indicates that limitations or restrictions are insignificant. If a soil has more than one limitation, the priority is as follows: w, c, and s.

In table 7, *slight, moderate,* and *severe* indicate the degree of the major soil limitations to be considered in management.

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

Seedling mortality ratings indicate the degree to which the soil affects the mortality of tree seedlings. Plant competition is not considered in the ratings. The ratings apply to seedlings from good stock that are properly planted during a period of sufficient rainfall. A rating of

slight indicates that the expected mortality is less than 25 percent; *moderate*, 25 to 50 percent; and *severe*, more than 50 percent.

Ratings of *windthrow hazard* are based on soil characteristics that affect the development of tree roots and the ability of the soil to hold trees firmly. A rating of *slight* indicates that few trees may be blown down by strong winds; *moderate*, that some trees will be blown down during periods of excessive soil wetness and strong winds; and *severe*, that many trees are blown down during periods of excessive soil wetness and moderate or strong winds.

Ratings of *plant competition* indicate the degree to which undesirable plants are expected to invade where there are openings in the tree canopy. The invading plants compete with native plants or planted seedlings. A rating of *slight* indicates little or no competition from other plants; *moderate* indicates that plant competition is expected to hinder the development of a fully stocked stand of desirable trees; *severe* indicates that plant competition is expected to prevent the establishment of a desirable stand unless the site is intensively prepared, weeded, or otherwise managed to control undesirable plants.

The *potential productivity* of merchantable or *common trees* on a soil is expressed as a *site index*. This index is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. Site index was calculated at age 50 for loblolly, longleaf, slash, and pond pines and, if sufficient data are available, for sweetgum and blackgum. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that woodland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability.

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

Woodland Grazing

Clifford Carter, range conservationist, Soil Conservation Service, prepared this section.

Columbia County, with a large acreage in woodland production, also has a high potential for woodland grazing. Many of the smaller privately owned woodland tracts are fenced and provide some livestock grazing. However, most of the larger woodland tracts owned by the timber companies are not fenced, and the forage produced is not harvested. Large tracts in the Osceola National Forest are fenced for woodland grazing.

Because forage production and availability are directly related to tree canopy, the different age classes of trees cause a wide variation in forage production within a given tract. In some places, large areas must be fenced to provide adequate forage for a small number of cattle.

Grazeable woodland is forest that has an understory of native grasses, legumes, and forbs. The understory is an integral part of the forest plant community. The native plants can be grazed without significantly impairing other forest values. On such forest land, grazing is compatible with timber management if it is controlled or managed in such a manner that timber and forage resources are maintained or enhanced.

Understory vegetation consists of grasses, forbs, shrubs, and other plants used by livestock or by grazing or browsing wildlife. A well managed wooded area can produce enough understory vegetation to support optimum numbers of livestock or wildlife, or both.

Forage production on grazeable woodland varies according to the different kinds of grazeable woodland, the amount of shade cast by the canopy, the accumulation of fallen needles, the influence of time and intensity of grazing on the grasses and forage, and the number, size, spacing, and method of site preparation for tree plantings.

Recreation

Columbia County offers a wide variety of opportunities for recreation. Many of these are dependent on the county's wide open spaces and its favorable weather. Organized forms of recreation are centered in the Lake City area.

Columbia County has two state parks and part of a national forest within its boundaries. Ichetucknee Springs State Park is the most popular recreational site in the county. The crystal clear spring that rises within the park and flows southward attracts thousands of swimmers, canoers, and other visitors each year.

O'Leno State Park offers water activities on the Santa Fe River. Camping, hiking, picnicking, and observing wildlife are popular activities at this park.

The approximately 78,000 acres of the Osceola National Forest within Columbia County provide opportunities for hiking, picnicking, camping, and observing wildlife.

The county's rivers provide opportunity for canoeing, kayaking, swimming, diving, and sightseeing. The Great Suwannee River Canoeing and Kayaking Competition has been held on a part of the Suwannee River that borders Columbia County. Another activity in the Suwannee River area is hiking. The Florida Trail Association has established a hiking trail along the river.

Recreational activities of a more organized nature are found in or near Lake City. Facilities are available for indoor games, field sports, basketball, golf, tennis, racquetball, swimming, and bowling in Lake City and at the nearby country clubs. Civic clubs and church groups sponsor many of these activities.

The soils of the survey area are rated in table 8 according to limitations that affect their suitability for recreation. The ratings are based on restrictive soil

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

In table 8, 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 8 can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 11 and interpretations for dwellings without basements and for local roads and streets in table 10.

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 has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing campsites.

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

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

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

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

Wildlife Habitat

John Vance, biologist, Soil Conservation Service, prepared this section.

Good wildlife habitat is available in most areas of Columbia County. The part of the Osceola National Forest that is in the county, the areas along the Suwannee and Santa Fe Rivers, and the large expanse of wetlands (bogs and swamps) in the northern part of the county (fig. 10) are especially important as wildlife habitat.

The main game species include deer, turkey, quail, dove, and squirrel. The deer population generally is large everywhere but on the southern and western edges of the county. The turkey population is considered fair. The higher populations are along the eastern side and southwestern corner of the county. Quail and dove inhabit areas throughout the county, but the higher populations are in the more intensively farmed areas in the southern part of the county. The bear population is probably one of the highest in the southeast; in fact, the black bear is considered a threatened species in Florida, except in Columbia and Baker Counties and in the Apalachicola National Forest. Bear habitat is best in the northern part of the county where the relatively impenetrable large swamps and bogs offer excellent escape cover.

Nongame species include raccoon, opossum, bobcat, armadillo, fox, otter, mink, skunk, and a variety of songbirds, woodpeckers, predatory birds, wading birds, amphibians, and reptiles, including alligators. The alligator population is probably greatest in Sandlin Bay, Impassable Bay, and Pinhook Swamp.

The greatest threat to wildlife habitat in the county is the urban development taking place mainly around Lake City and along the Suwannee and Santa Fe Rivers.

Freshwater fish are an important part of the wildlife resource in Columbia County. Approximately 1,400 acres of lakes, ponds, and pits in the county, along with about 74 miles of rivers, offer fair to good fishing year round. Game and nongame species include largemouth bass, channel catfish, brown bullhead, bluegill, redear, spotted sunfish, warmouth, black crappie, striped mullet, chain pickerel, gar, and sucker.

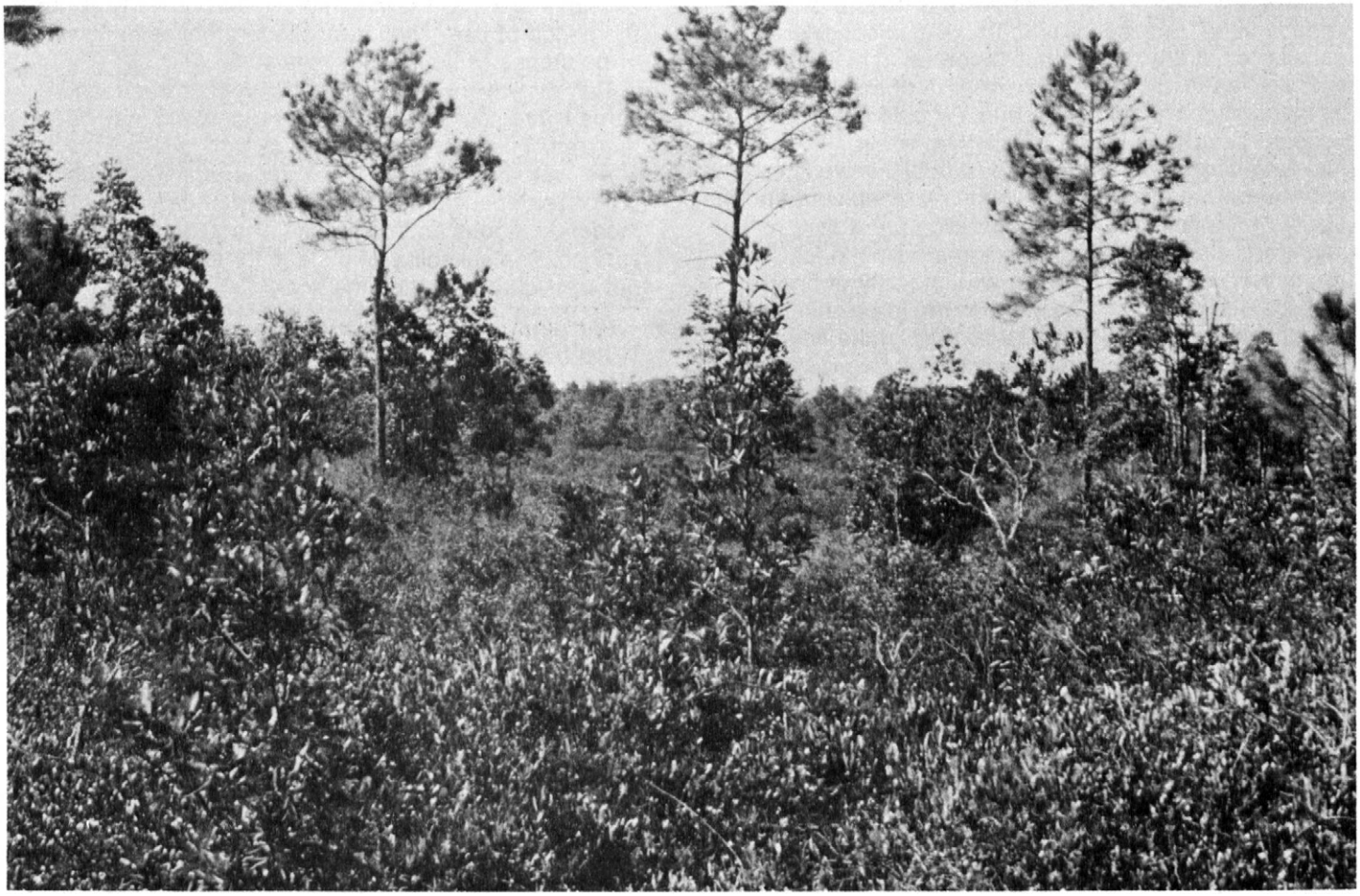


Figure 10.—Bay and smilax vegetation, in an area of Pamlico, loamy substratum-Dorovan complex, provides habitat for wetland wildlife.

There are a number of endangered and threatened species in Columbia County. These range from the seldom seen red-cockaded woodpecker to the more visible southeastern kestrel (sparrow hawk).

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

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

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

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

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

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, the available water capacity, and wetness. Examples of these plants are oak, 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 crabapple.

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

Engineering

Elwyn O. Cooper, area engineer, Soil Conservation Service, helped prepare this section.

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

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 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 must 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, depth to bedrock, hardness of bedrock within 5 to 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kind of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreation uses; to make preliminary estimates of construction conditions; to evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; to evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; to plan detailed onsite investigations of soils and geology; to locate potential sources of gravel, sand, earthfill, and topsoil; to plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and to 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 10 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 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 bedrock, a cemented pan, or 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 the depth to the water table.

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

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material, a base of gravel, crushed rock, or stabilized soil material, and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. Depth to bedrock or 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 11 shows the degree and the kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features

are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

Table 11 also shows the suitability of the soils for use as daily cover for landfills. A rating of *good* indicates that soil properties and site features are favorable for the use and good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, a high water table, depth to bedrock or to a cemented pan, and flooding affect absorption of the effluent. Large stones and bedrock or a cemented pan 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 or fractured bedrock is less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to filter the effluent effectively. Many local ordinances require that this material be of a certain thickness.

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

Table 11 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 bedrock or to a cemented pan, flooding, large stones, and content of organic matter.

Excessive seepage due to rapid permeability of the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, 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 ground water pollution. Ease of excavation and revegetation needs to be considered.

The ratings in table 11 are based on soil properties, site features, and observed performance of the soils. Permeability, depth to bedrock or to a cemented pan, a high water table, slope, and flooding affect both types of landfill. Texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium affect trench type landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

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

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

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, 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 plant growth. Material from the surface layer, therefore, should be stockpiled for use as the final cover.

Construction Materials

Table 12 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 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 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing engineering index properties provides detailed information about each soil layer. This information can help determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by 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, low shrink-swell potential, few cobbles and stones, and slopes of 15 percent or less. Depth to the water table is more than 3 feet. Soils rated *fair* are more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have moderate shrink-swell potential, 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 the depth to the water table is less than 1 foot. They may have layers of suitable material, but the material is less than 3 feet thick.

Sand and gravel are natural aggregates suitable for commercial use with a minimum of processing. Sand and gravel are used in many kinds of construction. Specifications for each use vary widely. In table 12, 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. Kinds of rock, 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, bedrock, 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 water table at or near the surface.

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

Water Management

Table 13 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for embankments, dikes, and levees and aquifer-fed 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.

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 or boulders, 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. Excavated ponds are affected by depth to a permanent water table, permeability of the aquifer, and quality of the water. Depth to bedrock and the content of large stones affect 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 bedrock, 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 potential frost action. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock or 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 bedrock or 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 reduce erosion and conserve moisture by intercepting runoff. Slope, wetness, large stones, and depth to bedrock or to a cemented pan affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of wind 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 bedrock or to a cemented pan affect the construction of grassed waterways. A hazard of wind erosion, 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 20.

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 characterize key soils.

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

Engineering Index Properties

Table 14 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

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

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Sandy clay loam," for example, is soil that is 20 to 35 percent clay, 45 to 80 percent sand, and less than 28 percent silt. If the content of particles coarser than sand is as much as 15 percent, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

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

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

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

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

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

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

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

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

Physical and Chemical Properties

Table 15 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

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

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

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

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

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

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

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.

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

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

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

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

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

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

1. Sands, coarse 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 sands, loamy fine sands, and loamy very fine sands. These soils are very highly erodible. Crops can be grown if intensive measures to control wind erosion are used.
3. Sandy loams, coarse sandy loams, fine sandy loams, and very fine sandy loams. These soils are highly erodible. Crops can be grown if intensive measures to control wind erosion are used.

4L. Calcareous loamy soils that are less than 35 percent clay and more than 5 percent finely divided calcium carbonate. These soils are erodible. Crops can be grown if intensive measures to control wind erosion are used.

4. Clays, silty clays, 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 wind erosion are used.
5. Loamy soils that are less than 18 percent clay and less than 5 percent finely divided calcium carbonate and sandy clay loams and sandy clays that are less than 5 percent finely divided calcium carbonate. These soils are slightly erodible. Crops can be grown if measures to control wind erosion are used.
6. Loamy soils that are 18 to 35 percent clay and less than 5 percent finely divided calcium carbonate, except silty clay loams. These soils are very slightly erodible. Crops can easily be grown.
7. Silty clay loams that are less than 35 percent clay and less than 5 percent finely divided calcium carbonate. These soils are very slightly erodible. Crops can easily be grown.
8. Stony or gravelly soils and other soils not subject to wind erosion.

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

In table 15, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

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

Soil and Water Features

Table 16 gives estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

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

The four hydrologic soil groups are:

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

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

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

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

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

Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, common, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (flooding occurs at least once during a period of 10 to 100 years); *occasional* that flooding occurs, on the average at least, once during a period of 2 to 10 years; and *frequent* that it occurs, on the average, more than once in 2 years. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, and *long* if more than 7 days. Probable dates are expressed in months; November-May, for example, means that flooding can occur during the period November through May.

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

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

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. The depth to a seasonal high water table applies to undrained soils. The estimates are based mainly on the evidence of a saturated zone, namely grayish colors or mottles in the soil. Indicated in table 16 are the depth to the seasonal high water table; the kind of water table—that is, perched, artesian, 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 16.

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. An *artesian* water table is under hydrostatic head, generally beneath an impermeable layer. When this layer is penetrated, the water level rises in an uncased borehole. A *perched* water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

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

Depth to bedrock is given if bedrock is within a depth of 5 feet. The depth is based on many soil borings and on observations during soil mapping. The rock is specified as either soft or hard. If the rock is soft or fractured, excavations can be made with trenching machines, backhoes, or small rippers. If the rock is hard or massive, blasting or special equipment generally is needed for excavation.

Subsidence is the settlement of organic soils or of saturated mineral soils of very low density. Subsidence 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 16 shows the expected initial subsidence, which usually is a result of drainage, and annual subsidence, which usually is a result of oxidation.

Not shown in the table is subsidence caused by an imposed surface load or by the withdrawal of ground water throughout an extensive area as a result of lowering the water table.

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

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

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

Physical, Chemical, and Mineralogical Analyses of Selected Soils

Dr. V. W. Carlisle and Dr. R. E. Caldwell, professors of soil science, University of Florida, Agricultural Experiment Stations and Soil Science Department, prepared this section.

Parameters for physical, chemical, and mineralogical properties of representative pedons sampled in Columbia County are presented in tables 17, 18, and 19. The analyses were conducted and coordinated by the Soil Characterization Laboratory at the University of Florida. Detailed pedon descriptions of soils analyzed are given in alphabetical order in the section "Classification of the Soils." Laboratory data and pedon information for additional soils in Columbia County, as well as in other counties in Florida, are on file at the University of Florida, Soil Science Department.

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

Particle-size distribution was determined by 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-centimeter water (1/10 bar) and 345-centimeter water (1/3 bar) were calculated from volumetric water

percentages divided by bulk density. Samples were ovendried 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 1N ammonium acetate buffered at pH 7.0. Sodium and potassium in the extract were determined by flame emission and calcium and magnesium 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 0.01M calcium chloride solution in a 1:2 soil-solution ratio; and 1N 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 0.1M sodium pyrophosphate. Determination of aluminum and iron was by atomic absorption spectrophotometry and that of extracted carbon by the Walkley-Black wet combustion method.

Mineralogy of the less than 2 micrometers clay fraction 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, summed, and normalized to give percentage of 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.

Surface horizons of most Columbia County soils are inherently sandy (table 17). All soils sampled, except the Lucy, Oleno, Pantego, and Troup series, had at least one horizon that was more than 90 percent sand. The Leon and Alpin soils contained more than 90 percent sand to a depth of 2 meters or more. The Albany, Bonneau, Ichetucknee, Ocilla, Oleno, Pantego, and Surrency soils contained the most fine textured materials with horizons exceeding 30 percent clay. Silt content generally was in the range of 3 to 8 percent; however, it exceeded 18 percent in one or more horizons of the Ocillo, Oleno, Pantego, and Surrency soils. Argillic horizons with clay content ranging from 11.8 to 81.6 percent occurred in all but the Hurricane, Leon, and Alpin soils. Fine sand dominated the sand fraction of all soils. Horizons with 50 percent or more fine sand occurred in all but the Lucy and Troup soils. Droughtiness is a common characteristic of sandy soils, particularly those that are moderately well drained, well drained, and excessively drained.

Hydraulic conductivity values frequently exceeded 15 centimeters per hour in the sandy horizons of the Albany, Alpin, Blanton, Bonneau, Electra Variant, Hurricane, Leon, Lucy, Mascotte, Ocilla, Plummer, and Troup soils. Horizons with enhanced amounts of clay occurred at varying depths in the Albany, Blanton, Bonneau, Electra Variant, Ichetucknee, Lucy, Mascotte, Ocilla, Pantego, Pelham, Plummer, Surrency, and Troup soils and resulted in very low hydraulic conductivity values that frequently approached zero. The Electra Variant, Leon, and Mascotte soils had well-developed spodic horizons with very low hydraulic conductivity values. The very low hydraulic conductivity values for the soils that contain enhanced amounts of clays and well-developed spodic horizons may or may not coincide with the estimated permeability values in table 15. The undisturbed soil cores occupy only a small part of the pedon and are only a single sample. In these soils the very low values may not represent true field conditions.

The available water in a soil for plants can be estimated from bulk density and water content data. Generally, excessively sandy soils that contain low amounts of organic matter retain low amounts of available water. The Alpin soil retains very low amounts of available water within a depth of more than 2 meters. The surface horizon of the Surrency soil retains the largest amount of available water.

Chemical soil properties (table 18) show that most Columbia County soils contain a low amount of extractable bases. Only the surface horizon of Lucy, Oleno, Pantego, and Troup soils exceeds 2 milliequivalents per 100 grams extractable bases; however, Bonneau, Chiefland, Ichetucknee, Lucy, Ocilla, Oleno, Pantego, and Troup soils have at least one horizon below the surface that exceeds this amount. Calcium is the dominant base, but the Lucy, Ocilla, and Troup soils have horizons with considerably greater amounts of magnesium than calcium. Sodium is not detectable in the Albany, Alpin, Blanton, and Plummer soils and occurs in amounts less than 0.2 milliequivalents per 100 grams in all but the Ocilla, Oleno, and Pantego soils. All soils sampled contain less than 1.0 milliequivalent per 100 grams potassium. Cation-exchange capacity values exceed 10 milliequivalents per 100 grams in the surface horizon of the Hurricane, Leon, Lucy, Mascotte, Oleno, Pantego, and Surrency soils. Within pedon depth, the cation-exchange capacity exceeds 10 milliequivalents per 100 grams in one or more horizons of the Bonneau, Chiefland, Electra Variant, Hurricane, Ichetucknee, Leon,

Lucy, Mascotte, Ocilla, Oleno, Pantego, Plummer, Surrency, and Troup soils.

Soils with a low cation-exchange capacity in the surface horizon, such as the Alpin and Chiefland soils, require only small amounts of lime to significantly alter both the base status and soil reaction in the upper horizons. Generally, soils of low inherent soil fertility are associated with low values for extractable bases and for cation-exchange capacity. Fertile soils are associated with high values for extractable bases, high cation-exchange capacity, and high base saturation values.

Organic carbon content is less than 2 percent throughout the profiles of the Albany, Alpine, Blanton, Bonneau, Chiefland, Electra Variant, Hurricane, Ichetucknee, Lucy, Ocilla, Oleno, Pelham, Plummer, and Troup soils. The surface horizon of the Leon, Mascotte, Pantego, and Surrency soils contains more than 2 percent organic carbon. Soil practices that conserve and maintain organic carbon in soils are highly desirable because organic carbon content is directly related to soil nutrient and water retention.

Electrical conductivity values generally are very low, exceeding 0.1 millimhos per centimeter only in the Oleno soil. Soluble salt content of Columbia County soils is insufficient to detrimentally affect the growth of salt-sensitive plants.

Soil reaction in water generally ranges from pH 4.5 to 6.0. Slightly higher reaction values were recorded for one or two horizons in the Chiefland, Ichetucknee, Ocilla, Oleno, and Troup soils, but none was above pH 7.0. Soil reaction generally is 0.5 to 1.5 units lower in calcium chloride and potassium chloride solutions than in water. Maximum plant nutrient availability generally is attained when soil reaction is between pH 6.5 and 7.5.

Sodium pyrophosphate extractable iron is 0.03 percent or less in the Bh horizon of the Electra Variant, Hurricane, Leon, and Mascotte soils. The ratio of pyrophosphate extractable carbon and aluminum to clay in these soils is sufficient to meet the chemical criteria for a spodic horizon. Citrate-dithionite extractable iron ranges from 0.01 percent in the spodic horizon of Hurricane soils to 2.49 percent in the argillic horizon of Albany soils. Aluminum extracted by citrate-dithionite in spodic horizons of Spodosols and argillic horizons of Alfisols and Ultisols ranges from 0.05 to 0.31 percent. Amounts of aluminum and iron in Columbia County soils are not sufficient to detrimentally affect phosphorus availability.

The sand fraction (2 to 0.05 millimeters) is siliceous with quartz overwhelmingly dominant in all pedons. Small amounts of heavy minerals occur in most horizons; the greatest concentration is in the very fine sand fraction. Crystalline mineral components of the clay fraction (less than 0.002 millimeters) are reported in table 19 for major horizons of the pedons sampled. The clay mineralogical suite is composed of montmorillonite, a 14-angstrom intergrade, kaolinite, gibbsite, and quartz. Montmorillonite occurs in slightly more than one-half of the pedons sampled but is noticeably absent in the Grossarenic Paleudults, Grossarenic Paleaquults, and Typic Quartzipsamments. Montmorillonite is not detectable in one pedon of Bonneau soils and in one pedon of Ocilla soils located a short distance south of Lake City; conversely, large amounts of montmorillonite occur in a second pedon of Bonneau soils and in a second pedon of Ocilla soils located northwest of Lake City. Kaolinite, 14-angstrom intergrade minerals, and quartz occur in all pedons. Gibbsite is detected only in the argillic horizon of Blanton soils.

Montmorillonite is probably the least stable of the mineral components in the present acidic environment of the Bonneau, Chiefland, Electra Variant, Ichetucknee, Leon, Lucy, Mascotte, Ocilla, Oleno, Pantego, and Pelham soils. Montmorillonite appears to have been inherited by these soils. A considerable change in volume could result from the shrinking (when dry) and swelling (when wet) of the montmorillonitic subsoil of the Bonneau, Ocilla, Oleno, and Pantego soils. The general tendency of 14-angstrom intergrades to decrease with depth suggests that the 14-angstrom intergrade minerals are very stable in this weathering environment. Soils dominated by montmorillonite and 14-angstrom intergrades have a much higher cation-exchange capacity and retain more plant nutrients than soils dominated by kaolinite and quartz.

Engineering Index Test Data

Table 20 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 Soils 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) *(1)* or the American Society for Testing and Materials (ASTM) *(2)*.

The tests and methods are: AASHTO classification—M 145 (AASHTO), D 3282 (ASTM); Unified classification—D 2487 (ASTM); Mechanical analysis—T 88 (AASHTO), D 2217 (ASTM); Liquid limit—T 89 (AASHTO), D 423 (ASTM); Plasticity index—T 90 (AASHTO), D 424 (ASTM); Moisture density, Method A—T 99 (AASHTO), D 698 (ASTM).

Table 20 contains engineering test data about some of the major soils in the county. The tests were made by the Soils Laboratory, Florida Department of Transportation, Bureau of Materials and Research. The tests help evaluate the soils for engineering purposes. The classifications given are based on data obtained by mechanical analysis and by tests to determine liquid limits and plastic limits.

The mechanical analyses were made by the combined sieve and hydrometer method. In this method, the various grain-sized fractions are calculated on the basis of all the material in the soil sample, including that coarser than 2 millimeters in diameter. The mechanical analyses used in this method should not be used in naming textural classes of soils.

Liquid limit and plasticity index indicate the effect of water on the strength and consistence of the soil material. As the moisture content of a dry clayey soil is increased, the material goes from dry to semisolid to plastic. If the moisture content is further increased, the material changes from plastic to liquid. The plastic limit is the moisture content at which the soil material changes from semisolid to plastic, and the liquid limit is the moisture content at which the soil material changes from plastic to liquid. The plasticity index is the numerical difference between the liquid limit and the plastic limit. It indicates the range of moisture content within which a soil material is plastic. The data on liquid limit and plasticity index in table 20 are based on laboratory tests of soil samples.

Compaction, or moisture-density, data are important in earthwork. If soil material is compacted at a successively higher moisture content, assuming that the compactive effort remains constant, the density of the compacted material increases until the optimum moisture content is reached. After that, density decreases with an increase in moisture content. The highest dry density obtained in the compactive test is termed maximum dry density. As a rule, maximum strength of earthwork is obtained if the soil is compacted to the maximum dry density.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories *(10)*. 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 21 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Ten soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Entisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Aquent (*Aqu*, meaning water, plus *ent*, from Entisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Haplaquents (*Hapl*, meaning minimal horizonation, plus *aquent*, the suborder of the Entisols that have an aquic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Haplaquents.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Mostly the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineral content, temperature regime, depth of the root zone, consistence, moisture equivalent, slope, and permanent cracks. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine-loamy, mixed, nonacid, mesic Typic Haplaquents.

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 *(8)*. Many of the technical terms used in the descriptions are defined in Soil Taxonomy *(10)*. 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 is a member of the loamy, siliceous, thermic family of Grossarenic Paleudults. It consists of somewhat poorly drained, moderately permeable soils that formed in deposits of sandy and loamy sediments. The soils are nearly level to gently sloping. They are on broad flats and in undulating areas bordering poorly defined drainageways and swales on the uplands. The slope ranges from 0 to 5 percent. The water table is at a depth of 12 to 30 inches for 1 to 4 months in most years. Some areas are flooded occasionally for long periods in about 1 year in 10.

The Albany soils are closely associated with the Blanton, Bonneau, Chipley, Ocilla, Pelham, Plummer, and Troup soils. The Blanton, Bonneau, and Troup soils are better drained than the Albany soils, and the Pelham and Plummer soils are more poorly drained. The Chipley soils are sandy to a depth of 80 inches or more; and the Ocilla, Bonneau, and Pelham soils have a sandy A horizon 20 to 40 inches thick.

Typical pedon of Albany fine sand, 0 to 5 percent slopes, in a pine plantation 0.5 mile east of Birley Road and 0.5 mile south of Florida Highway 252, NW1/4NE1/4 sec. 8, T. 4 S., R. 16 E.

A1—0 to 7 inches; grayish brown (10YR 5/2) fine sand; weak fine granular structure; friable; many fine roots; strongly acid; clear smooth boundary.
A21—7 to 15 inches; pale brown (10YR 6/3) fine sand; few fine faint very pale brown splotches; single grained; loose; strongly acid; gradual wavy boundary.
A22—15 to 30 inches; pale brown (10YR 6/3) fine sand; few fine prominent yellow (10YR 7/6) and common fine white mottles; common uncoated sand grains; single grained; loose; strongly acid; gradual wavy boundary.
A23—30 to 55 inches; white (10YR 8/2) fine sand; common medium prominent brownish yellow (10YR 6/8) mottles; single grained; loose; strongly acid; gradual wavy boundary.
B1—55 to 65 inches; pale yellow (2.5Y 7/4) loamy fine sand; common medium prominent yellowish brown (10YR 5/6) and common medium faint white (10YR 8/2) mottles; weak medium granular structure; friable; about 2 percent plinthite; very strongly acid; gradual wavy boundary.
B2tg—65 to 80 inches; gray (10YR 6/1) sandy clay loam; many medium prominent yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; about 4 percent plinthite; very strongly acid.

The soil is very strongly acid or strongly acid.

The A1 horizon is 6 to 8 inches thick. It has hue of 10YR, value of 3 through 5, and chroma of 1 or 2. The A2 horizon is 34 to 60 inches thick. It has hue of 10YR, value of 5, and chroma of 2 or 4, or value of 6 and chroma of 2 to 8, or value of 7 or 8 and chroma of 2. Few to common brown, yellow, and gray mottles occur throughout the horizon.

The B1 horizon is 0 to 10 inches thick. It has hue of 10YR, value of 6, and chroma of 4 or 6; or where it has hue of 2.5Y, it has value of 6 and chroma of 4, or value of 5 or 7 and chroma of 4 or 6, or value of 8 and chroma of 4. Few to common brown, yellow, and gray mottles occur throughout the horizon. The texture is loamy fine sand or fine sandy loam.

The B2tg horizon has hue of 10YR and either value of 5 or 6 and chroma of 1 to 8 or value of 7 and chroma of 1 or 2; or it has hue of 2.5Y and either value of 6 and chroma of 4 or value of 7 and chroma of 2. Its texture is sandy loam, fine sandy loam, or sandy clay loam. Common to many red, brown, yellow, and gray mottles occur throughout the horizon.

Alpin Series

The Alpin series is a member of the thermic, coated family of Typic Quartzipsamments. It consists of excessively drained, moderately rapidly permeable soils that formed in thick marine sandy sediments. These nearly level to strongly sloping soils occur on broad, slightly elevated ridges. The slope ranges from 0 to 12 percent. The water table is below a depth of 80 inches throughout the year.

The Alpin soils are closely associated with the Albany, Blanton, Chipley, Electra Variant, Lakeland, Leon, Plummer, Surrency, Troup, and Bonneau soils and with the Chiefland-Pedro Variant complex and Udorthents. The Alpin soils differ from the associated soils in having lamellae. They differ from the Albany, Blanton, Bonneau, Plummer, and Surrency soils in being better drained and in not having a Bt horizon. The Troup soils have a deep Bt horizon. The Electra Variant and Leon soils are more poorly drained than the Alpin soils and have a Bh horizon. The Chipley soils are more poorly drained than the Alpin soils. The Chiefland and Pedro Variant soils are shallow to deep over bedrock. Udorthents are mine spoil covering buried soils.

Typical pedon of Alpin fine sand, 0 to 5 percent slopes, in an area 400 feet north of the Suwannee County line and 1,400 feet west of the intersection of Old Ichetucknee Road and Florida Highway 238, 10 feet west of unimproved dirt road, SE1/4SW1/4 sec. 1, T. 6 S., R. 15 E.

A1—0 to 6 inches; grayish brown (10YR 5/2) fine sand; single grained; loose; common fine and medium roots; medium acid; clear smooth boundary.
A21—6 to 15 inches; pale brown (10YR 6/3) fine sand; common uncoated sand grains; single grained; loose; few fine roots; strongly acid; gradual wavy boundary.
A22—15 to 27 inches; pale brown (10YR 6/3) fine sand; common uncoated sand grains; single grained; loose; few fine roots; strongly acid; gradual wavy boundary.
A23—27 to 38 inches; very pale brown (10YR 7/3) fine sand; common fine faint very pale brown (10YR 7/4) splotches; few uncoated sand grains; single grained; loose; few fine roots; strongly acid; gradual wavy boundary.
A24—38 to 52 inches; very pale brown (10YR 8/3) fine sand; few fine distinct light yellowish brown (10YR 6/4) mottles; single grained; loose; strongly acid; clear wavy boundary.

A2&B1—52 to 80 inches; very pale brown (10YR 8/3) fine sand; single grained; loose; common uncoated sand grains; common yellowish brown (10YR 5/6) loamy fine sand lamellae 2.5 to 15 millimeters thick; individual lamellae are discontinuous in length within the pedon; weak fine granular structure; very friable; medium acid.

The soil is medium acid to very strongly acid. Lamellae begin at a depth of 40 to 70 inches and have a cumulative thickness of 1 to 6 inches to a depth of 80 inches.

The A1 horizon is 3 to 8 inches thick. It has hue of 10YR and either value of 4 or 5 and chroma of 1 through 3 or value of 3 and chroma of 3. The A2 horizon is 36 to 58 inches thick. It has hue of 10YR with value of 6 or 7 and chroma of 3 through 8, or value of 5 and chroma of 4 through 8, or value of 8 and chroma of 3; or it has hue of 2.5Y, value of 7, and chroma of 6. Streaks and small to large pockets of uncoated sand grains with hue of 10YR, value of 7 or 8, and chroma of 1 or 2 are in this horizon in many pedons. Few light yellowish brown mottles occur in the lower part of this horizon, usually below a depth of 40 inches.

The A2&B1 horizon is 14 to 40 inches thick. The A2 part has hue of 10YR; and it has value of 7 and chroma of 1 through 6, or value of 8 and chroma of 1 through 3, or value of 8 and chroma of 6. The B1 part of this horizon has hue of 10YR and either value of 5 and chroma of 4 through 8 or value of 7 and chroma of 6; or it has hue of 7.5YR, value of 5, and chroma of 6 or 8. The lamellae range from 1 to 15 millimeters in thickness and from 1 centimeter to more than 1 meter in horizontal length in the pedon. The texture of the lamellae is loamy sand, loamy fine sand, or sandy loam; however, the texture after mixing is fine sand.

Bigbee Series

The Bigbee series is a member of the thermic, coated family of Typic Quartzipsamments. It consists of excessively drained, rapidly permeable soils that formed in marine or fluvial sandy deposits. These nearly level to gently sloping soils occur on low terraces along rivers and flood for long periods during high rainfall. The slope ranges from 0 to 2 percent. The water table is at a depth of 40 to 70 inches for 1 to 2 months and rises to a depth of 20 to 40 inches for short periods; it is usually deeper than 80 inches for the rest of the year.

The Bigbee soils are closely associated with the Electra Variant, Alpin, Albany, Blanton, Leon, and Mascotte soils. The Electra Variant and the Leon and Mascotte soils have a spodic horizon and are more poorly drained than the Bigbee soils. The Alpin soils have lamellae, and the Albany and Blanton soils have a Bt horizon.

Typical pedon of Bigbee fine sand in a borrow pit 100 yards south of Florida Highway 136 and 200 yards west of White Springs Road, NW1/4SE1/4SE1/4 sec. 12, R. 15 E., T. 2 S.

A1—0 to 7 inches; dark grayish brown (10YR 4/2) fine sand; weak fine granular structure; very friable; few fine roots; very strongly acid; clear smooth boundary.

C1—7 to 14 inches; yellowish brown (10YR 5/4) fine sand; single grained; loose; very strongly acid; gradual wavy boundary.

C2—14 to 30 inches; light yellowish brown (10YR 6/4) fine sand; common medium uncoated sand grains; single grained; loose; very strongly acid; clear smooth boundary.

C3—30 to 48 inches; yellow (10YR 7/8) fine sand; few fine faint brownish yellow mottles; common uncoated sand grains; single grained; loose; very strongly acid; gradual wavy boundary.

C4—48 to 80 inches; white (10YR 8/2) fine sand, few fine distinct light yellowish brown (10YR 6/4) and brownish yellow (10YR 6/8) mottles; single grained; loose; very strongly acid.

The thickness of the solum exceeds 80 inches. Reaction is strongly acid or very strongly acid in all horizons.

The A1 horizon is 5 to 8 inches thick. It has hue of 10YR; it has value of 4 and chroma of 2 or 3, or value of 5 and chroma of 3, or value of 3 and chroma of 2.

The upper part of the C horizon has hue of 10YR, value of 5, and chroma of 4 through 8, or value of 6 and chroma of 4 or 6, or value of 7 and chroma of 6 or 8; or it has hue of 7.5YR, value of 5, and chroma of 6 or 8. The lower part of the C horizon has hue of 10YR and either value of 6 or 7 and chroma of 3 or 4 or value of 8 and chroma of 1 or 2. Chroma of 2 or less occurs at a depth of more than 40 inches. The C horizon extends to a depth of 80 inches or more.

Blanton Series

The Blanton series is a member of the loamy, siliceous, thermic family of Grossarenic Paleudults. It consists of moderately well drained, moderately permeable soils that formed in sandy and loamy marine materials. These nearly level to sloping soils occur on extensive broad ridges and slopes adjacent to drainageways. The slope ranges from 0 to 8 percent. The water table is at a depth of 5 to 6 feet for most of the year. A perched water table is above the Bt horizon for less than a month during wet seasons.

The Blanton soils are closely associated with the Albany, Alpin, Bigbee, Chipley, Lakeland, Ocilla, Plummer, Ichetucknee, Bonneau, and Lucy soils. The Albany, Chipley, Ocilla, and Plummer soils are more poorly drained than the Blanton soils, and the Bigbee and Lakeland soils are better drained. The Bigbee,

Chipley, and Lakeland soils are sandy to a depth of 80 inches or more. The Ocilla, Bonneau, and Lucy soils have a sandy A horizon less than 40 inches thick. The Alpin soils have lamellae in accumulations of 6 inches or less in the upper 80 inches, and they do not have an argillic horizon. The Ichetucknee soils are in a fine, mixed family.

Typical pedon of Blanton fine sand, 0 to 5 percent slopes, in a pine plantation 1 mile south of Florida Highway 252, 800 feet west of Birley Road, 25 feet east of Woods Road, SE1/4SW1/4 sec. 8, T. 4 S., R. 16 E.

Ap—0 to 7 inches; gray (10YR 6/1) fine sand; weak fine granular structure; very friable; many fine and common medium roots; strongly acid; clear wavy boundary.

A21—7 to 37 inches; very pale brown (10YR 7/3) fine sand; common medium faint white (10YR 8/2) splotches; single grained, loose; common fine roots; strongly acid; gradual smooth boundary.

A22—37 to 52 inches; light gray (10YR 7/2) fine sand; few fine faint very pale brown (10YR 7/4) mottles; many medium pockets of white (10YR 8/2) in lower 10 inches; single grained; loose; few fine roots; strongly acid; clear wavy boundary.

B21t—52 to 62 inches; light yellowish brown (10YR 6/4) fine sandy loam; few fine faint brownish yellow (10YR 6/8) mottles; moderate medium granular structure; friable; very strongly acid; gradual wavy boundary.

B22t—62 to 67 inches; very pale brown (10YR 7/4) fine sandy loam; many medium distinct strong brown (7.5YR 5/6) and common medium distinct pale brown (10YR 6/3) mottles; weak fine subangular blocky structure; friable; very strongly acid; gradual wavy boundary.

B23tg—67 to 80 inches; light brownish gray (10YR 6/2) fine sandy loam, many medium distinct strong brown (7.5YR 5/8) mottles; weak fine subangular blocky structure; friable; very strongly acid.

The thickness of the solum ranges from 60 to more than 80 inches. Reaction is strongly or very strongly acid in all horizons. Ironstone pebbles generally range from 0 to 5 percent. In some pedons they make up as much as 15 percent of the material below a depth of 60 inches.

The A1 or Ap horizon is 5 to 10 inches thick. It has hue of 10YR, value of 4 through 6, and chroma of 1 through 3. The A2 horizon is 38 to 64 inches thick. It has hue of 10YR, value of 6 or 7, and chroma of 1 through 4.

The B2t horizon has hue of 10YR and either value of 6 or 7 and chroma of 2 through 4 or value of 5 or 6 and chroma of 6 or 8; or it has hue of 7.5YR, value of 5, and chroma of 6. Where chroma is 6 or 8, this horizon has few to common gray, yellow, brown, or red mottles. Chroma of 2 or less occurs in the lower part of this horizon. The texture is sandy loam, fine sandy loam, or sandy clay loam.

Bonneau Series

The Bonneau series is a member of the loamy, siliceous, thermic family of Arenic Paleudults. It consists of moderately well drained, moderately permeable soils that formed in loamy coastal plain sediments. These gently sloping to sloping soils occur on slightly elevated knolls and in narrow to broad upland areas. The slope ranges from 2 to 8 percent. The water table is at a depth of 48 to 72 inches for 1 to 2 months during rainy periods of most years. It is below a depth of 72 inches during the remainder of the year.

The Bonneau soils are closely associated with the Albany, Alpin, Blanton, Leefield, Pelham, Ichetucknee, and Troup soils. The Bonneau soils have a Bt horizon at a depth of 20 to 40 inches, whereas the Albany, Alpin, Blanton, Ichetucknee, and Troup soils do not. Additionally, the Albany, Leefield, Pelham, and Ichetucknee soils are wetter than the Bonneau soils, and the Alpin soils are excessively drained.

Typical pedon of Bonneau fine sand, 2 to 5 percent slopes, 0.75 mile west of U.S. Highway 41, 0.5 mile south of New Mount Zion Church, and 200 feet east of Suwannee Valley Road, SW1/4SE1/4 sec. 21, T. 2 S., R. 16 E.

A1—0 to 7 inches; grayish brown (10YR 5/2) fine sand; weak fine granular structure; friable; strongly acid; clear smooth boundary.

A21—7 to 15 inches; yellowish brown (10YR 5/4) fine sand; single grained; loose; strongly acid; gradual wavy boundary.

A22—15 to 27 inches; brownish yellow (10YR 6/6) fine sand; very pale brown (10YR 7/3) splotches; single grained; loose; strongly acid; gradual wavy boundary.

B21t—27 to 36 inches; yellowish brown (10YR 5/6) fine sandy loam; weak medium subangular blocky structure; firm; strongly acid; gradual wavy boundary. (This horizon was subdivided for tests to determine physical and chemical properties.)

B22t—36 to 58 inches; mottled very pale brown (10YR 7/4), yellowish red (5YR 4/6), and grayish brown (2.5Y 5/2) sandy clay loam; strong medium subangular blocky structure; very firm; strongly acid; gradual wavy boundary.

B23t—58 to 74 inches; mottled very pale brown (10YR 7/4), yellowish red (5YR 4/6), and grayish brown (2.5Y 5/2) sandy clay loam; strong medium subangular blocky structure; very firm; few gray (10YR 5/1) and yellowish red (5YR 5/8) pockets of fine sandy loam; clay films on ped faces; very strongly acid; gradual wavy boundary.

B24t—74 to 80 inches; mottled gray (10YR 5/1) and pink (7.5YR 7/4) sandy clay loam; weak medium subangular blocky structure; firm; very strongly acid.

Reaction ranges from medium acid to very strongly acid, except where the soil has been limed.

The A1 or Ap horizon is 5 to 9 inches thick. It has hue of 10YR, value of 4 or 5, and chroma of 1 through 3. The A2 horizon is 10 to 33 inches thick. It has hue of 2.5Y, value of 6 or 7, and chroma of 4; or it has hue of 10YR and either value of 5 and chroma of 3 or 4 or value of 6 or 7 and chroma of 3 through 6.

The B21t horizon is 6 to 20 inches thick and has hue of 7.5YR or 10YR, value of 5 through 7, and chroma of 4 through 8. Common yellow, reddish brown, yellowish red, and brownish yellow mottles are in some pedons. The texture is fine sandy loam or sandy clay loam.

The lower part of the B2t horizon has the same color range as the B21t horizon with few to common brown, yellow, red, and gray mottles, or this horizon is reticulately mottled throughout with these colors. Chroma of 2 or less is at a depth of 36 to 60 inches. The B2t horizon extends to a depth of 80 inches or more. The texture is sandy clay loam or sandy clay.

Chiefland Series

The Chiefland series is a member of the loamy, siliceous, thermic family of Arenic Hapludalfs. It consists of well drained, moderately permeable soils that formed in sandy and loamy sediments underlain by limestone. These nearly level to sloping soils occur on upland karst landscapes and along river and creek banks. The slope ranges from 0 to 8 percent. The water table is below a depth of 72 inches.

The Chiefland soils are closely associated with the Lakeland, Alpin, Bigbee, Blanton, Chipley, Troup, Bonneau, and Pedro Variant soils. The Chiefland soils differ from the associated soils, except the Pedro Variant, in having limestone within a depth of 80 inches. The Pedro Variant soils have limestone within a depth of 20 inches. Additionally, the Blanton and Chipley soils are moderately well drained, and the Alpin and Lakeland soils do not have a Bt horizon.

Typical pedon of Chiefland fine sand, 0 to 5 percent slopes, 0.55 mile east of U.S. Highway 441, 0.3 mile north of Bellamy Road, SW1/4NE1/4 sec. 3, T. 7 S., R. 17 E.

Ap—0 to 8 inches; brown (10YR 5/3) fine sand; single grained; loose; common uncoated sand grains (many in the upper 2 inches); many fine roots; medium acid; gradual smooth boundary.

A2—8 to 33 inches; pale brown (10YR 6/3) fine sand; common medium faint brown (10YR 5/3) and few fine prominent brownish yellow (10YR 6/6) mottles; single grained; loose; common uncoated sand grains; many fine carbonate masses and mycelia; medium acid; clear wavy boundary.

B2t—33 to 39 inches; strong brown (7.5YR 5/8) fine sandy loam; weak medium subangular blocky structure; friable; few small carbonate nodules; neutral; abrupt wavy boundary.

11CR—39 to 80 inches; white (10YR 8/2) soft limestone.

The depth to soft limestone ranges from 26 to 50 inches in about 60 percent of the pedon and from 50 to 60 inches in about 30 to 40 percent of the pedon. In solution holes, the solum extends to a depth of more than 60 inches. Boulders cover about 1 to 3 percent of the area.

The A1 or Ap horizon is 3 to 8 inches thick. It has hue of 10YR, value of 4 or 5, and chroma of 1 through 3. The A2 horizon is 18 to 30 inches thick. It has hue of 10YR, value of 6 or 7, and chroma of 2 through 4. Brownish yellow or very pale brown streaks and splotches range from none to common. Reaction is strongly acid to neutral. Fine limestone particles are scattered throughout this horizon in some pedons.

The B2t horizon is 3 to 18 inches thick. It has hue of 7.5YR or 10YR, value of 4 through 6, and chroma of 4 through 8. Its texture is fine sandy loam or sandy clay loam. Reaction ranges from slightly acid to moderately alkaline. Soft limestone nodules or fragments range from few to common in the lower part of this horizon.

The IICr horizon is weathered limestone with hue of 10YR, value of 7 or 8, and chroma of 1 or 2. It is mixed with few to many hard limestone boulders. Solution holes filled with sandy clay loam or fine sand occupy about 30 percent of the pedon. Depth to limestone is highly variable within short distances.

Chipley Series

The Chipley series is a member of the thermic, coated family of Aquic Quartzipsamments. It consists of moderately well drained, rapidly permeable soils that formed in thick, sandy marine sediments. The soils are nearly level to gently sloping. They are on low ridges and knolls. The slope ranges from 0 to 5 percent. The water table is at a depth of 20 to 40 inches for 2 to 4 months during most years and at a depth of 40 to 60 inches during the rest of the year. During dry periods, the water table may fall to a depth of more than 60 inches.

The Chipley soils are closely associated with the Albany, Alpin, Blanton, Plummer, Mascotte, Hurricane, and Bonneau soils. The Albany, Blanton, Plummer, Mascotte, and Bonneau soils have an argillic horizon. The Mascotte soils have a spodic horizon, and the Hurricane soils have a deep spodic horizon. The Plummer and Mascotte soils are more poorly drained than the Chipley soils. The Alpin soils have lamellae and are excessively drained.

Typical pedon of Chipley fine sand, 0 to 5 percent slopes, in a wooded area 1,500 feet south of U.S. Highway 90 and 3/4 mile west of intersection U.S. Highway 90 and Florida Highway 252, about 200 feet southeast of the northwest corner of Pinemount

subdivision, NW1/4SW1/4SW1/4 sec. 34, T. 3 S., R. 16 E.

Ap—0 to 7 inches; gray (10YR 5/1) fine sand; single grained; loose; extremely acid; clear smooth boundary.
C1—7 to 30 inches; very pale brown (10YR 7/3) fine sand; common medium distinct yellow (10YR 7/6) mottles; single grained; loose; strongly acid; gradual wavy boundary.
C2—30 to 40 inches; light gray (10YR 7/2) fine sand; common medium faint very pale brown (10YR 7/3) mottles; single grained; loose; strongly acid; gradual wavy boundary.
C3—40 to 60 inches; very pale brown (10YR 7/3 to 7/4) fine sand; common medium faint brownish yellow (10YR 6/8) and white (10YR 8/2) and few fine prominent yellowish red (5YR 4/8) mottles; single grained; loose; very strongly acid; abrupt smooth boundary.
C4—60 to 66 inches; white (10YR 8/1) fine sand; single grained; loose; very strongly acid; gradual wavy boundary.
C5—66 to 80 inches; white (10YR 8/1) fine sand; few fine faint brownish yellow (10YR 6/8) and common medium faint yellow (10YR 8/6) mottles; single grained; loose; very strongly acid.

The Ap horizon ranges from extremely acid to strongly acid. The C horizon is very strongly acid or strongly acid.

The Ap horizon is 4 to 10 inches thick. It has hue of 10YR, value of 2 through 5, and chroma of 1 or 2.

The C horizon has hue of 10YR and either value of 7 or 8 and chroma of 1 to 4 or value of 4 to 6 and chroma of 3; or it has hue of 7.5YR, value of 5, and chroma of 6. Few to common fine and medium reddish and yellowish segregated iron mottles and white, gray, and pale brown mottles are at a depth of 30 to 40 inches in some pedons.

Dorovan Series

The Dorovan series is a member of the dysic, thermic family of Typic Medisaprists. It consists of very poorly drained, moderately permeable, highly decomposed organic materials more than 51 inches thick. These materials are decomposed leaves, twigs, roots, and other partially decomposed plants. The soils are in large swamps and drainageways in the northern part of the county. The water table is at or above the surface for 6 to 12 months during most years. Most areas are covered by as much as 2 feet of water at some time during the year. The concave slopes are less than 1 percent.

The Dorovan soils are closely associated with the Leon, Mascotte, Pamlico, Pelham, Plummer, Sapelo, and Surrency soils. All of these, except the Pamlico soils, are mineral soils. The Pelham and Surrency soils have a Bt horizon at a depth of 20 to 40 inches. The Leon, Mascotte, and Sapelo soils have a Bh horizon. The Pamlico soils have organic materials less than 51 inches thick underlain by sandy over loamy materials.

Typical pedon of Dorovan muck, 0.04 mile east of Little Suwannee Road, 0.4 mile south of the Georgia state line, NE1/4SE1/4 sec. 18, T. 2 N., R. 18 E.

Oa1—0 to 14 inches; very dark brown (10YR 2/2) muck; about 45 percent fiber, 15 percent rubbed; massive; very friable; many medium to large partly decomposed leaves, twigs, and wood fragments; very strongly acid; diffuse wavy boundary.
Oa2—14 to 50 inches; dark reddish brown (5YR 2/2) muck; about 30 percent fiber, 5 percent rubbed; massive; very friable; few to common partially decomposed roots, limbs, logs, and fragments of wood; very strongly acid; diffuse wavy boundary.
Oa3—50 to 80 inches; dark reddish brown (5YR 2/2) muck; about 25 percent fiber, less than 5 percent rubbed; common partially decomposed plant parts; very strongly acid.

The thickness of the organic material ranges from 51 to 80 inches or more. Reaction is strongly acid to very strongly acid. Fiber content of the Oa horizon ranges from 20 to 50 percent unrubbed and from less than 5 to 20 percent rubbed.

The Oa horizon has hue of 5YR, 7.5YR, or 10YR, value of 2 or 3, and chroma of 1 or 2; or it is neutral with value of 2 or 3. This horizon contains few to many partly decomposed leaves, roots, twigs, and remains of hydrophytic plants. A few logs and large woody fragments are in the lower part of this horizon.

In some pedons there is a IIC horizon that has hue of 10YR, value of 3 to 5, and chroma of 1 or 2. Its texture is fine sand or sandy loam. Depth to the IIC horizon ranges from 52 to 80 inches or more.

Electra Variant

The Electra Variant is a member of the sandy, siliceous, thermic family of Arenic Ultic Haplohumods. It consists of somewhat poorly drained, slowly permeable soils that formed in thick, marine sandy and loamy deposits. These nearly level to gently sloping soils occur on low ridges; along creeks, rivers, and drainageways; and around swamps and depressions. The slope ranges from 0 to 5 percent. The water table is at a depth of 25 to 40 inches for about 4 months during most years and under normal conditions recedes to a depth of more than 40 inches the rest of the year. Some areas of this soil near major rivers are occasionally flooded after abnormally heavy and prolonged rainfall. These soils historically have flooded in March or April about once every 10 years. This flooding is especially predominate in the Suwannee River flood plains.

The Electra Variant soils are closely associated with the Albany, Alpin, Bigbee, Blanton, Leon, Plummer, Pelham, Sapelo, and Surrency soils. The Electra Variant soils differ from these soils, except the Leon and Sapelo soils, in having a spodic horizon. The Leon and Sapelo soils are more poorly drained and have a spodic horizon within a depth of 30 inches. The Leon soils do not have an argillic horizon. The Plummer, Pelham, and Surrency soils are more poorly drained than the Electra Variant soils, and the Alpin and Blanton soils are better drained.

Typical pedon of Electra Variant fine sand, 0 to 5 percent slopes, 900 feet west of Florida Highway 245 and 0.25 mile north of Olustee Creek, 10 feet west of woodland trail, SE1/4SE1/4 sec. 25, T. 5 S., R. 17 E.

A1—0 to 4 inches; gray (10YR 5/1) fine sand; weak fine granular structure; very friable; many fine and medium and few coarse roots; very strongly acid; clear smooth boundary.

A21—4 to 24 inches; white (10YR 8/1) fine sand; few fine distinct brown (10YR 5/3) streaks along root channels; single grained; loose; common fine and few medium roots; very strongly acid; gradual wavy boundary.

A22—24 to 34 inches; light gray (10YR 7/2) fine sand; few fine and medium distinct dark grayish brown (10YR 4/2) streaks along root channels; single grained; loose; few fine and medium roots; very strongly acid; gradual wavy boundary.

A23—34 to 38 inches; light brownish gray (10YR 6/2) fine sand; common medium distinct dark grayish brown (10YR 4/2) streaks along root channels; single grained; loose; few fine roots; strongly acid; abrupt wavy boundary.

B21h—38 to 46 inches; dark brown (7.5YR 3/2) fine sand; weak fine subangular blocky structure; friable; many fine roots; sand grains coated with organic matter; very strongly acid; gradual wavy boundary.

B22h—46 to 51 inches; dark brown (10YR 3/3) fine sand; weak fine subangular blocky structure; friable; common fine roots; sand grains coated with organic matter; very strongly acid; gradual wavy boundary.

B3—51 to 53 inches; dark yellowish brown (10YR 4/4) fine sand; single grained; loose; very strongly acid; gradual wavy boundary.

B21t—53 to 57 inches; yellowish brown (10YR 5/4) fine sandy loam; common fine faint pale brown (10YR 6/3) mottles; weak fine subangular blocky structure; friable; few to common fine reddish brown partially decomposed roots; strongly acid; gradual wavy boundary.

B22tg—57 to 80 inches; light brownish gray (10YR 6/2) fine sandy loam; few coarse distinct brownish yellow (10YR 6/8) and few fine prominent red (2.5YR 4/6) mottles; weak fine subangular blocky structure; friable; few to common fine reddish brown roots and root channels; strongly acid.

Reaction is very strongly acid or strongly acid.

The A1 horizon is 2 to 6 inches thick. It has hue of 10YR, value of 5 or 6, and chroma of 1. The A2 horizon is 32 to 40 inches thick. It has hue of 10YR, value of 5 through 8, and chroma of 1 or 2. Few to many dark grayish brown or brown streaks along root channels occur throughout this horizon.

Some pedons have a thin transitional horizon between the A2 and Bh horizons that is up to 3 inches thick. It has hue of 10YR, value of 5, and chroma of 2.

The Bh horizon is 10 to 18 inches thick. It has hue of 10YR, value of 2 or 3, and chroma of 2 or 3; or it has hue of 7.5YR or 5YR, value of 2 or 3, and chroma of 1 or 2. Some pedons have a B3 horizon that is up to 4 inches thick. It has hue of 10YR, value of 4, and chroma of 3 or 4. Some pedons have an A'2 horizon that is up to 12 inches thick. It has hue of 10YR, value of 5 through 7, and chroma of 2 or 3. The Bt horizon has hue of 10YR and value of 4 and chroma of 1 through 4, or value of 5 and chroma of 1 through 6, or value of 6 and chroma of 2 through 4; or it has hue of 2.5Y, value of 6, and chroma of 2. There are few to common gray, yellow, red, or brown mottles. The texture is fine sandy loam or sandy clay loam.

These soils are a variant of the Electra series because they are in the thermic temperature family rather than the hyperthermic temperature family. Other than this difference, these soils are within the concepts of the Electra series.

Fort Meade Variant

Fort Meade Variant is a member of the sandy, siliceous, thermic family of Quartzipsammentic Haplumbrepts. It consists of well drained, rapidly permeable soils that formed in moderately thick beds of sand and loamy sand. These soils are on nearly level to gently sloping uplands. The slope ranges from 0 to 5 percent. The water table is below a depth of 72 inches during most years.

The Fort Meade Variant soils are closely associated with the Blanton, Troup, Albany, Plummer, Lucy, and Orangeburg soils, all of which have a Bt horizon. The Blanton, Albany, and Plummer soils are less well drained than the Fort Meade Variant soils.

Typical pedon of Fort Meade Variant loamy fine sand, 0 to 5 percent slopes, 0.7 mile east of U.S. Highway 41, 0.8 mile north of Florida Highway 238, NE1/4NW1/4 sec. 35, T. 5 S., R. 17 E.

Ap—0 to 7 inches; very dark gray (10YR 3/1) loamy fine sand; weak fine granular structure; friable; few uncoated sand grains; few fine roots; strongly acid; gradual smooth boundary.

A12—7 to 16 inches; dark brown (10YR 3/3) loamy fine sand; weak fine granular structure; friable; few fine roots; strongly acid; clear wavy boundary.

C1—16 to 33 inches; dark brown (10YR 4/3) fine sand; single grained; loose; few cemented iron pebbles 1/2 centimeter to 3 centimeters in diameter; very strongly acid; gradual wavy boundary.
C2—33 to 51 inches; yellowish brown (10YR 5/4) fine sand; single grained; loose; few cemented pebbles 1/2 centimeter to 3 centimeters in diameter; very strongly acid; gradual wavy boundary.
C3—51 to 80 inches; yellowish brown (10YR 5/6) fine sand; single grained; loose; common cemented pebbles 1/2 centimeter to 3 centimeters in diameter; very strongly acid.

Reaction ranges from strongly acid to slightly acid in the A horizon and from very strongly acid to medium acid in the C horizon. Pebbles of phosphate rock or of silica cemented concretionary material enriched with phosphate range from few to many in most pedons. Pebbles range from 1/2 centimeter to 5 centimeters in diameter.

The A horizon is 11 to 16 inches thick. It has hue of 10YR, value of 2 or 3, and chroma of 1 through 3.

The C horizon has hue of 10YR and either value of 4 or 5 and chroma of 3 through 8 or value of 6 and chroma of 4 through 8; or it has hue of 7.5YR, value of 4 or 5, and chroma of 4 through 8. It is loamy fine sand or fine sand and extends to a depth of 80 inches or more.

These soils are a variant of the Fort Meade series because they are in the thermic temperature family rather than the hyperthermic temperature family. Other than this difference, these soils are within the concepts of the Fort Meade series.

Goldsboro Series

The Goldsboro series is a member of the fine-loamy, siliceous, thermic family of Aquic Paleudults. It consists of moderately well drained, moderately to moderately slowly permeable soils that formed in unconsolidated, loamy marine sediments. These gently sloping soils occur on upland tops and knolls. The slope ranges from 2 to 5 percent. A water table is at a depth of 2 to 3 feet after heavy rains for less than a month during most years. It is at a depth of 3 to 5 feet for 1 to 4 months and at a depth of more than 5 feet the remainder of the year.

The Goldsboro soils are closely associated with the Albany, Blanton, Bonneau, Lucy, and Ocilla soils. The Albany, Blanton, Bonneau, Lucy, and Ocilla soils have a Bt horizon more than 20 inches deep. In addition, the Albany and Ocilla soils are more poorly drained than the Goldsboro soils.

Typical pedon of Goldsboro loamy fine sand, 2 to 5 percent slopes, in a cleared area 1/2 mile south of Hillcrest Road and 100 yards east of Interstate 75 on logging road north from the abandoned road westward from Florida Highway 131, NW1/4SE1/4 sec. 32, T. 4 S., R. 17 E.

Ap—0 to 6 inches; grayish brown (10YR 5/2) loamy fine sand; weak fine granular structure; very friable; strongly acid; clear smooth boundary.
A2—6 to 13 inches; yellowish brown (10YR 5/4) loamy fine sand; few fine faint yellowish brown (10YR 5/6) mottles; single grained; loose; very strongly acid; gradual wavy boundary.
B1—13 to 18 inches; light yellowish brown (10YR 6/4) fine sandy loam; common medium distinct yellowish brown (10YR 5/6) mottles; moderate fine granular structure; very friable; very strongly acid; gradual wavy boundary.
B21t—18 to 23 inches; light yellowish brown (10YR 6/4) sandy clay loam; common medium faint brownish yellow (10YR 6/6) mottles; weak fine subangular blocky structure; friable; slightly sticky; common fine roots; very strongly acid; gradual wavy boundary.
B22t—23 to 30 inches; light yellowish brown (10YR 6/4) sandy clay loam; few fine distinct yellowish brown (10YR 5/6 and 5/8) and few medium distinct light gray (10YR 7/1) mottles; weak fine subangular blocky structure; friable; slightly sticky; few fine roots; very strongly acid; clear wavy boundary.
B23—30 to 45 inches; brownish yellow (10YR 6/6) sandy clay loam; common medium distinct light gray (10YR 7/1) and yellowish brown (10YR 5/8) mottles; moderate fine subangular blocky structure; friable; slightly sticky; sand grains coated and bridged with clay; very strongly acid; gradual wavy boundary.
B3—45 to 80 inches; light yellowish brown (10YR 6/4) sandy clay; many medium distinct light gray (10YR 7/1) and common medium distinct yellowish brown (10YR 5/8) mottles; moderate fine subangular blocky structure; friable; slightly sticky; slightly plastic; sand grains coated and bridged with clay; patchy clay films on faces of peds; very strongly acid.

Mottles that are associated with seasonal wetness are at a depth of about 20 to 30 inches. The depth to clayey texture ranges from 45 to 80 inches.

Reaction is very strongly acid or strongly acid throughout the soil, except where the soil has been limed.

The A1 or Ap horizon is 6 to 10 inches thick. It has hue of 10YR and either value of 5 and chroma of 1 or 2 or value of 3 and chroma of 1. The A2 horizon is 0 to 10 inches thick. It has hue of 10YR and either value of 5 or 6 and chroma of 2 to 6 or value of 7 and chroma of 3 or 4. In some pedons there are few yellowish brown mottles throughout this horizon. The texture of the A horizon is loamy fine sand or loamy sand.

The B1 horizon is 2 to 5 inches thick. It has hue of 10YR, value of 5 or 6, and chroma of 4 or 6. In some pedons there are few to common yellowish brown mottles throughout this horizon.

The B2t horizon is 25 to 62 inches thick. It has hue of 10YR and either value of 5 and chroma of 6 or value of 6 and chroma of 4 or 6. This horizon has few to many mottles in hue of 10YR and either value of 5 through 7 and chroma of 1 or 2 or value of 5 or 6 and chroma of 4 through 8; or it has hue of 5YR, value of 4, and chroma of 6 or 8. In many pedons this horizon is reticulately mottled with the same colors. The B2t horizon is fine sandy loam or sandy clay loam.

The B3 horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 through 4.

Hurricane Series

The Hurricane series is a member of the sandy, siliceous, thermic family of Grossarenic Entic Haplohumods. It consists of somewhat poorly drained, moderately rapidly permeable soils that formed in sandy coastal plain sediments. These nearly level soils occur on flats and in areas adjacent to poorly defined drainageways and depressions. The slope ranges from 0 to 2 percent. The water table is at a depth of 20 to 30 inches for 1 to 4 months during most years. Occasionally it is above 20 inches, but it recedes to a depth of 45 inches or more during dry periods.

The Hurricane soils are closely associated with the Albany, Blanton, Chipley, Leefield, Leon, Mascotte, Pelham, Plummer, Sapelo, and Surrency soils. The Hurricane soils differ from the Pelham, Plummer, Surrency, Albany, Blanton, and Leefield soils in having a spodic horizon and not having an argillic horizon; also the Blanton soils are better drained than the Hurricane soils. The Hurricane soils differ from the Chipley soils in having a spodic horizon and from the Sapelo and Mascotte soils in not having an argillic horizon. Hurricane soils are better drained than Leon soils.

Typical pedon of Hurricane fine sand, 0.5 mile east of junction of Florida Highway 100A and U.S. Highway 90, 150 yards north of U.S. Highway 90, SE1/4NE1/4 sec. 34, T. 3 S., R. 17 E.

Ap—0 to 8 inches; very dark gray (10YR 3/1) fine sand; weak fine granular structure; very friable; many fine roots; strongly acid; gradual wavy boundary.

A21—8 to 18 inches; grayish brown (10YR 5/3) fine sand; few fine distinct very dark gray (10YR 3/1) splotches; weak fine granular structure; very friable; strongly acid; diffuse wavy boundary.

A22—18 to 32 inches; pale brown (10YR 6/3) fine sand; common medium prominent yellowish brown (10YR 5/8) mottles; common fine faint light gray (10YR 7/2) mottles in lower 10 inches; weak fine granular structure; very friable; very strongly acid; gradual wavy boundary.

A23—32 to 56 inches; light gray (10YR 7/2) fine sand; common medium faint gray (10YR 6/1) mottles; common fine distinct very dark grayish brown (10YR 3/2) mottles along old root channels; weak fine granular structure; very friable; very strongly acid; gradual wavy boundary.

B1h—56 to 65 inches; dark brown (7.5YR 4/2) fine sand; weak medium granular structure; friable; common medium distinct black (5YR 2/1) Bh bodies; very strongly acid; gradual wavy boundary.

B2h—65 to 80 inches; black (5YR 2/1) fine sand; weak medium subangular blocky structure; firm; few scattered weakly cemented ortstein fragments.

Reaction ranges from very strongly acid to strongly acid, except where the soil has been limed.

The A1 or Ap horizon is 6 to 9 inches thick. It has hue of 10YR, value of 3 or 4, and chroma of 2 or less. Where the horizon is more than 8 inches thick, value is more than 3.

The A2 horizon is 42 to 60 inches thick. It has hue of 10YR, value of 5 through 7, and chroma of 2 to 4. Chroma of 2 is restricted to the lower part of the A2 horizon. This horizon has few to many mottles in hue of 10YR and either value of 4 and chroma of 2 to 4 or value of 5 through 7 and chroma of 2 through 8. In some pedons there are coarse black or dark brown Bh bodies in the lower part of the A2 horizon.

Depth to the Bh horizon is more than 50 inches. The horizon has hue of 7.5YR, value of 3 or 4, and chroma of 1 or 2; or it has hue of 10YR, value of 2 or 3, and chroma of 1 or 2. Sand grains in this horizon are well coated with organic matter.

Ichetucknee Series

The Ichetucknee series is a member of the fine, mixed, thermic family of Albaquultic Hapludalfs. It consists of somewhat poorly drained, slowly permeable soils that formed in clayey marine deposits underlain by limestone bedrock. These gently sloping to sloping soils occur on small knolls, side slopes, and undulating terrain on erosional uplands. The slope ranges from 2 to 8 percent. These soils have a perched water table at a depth of 1 1/2 to 3 feet for periods of 1 to 4 months after heavy rains during most years. Sloping areas are saturated for longer periods because of hillside seepage.

The Ichetucknee soils are closely associated with the Albany, Blanton, Surrency, Goldsboro, and Bonneau soils. Except for the Goldsboro soils, the associated soils have a Bt horizon at a depth of more than 20 inches. None of these soils have rock within a depth of 80 inches.

Typical pedon of Ichetucknee fine sand, 2 to 5 percent slopes, in a wooded area 0.75 mile southeast of intersection of Florida Highways 247 and 240, 0.5 mile south of Florida Highway 240, and 50 feet east of Mary Road, NE1/4SE1/4 sec. 14, T. 5 S., R. 15 E.

Ap—0 to 5 inches; gray (10YR 5/1) fine sand; weak fine granular structure; friable; very strongly acid; gradual wavy boundary.
A2—5 to 13 inches; light gray (10YR 7/2) fine sand; common medium faint very pale brown (10YR 7/4) splotches; weak fine granular structure; very friable; strongly acid; abrupt wavy boundary.
B21t—13 to 39 inches; pale brown (10YR 6/3) clay; few fine faint gray (10YR 6/1), many fine prominent red (2.5YR 4/6), and common fine distinct brownish yellow (10YR 6/6) mottles; moderate medium subangular blocky structure; very firm, sticky, slightly plastic when wet; few clay films; strongly acid; clear wavy boundary.
B22t—39 to 55 inches; yellowish red (5YR 5/6) clay; strong medium subangular blocky structure; extremely firm; few clay films; slightly acid; abrupt irregular boundary.
IIR—55 inches; soft limestone; 10 percent solution holes filled with clay; strongly alkaline.

The thickness of the solum ranges from 50 to 75 inches. Reaction is strongly acid or very strongly acid in the A1 and A2 horizons, strongly acid to medium acid in the B21t horizon, and medium acid to mildly alkaline in the B22t horizon.

The A1 or Ap horizon is 3 to 5 inches thick. It has hue of 10YR, value of 3 to 5, and chroma of 1 or 2. The A2 horizon is up to 15 inches thick. It has hue of 10YR, value of 4 through 7, and chroma of 2 through 4. The A horizon is 3 to 20 inches thick, and it is loamy fine sand or fine sand.

The B21t horizon is 7 to 40 inches thick. It has hue of 5YR, 7.5YR, or 10YR, value of 5 or 6, and chroma of 3 to 6. This horizon has few to many gray mottles in the upper 10 inches, or the horizon is mottled throughout in shades of gray, yellow, and red.

The B22t horizon has hue of 7.5YR or 10YR, value of 5 through 7, and chroma of 1 or 2 with strong brown, yellowish red, or red mottles; or it has hue of 5YR or 7.5YR, value of 5 or 6, and chroma of 6 or 8 with or without gray, brown, and red mottles. The texture of the Bt horizon is sandy clay or clay.

Depth to the IIR horizon ranges from 50 to 75 inches. The horizon is soft limestone with fragments of hard limestone.

Lakeland Series

The Lakeland series is a member of the thermic, coated family of Typic Quartzipsamments. It consists of excessively drained, very rapidly permeable soils that formed in thick, marine sandy sediments. These nearly level to strongly sloping soils occur on broad, slightly elevated ridges of the coastal plain lowlands. The slope ranges from 0 to 12 percent. The water table is below a depth of 80 inches.

The Lakeland soils are closely associated with the Albany, Alpin, Blanton, Chipley, and Troup soils. The Lakeland soils differ from the Albany, Blanton, and Troup soils in not having a Bt horizon. The Alpin soils have lamellae, and the Chipley soils are more poorly drained than the Lakeland soils.

Typical pedon of Lakeland fine sand, 0 to 5 percent slopes, in a wooded subdivision 3,300 feet north of Florida Highway 252 and 1/2 mile west of Florida Highway 133, NE1/4NE1/4 sec. 16, T. 4 S., R. 17 E.

Ap—0 to 6 inches; grayish brown (10YR 5/2) fine sand; single grained; loose; few uncoated sand grains; common fine roots; strongly acid; clear wavy boundary.
C1—6 to 20 inches; light yellowish brown (10YR 6/4) fine sand; single grained; loose; few uncoated sand grains; few fine roots; very strongly acid; gradual wavy boundary.
C2—20 to 55 inches; very pale brown (10YR 7/4) fine sand; single grained; loose; few fine faint light yellowish brown splotches; common uncoated sand grains; very strongly acid; gradual wavy boundary.
C3—55 to 80 inches; very pale brown (10YR 7/3) fine sand; single grained; loose; few fine faint yellow mottles; many medium faint uncoated sand grains; very strongly acid.

Reaction is very strongly acid or strongly acid.

The A1 or Ap horizon is 2 to 8 inches thick. It has hue of 10YR, value of 3 to 5, and chroma of 1 or 2.

The C horizon has hue of 10YR and either value of 5 and chroma of 4 through 8 or value of 6 or 7 and chroma of 3 through 8; or it has hue of 7.5YR, value of 5, and chroma of 6 to 8; or it has hue of 5YR, value of 5, and chroma of 6. Small pockets or splotches of light gray or white uncoated sand grains occur in some pedons. Few mottles of higher chroma are below 40 inches in some pedons. This horizon extends to a depth of more than 80 inches.

Leefield Series

The Leefield series is a member of the loamy, siliceous, thermic family of Arenic Plinthaquic Paleudults. It consists of somewhat poorly drained, moderately slowly permeable soils that formed in sandy and loamy sediments. These nearly level soils occur on small flats and in gently undulating areas. The slope ranges from 0 to 2 percent. The water table is at a depth of 18 to 30 inches for 4 months in most years. It is at a depth of 30 to 60 inches for 4 months and is below a depth of 60 inches the remainder of the year.

The Leefield soils are closely associated with the Albany, Blanton, Ocilla, and Bonneau soils. The Leefield soils differ from the Albany and Blanton soils in having a Bt horizon at a depth of 20 to 40 inches and in having

more than 5 percent plinthite. In addition, the Leefield soils are less well drained than the Blanton soils. The Leefield soils differ from the Ocilla and Bonneau soils in having more than 5 percent plinthite. Also, the Bonneau soils are better drained than the Leefield soils.

Typical pedon of Leefield fine sand, 0.5 mile north of Owens-Illinois Road 8, 100 yards west of Buford Tyre Road, SE1/4 sec. 5, T. 4 S , R. 18 E.

A11—0 to 5 inches; dark gray (10YR 4/1) fine sand; weak fine granular structure; very friable; common fine roots; very strongly acid; gradual wavy boundary.

A12—5 to 8 inches; dark grayish brown (10YR 4/2) fine sand; weak fine granular structure; very friable; few fine roots; very strongly acid; clear wavy boundary.

A21—8 to 20 inches; yellowish brown (10YR 5/4) fine sand; single grained; loose; very strongly acid; gradual smooth boundary.

A22—20 to 27 inches; light yellowish brown (10YR 6/4) fine sand; few medium faint light gray (10YR 7/2) and common medium distinct yellowish brown (10YR 5/6) mottles; single grained; loose; very strongly acid; gradual wavy boundary.

B21t—27 to 31 inches; light yellowish brown (10YR 6/4) sandy loam; common fine prominent yellowish brown (10YR 5/8) mottles; moderate medium granular structure; friable; very strongly acid; gradual wavy boundary.

B22t—31 to 45 inches; pale brown (10YR 6/3) sandy clay loam; common coarse distinct brownish yellow (10YR 6/8) and common medium distinct light gray (10YR 7/1) mottles; weak fine subangular blocky structure; friable; about 8 percent plinthite; few iron concretions; very strongly acid; gradual wavy boundary.

B23t—45 to 65 inches; light gray (10YR 7/2) sandy clay loam; common medium distinct brownish yellow (10YR 6/6) and common coarse prominent red (2.5YR 4/8) mottles; moderate medium subangular blocky structure; firm; 5 percent plinthite; common iron concretions; sand grains coated and bridged with clay; very strongly acid; gradual wavy boundary.

B24t—65 to 80 inches; reticulately mottled brownish yellow (10YR 6/6), gray (10YR 5/1), light gray (10YR 7/2), and red (2.5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; firm; about 10 percent plinthite; few iron concretions; very strongly acid.

The thickness of the solum ranges from 60 to 80 inches or more. Depth to a horizon with 5 to 20 percent plinthite ranges from 30 to 60 inches. Reaction is strongly acid or very strongly acid.

The A1 or Ap horizon is 6 to 10 inches thick. It has hue of 10YR, value of 3 to 5, and chroma of 2 or less. The A2 horizon is 15 to 25 inches thick. It has hue of 10YR, value of 5 to 7, and chroma of 2 to 6 with few to common gray, brown, and yellow mottles in the lower part.

The B21t horizon has hue of 10YR, value of 5 or 6, and chroma of 4 to 6 with few to common gray, brown, or yellow mottles. It is 0 to 6 inches thick. The B22t horizon is 6 to 14 inches thick. It has hue of 10YR and 2.5Y, value of 5 or 6, and chroma of 3 to 6. The B23t horizon is 16 to 23 inches thick. It has hue of 10YR or 2.5Y, value of 4 to 8, and chroma of 0 to 6; or it is reticulately mottled gray, brown, yellow, and red. The B24t horizon is reticulately mottled with gray, brown, yellow, and red, and it extends to a depth of 80 inches or more. The texture of the B2t horizon is sandy loam or sandy clay loam with or without pockets of sand or clay.

Leon Series

The Leon series is a member of the sandy, siliceous, thermic family of Aeric Haplaquods. It consists of poorly drained, moderately permeable to moderately rapidly permeable soils that formed in thick deposits of sandy marine sediments. These nearly level soils occur in large broad flatwood areas, small to large areas on the uplands, and on river flood plains. The slope ranges from 0 to 2 percent. The water table is at a depth of less than 10 inches for 1 to 4 months during periods of high rainfall and recedes to a depth of more than 40 inches during very dry seasons. The river flood plains occasionally are flooded for long periods following unusually heavy rainfall.

The Leon soils are closely associated with the Albany, Alpin, Sapelo, Blanton, Chipley, Mascotte, Plummer, and Surrency soils. The Leon soils differ from the Albany, Blanton, Mascotte, Sapelo, Plummer, and Surrency soils in not having a Bt horizon. The Alpin, Chipley, Albany, Blanton, Plummer, and Surrency soils do not have a Bh horizon. Additionally, the Alpin and Chipley soils are better drained than the Leon soils, and the Surrency soils are more poorly drained.

Typical pedon of Leon fine sand, 30 yards east of Price Creek Road, 0.25 mile south of U.S. Highway 90, NW1/4SW1/4 sec. 35, T. 3 S., R. 17 E.

Ap—0 to 8 inches; black (10YR 2/1) fine sand; salt-and-pepper appearance; moderate medium granular structure; very friable; very strongly acid; clear wavy boundary.

A2—8 to 19 inches; gray (10YR 6/1) fine sand; single grained; loose; very strongly acid; clear wavy boundary.

B21h—19 to 23 inches; black (10YR 2/1) fine sand; weak medium subangular blocky structure; friable; sand grains coated with organic matter; very strongly acid; gradual wavy boundary.

B22h—23 to 27 inches; very dark brown (10YR 2/2) fine sand; weak medium subangular blocky structure;

sand grains coated with organic matter; friable; strongly acid; gradual wavy boundary.
B3—27 to 54 inches; dark yellowish brown (10YR 3/4) fine sand; weak medium granular structure; friable; strongly acid; clear irregular boundary.
B'21h—54 to 65 inches; dark brown (7.5YR 3/2) fine sand; common medium distinct black (10YR 2/1) and dark brown (10YR 3/3) mottles; weak medium subangular blocky structure; friable; strongly acid; gradual wavy boundary.
B'22h—65 to 80 inches; black (10YR 2/1) fine sand; weak medium granular structure; sand grains coated with organic matter; friable; medium acid.

Reaction ranges from extremely acid to strongly acid, except in farmed areas where the soils are extremely acid to medium acid.

The A1 horizon is 3 to 8 inches thick. It has hue of 10YR, value of 2 through 4, and chroma of 1 or 2. This horizon has a salt-and-pepper appearance that is caused by the mixing of organic matter and the uncoated sand grains. The A2 horizon is 4 to 12 inches thick. It has hue of 10YR, value of 5 through 8, and chroma of 1 or 2.

The Bh horizon is 6 to 10 inches thick. It is at a depth of less than 30 inches. It has hue of 10YR, 7.5YR, or 5YR, value of 2 or 3, and chroma of 1 or 2. Sand grains are coated with organic matter. Tongues or pockets of gray or light gray fine sand are in this horizon in some pedons. The B3 horizon is 2 to 27 inches thick. It has hue of 10YR, value of 3 through 5, and chroma of 3 or 4.

The A'2 horizon, where present, has hue of 10YR, value of 5 or 6, and chroma of 1 or 2. It is 0 to 33 inches thick. The B'h horizon has hue of 10YR, 7.5YR, or 5YR, value of 2 or 3, and chroma of 1 or 2.

In some pedons there is a C horizon below the B3 horizon. It has hue of 10YR and either value of 6 and chroma of 3 to 6 or value of 7 or 8 and chroma of 3 or 4. The C horizon extends to a depth of 80 inches or more.

Lucy Series

The Lucy series is a member of the loamy, siliceous, thermic family of Arenic Paleudults. It consists of well drained, moderately permeable soils that formed in loamy sediments on the uplands. These soils are on gently sloping to sloping broad ridges and knolls. The slope ranges from 2 to 8 percent. The water table is below a depth of 72 inches throughout the year.

The Lucy soils are associated with the Blanton, Bonneau, Ocilla, Orangeburg, and Troup soils. The Blanton and Troup soils have an argillic horizon below a depth of 40 inches. In addition, the Blanton soils are moderately well drained. The Bonneau and Ocilla soils are less well drained than the Lucy soils. The Orangeburg soils have an argillic horizon within a depth of 20 inches.

Typical pedon of Lucy loamy fine sand, 2 to 5 percent slopes, 80 yards east of Old Wire Road, 20 yards north of gas line right-of-way, SW1/4SE1/4 sec. 11, T. 6 S., R. 17 E.

A1—0 to 6 inches; dark brown (10YR 3/3) loamy fine sand; weak fine granular structure; very friable; many fine and common medium roots; medium acid; gradual wavy boundary.
A21—6 to 12 inches; yellowish brown (10YR 5/6) loamy sand; weak fine granular structure; very friable; common fine and medium roots; strongly acid; gradual wavy boundary.
A22—12 to 22 inches; strong brown (7.5YR 5/6) loamy fine sand; weak fine granular structure; very friable; common fine and few medium roots; strongly acid; gradual wavy boundary.
A23—22 to 29 inches; strong brown (7.5YR 5/6) loamy sand; moderate medium granular structure; friable; common fine roots; strongly acid; gradual wavy boundary.
B21t—29 to 40 inches; yellowish red (5YR 4/6) fine sandy loam; weak medium subangular blocky structure; friable; few fine roots; strongly acid; gradual wavy boundary.
B22t—40 to 70 inches; yellowish red (5YR 5/6) fine sandy loam; weak fine subangular blocky structure; friable; strongly acid.
B23t—70 to 80 inches; yellowish red (5YR 5/6) fine sandy loam; common medium distinct strong brown (7.5YR 5/6) mottles; weak fine subangular blocky structure; friable; strongly acid.

Reaction is strongly acid or very strongly acid, except where the soil has been limed.

The A1 or Ap horizon is 6 to 9 inches thick. It has hue of 10YR, value of 3 to 5, and chroma of 2 or 3. The A2 horizon is 14 to 29 inches thick. It has hue of 10YR, value of 4 through 6, and chroma of 4 through 6; or it has hue of 7.5YR and either value of 5 and chroma of 6 or 8 or value of 4 and chroma of 4. The A horizon is loamy sand, loamy fine sand, or fine sand.

The B2t horizon extends to a depth of 80 inches or more. It has hue of 5YR, value of 4 or 5, and chroma of 6 or 8. Texture is sandy clay loam or fine sandy loam.

Content of rounded gravel and iron concretions or silica-cemented nodules less than 15 millimeters in diameter is generally less than 5 percent, by volume. Yellow or brown mottles occur below a depth of 36 inches in some pedons. Ironstone fragments up to 10 inches in diameter occur on the surface of some pedons. Some pedons have sandy clay substratums below a depth of 60 inches.

Mandarin Series

The Mandarin series is a member of the sandy, siliceous, thermic family of Typic Haplohumods. It consists of somewhat poorly drained, moderately permeable soils that formed in marine deposits of sandy and loamy sediments. These nearly level soils occur in slightly elevated areas in the flatwoods. The slope ranges from 0 to 2 percent. The water table is at a depth of 20 to 40 inches for 4 to 6 months and at a depth of more than 40 inches for 6 to 8 months. The water table may rise above 20 inches during rainy periods.

The Mandarin soils are closely associated with the Albany, Chipley, Leon, Mascotte, Ocilla, Pelham, Plummer, Hurricane, and Sapelo soils. The Mandarin soils differ from the Albany, Chipley, Ocilla, Pelham, and Plummer soils in having a Bh horizon. The Mandarin soils are better drained than the Leon, Mascotte, and Sapelo soils. The Mandarin soils have a Bh horizon at a greater depth than that of the Bh horizon of the Hurricane soils.

Typical pedon of Mandarin fine sand, in a flatwoods area 3 miles east of the intersection of Florida Highway 100 and U.S. Highway 90, 50 feet south of U.S. Highway 90, SE1/4NW1/4 sec. 31, T. 3 S., R. 18 E.

A1—0 to 5 inches; gray (10YR 5/1) fine sand; weak fine granular structure; very friable; very strongly acid; gradual wavy boundary.

A2—5 to 16 inches; light gray (10YR 7/2) fine sand; single grained; loose; very strongly acid; abrupt wavy boundary.

B21h—16 to 19 inches; very dark brown (10YR 2/2) fine sand; weak fine subangular blocky structure; friable; sand grains well coated with organic matter; common fine roots; very strongly acid; clear wavy boundary.

B22h—19 to 23 inches; dark reddish brown (5YR 3/2) fine sand; weak fine subangular blocky structure; friable; common fine roots; sand grains well coated with organic matter; very strongly acid; gradual wavy boundary.

B23h—23 to 26 inches; dark brown (7.5YR 3/2) fine sand; few medium distinct dusky red mottles; weak fine granular structure; very friable; sand grains coated with organic matter; very strongly acid; gradual wavy boundary.

B31—26 to 33 inches; dark yellowish brown (10YR 4/4) fine sand; single grained; loose; very strongly acid; gradual wavy boundary.

B32—33 to 45 inches; light yellowish brown (10YR 6/4) fine sand; few fine faint yellowish brown mottles; single grained; loose; very strongly acid; gradual wavy boundary.

A'21—45 to 59 inches; light gray (10YR 7/2) fine sand; single grained; loose; very strongly acid; gradual wavy boundary.

A'22—59 to 64 inches; grayish brown (10YR 5/2) fine sand; single grained; loose; very strongly acid; clear wavy boundary.

B'2h—64 to 80 inches; very dark brown (10YR 2/2) fine sand; single grained; loose; very strongly acid.

Reaction ranges from extremely acid to strongly acid. Depth to the Bh horizon ranges from 13 to 30 inches.

The A1 horizon has hue of 10YR, value of 2 through 6, and chroma of 1. It is 2 to 6 inches thick. The A2 horizon has hue of 10YR, value of 5 through 8, and chroma of 1 or 2. It is 11 to 18 inches thick.

The B2h horizon has hue of 10YR, value of 2 or 3, and chroma of 1 through 3; or hue of 7.5YR, value of 3, and chroma of 2; or hue of 5YR, value of 2 or 3, and chroma of 1 through 4. It is 10 to 26 inches thick. The B3 horizon has hue of 10YR, value of 4 through 6, and chroma of 2 through 4. It is up to 19 inches thick.

The A'2 horizon has hue of 10YR, value of 5 through 8, and chroma of 1 through 3. It is 12 to 35 or more inches thick. The B'2h horizon has the same color range as the B2h horizon and is coated with organic matter. It extends to a depth of 80 inches or more.

Mascotte Series

The Mascotte series is a member of the sandy, siliceous, thermic family of Ultic Haplaquods. It consists of poorly drained, moderately permeable soils that formed in thick, sandy and loamy marine deposits. These nearly level soils occur in the flatwoods, along the edges of swamps and depressions, and along rivers and streams. The slope ranges from 0 to 2 percent. The water table is within a depth of 10 inches for 1 to 4 months during most years. It is at a depth of 10 to 40 inches for periods up to 6 months and is below a depth of 40 inches during the driest seasons. Depressional areas are ponded for periods up to 6 months. Some areas near major rivers are occasionally flooded after heavy and prolonged rains. These soils historically have been flooded in March and April in about 1 year in 10.

The Mascotte soils are closely associated with the Blanton, Bigbee, Leefield, Leon, Ocilla, Pelham, Plummer, Sapelo, and Surrency soils. The Mascotte soils differ from the Blanton, Bigbee, Leefield, Ocilla, Pelham, Plummer, and Surrency soils in having a Bh horizon. The Blanton, Bigbee, Leefield, and Ocilla soils are better drained than the Mascotte soils, and the Surrency soils are more poorly drained. The Plummer soils have a Bt horizon at a depth of more than 40 inches. The Mascotte soils differ from the Leon and Sapelo soils in having a Bt horizon at a depth of 20 to 40 inches.

Typical pedon of Mascotte fine sand, in a planted flatwoods area 1 mile south of U.S. Highway 90 and 3 miles west of the Baker County Line, SW1/4SW1/4 sec. 34, T. 3 S., R. 18 E.

Ap—0 to 6 inches; black (10YR 2/1) fine sand; weak fine granular structure, very friable; many uncoated sand grains; extremely acid; gradual wavy boundary.

A2—6 to 15 inches; gray (10YR 6/1) fine sand; common medium distinct dark gray (10YR 4/1) mottles; single grained; loose; few fine roots; very strongly acid; abrupt wavy boundary.

B21h—15 to 19 inches; black (10YR 2/1) fine sand; weak fine subangular blocky structure; friable; many fine and few medium roots; sand grains coated with organic matter; few uncoated sand grains; very strongly acid; gradual wavy boundary.

B22h—19 to 25 inches; dark reddish brown (5YR 2/2) fine sand; weak fine subangular blocky structure; friable; many sand grains thinly coated with organic matter; common coarse pockets of dark brown (10YR 3/3) in lower part; few fine roots; very strongly acid; gradual wavy boundary.

A'2—25 to 35 inches; yellowish brown (10YR 5/4) fine sand; common medium distinct black (10YR 2/1) mottles; weak fine granular structure; very friable; very strongly acid; abrupt smooth boundary.

B'h—35 to 37 inches; black (N 2/0) fine sand; weak medium granular structure; friable; very strongly acid; abrupt smooth boundary.

B'21tg—37 to 55 inches; light brownish gray (10YR 6/2) fine sandy loam; common medium distinct brownish yellow (10YR 6/6) and common coarse prominent yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; slightly sticky; very strongly acid; gradual wavy boundary.

B'22tg—55 to 67 inches; gray (10YR 6/1) fine sandy loam; few coarse distinct reddish yellow (5YR 6/6) mottles; weak medium subangular blocky structure; friable; common fine yellowish brown streaks along root channels; many fine and medium partially decayed roots; very strongly acid; gradual wavy boundary.

Cg—67 to 80 inches; light olive gray (5Y 6/2) loamy sand; common medium prominent reddish yellow (7.5YR 6/8) mottles; weak fine granular structure; friable; very strongly acid.

Reaction ranges from extremely acid to strongly acid throughout the solum.

The A1 or Ap horizon is 3 to 6 inches thick. It has hue of 10YR, value of 2 through 4, and chroma of 1.

The A2 horizon is 5 to 16 inches thick. It has hue of 10YR, value of 5 through 7, and chroma of 1 or 2. Some pedons have yellow, dark gray, and brown mottles. The A2 horizon is fine sand or loamy fine sand.

The Bh horizon is 6 to 18 inches thick. It has hue of 10YR, value of 2 or 3, and chroma of 1 or 2; or hue of 7.5YR, value of 3 or 4, and chroma of 2 through 4; or hue of 5YR, value of 2 or 3, and chroma of 1 through 3. Some pedons have few to common weakly cemented bodies with the same color ranges. The Bh horizon is fine sand or loamy fine sand.

The A'2 horizon has hue of 10YR, value of 5 through 7, and chroma of 2 through 4. It is up to 10 inches thick.

Some pedons have a thin B'h horizon about 2 inches thick between the A'2 and B'2tg horizons. It has hue of 10YR, value of 2 or 3, and chroma of 2; or it is neutral with value of 2.

The B'2tg horizon has hue of 10YR, value of 4 through 7, and chroma of 1 or 2; or it has hue of 2.5Y, value of 6, and chroma of 2. There are common to many red, brown, and yellow mottles. In some pedons this horizon is reticulately mottled in the colors listed above in addition to gray. The B'2tg horizon is fine sandy loam or sandy clay loam.

Some pedons have a Cg horizon within a depth of 80 inches. It has hue of either 10YR or 5Y, value of 6, and chroma of 1 or 2. There are none to common brown, yellow, and red mottles. Texture is fine sand, loamy fine sand, or loamy sand.

Ocilla Series

The Ocilla series is a member of the loamy, siliceous, thermic family of Aquic Arenic Paleudults. It consists of somewhat poorly drained, nearly level to gently sloping, moderately permeable soils that formed in deposits of sandy and loamy sediments. The slope ranges from 0 to 5 percent. The water table is at a depth of 15 to 30 inches for 2 to 6 months in most years. It is below a depth of 30 inches during the remainder of the year, except during unusually high rainfall periods.

The Ocilla soils are closely associated with the Albany, Blanton, Bonneau, Pelham, and Plummer soils. The Albany, Blanton, and Plummer soils have a Bt horizon at a depth of 40 to 80 inches. The Pelham soils are more poorly drained than the Ocilla soils, and the Bonneau soils are better drained.

Typical pedon of Ocilla fine sand, 0 to 5 percent slopes, in a cultivated field 0.4 mile west of Payne Road, 0.4 mile north of Gabe Road, NW1/4SW1/4 sec. 2, T. 5 S., R. 17. E.

Ap—0 to 9 inches; dark gray (10YR 4/1) fine sand; single grained; loose; medium acid; gradual wavy boundary.

A21—9 to 19 inches; grayish brown (2.5Y 5/2) fine sand; single grained; loose; slightly acid; gradual wavy boundary.

A22—19 to 26 inches; light brownish gray (2.5Y 6/2) fine sand; many fine distinct brownish yellow (10YR 6/6) mottles; single grained; loose; strongly acid; gradual smooth boundary.

A23—26 to 32 inches; pale brown (10YR 6/3) fine sand; few medium prominent yellowish brown (10YR 5/6) and many fine faint light gray (10YR 7/1) mottles;

weak fine granular structure; very friable; strongly acid; gradual wavy boundary.

B21tg—32 to 52 inches; mottled light brownish gray (2.5Y 6/2), strong brown (7.5YR 5/8), and pale brown (10YR 6/3) fine sandy loam; weak fine subangular blocky structure; friable; very strongly acid; gradual wavy boundary.

B22tg—52 to 68 inches; gray (10YR 5/1) fine sandy loam; common coarse prominent strong brown (7.5YR 5/8) and common fine faint pale brown (10YR 6/3) mottles; moderate medium subangular blocky structure; firm; very strongly acid; clear wavy boundary.

IICg—68 to 80 inches; light gray (5Y 7/1) clay; few fine prominent strong brown (7.5YR 5/8) mottles; massive; very firm; very strongly acid.

Reaction ranges from extremely acid to strongly acid, except where the soil has been limed. The A horizon is fine sand or loamy fine sand. The A horizon is 20 to 40 inches thick. Mottles of chroma of 2 or less are at a depth of less than 30 inches.

The A1 or Ap horizon is 4 to 9 inches thick. It has hue of 10YR, value of 3 or 4, and chroma of 1. The A2 horizon is 16 to 30 inches thick. It has either hue of 10YR, value of 6, and chroma of 3 or 4 or hue of 2.5Y, value of 4 to 7, and chroma of 2 through 4.

The B1 horizon, where present, has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 3 to 6 with few to common gray or grayish brown mottles. It is up to 10 inches thick. The upper part of the B2tg horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 2 to 6 with light gray, gray, or grayish brown mottles, or it is mottled with gray and brown. The lower part of the B2tg horizon has either hue of 10YR to 5Y, value of 5 to 7, and chroma of 1 or 2 or hue of 2.5Y, value of 5 or 7, and chroma of 1. In some pedons this horizon is mottled in the same colors. It is 20 to 44 inches thick. Texture of the B2tg horizon is fine sandy loam or sandy clay loam. This horizon has up to 5 percent silica cemented or ironstone fragments.

The IICg horizon is below a depth of 60 inches. It has hue of 10YR or 5Y, value of 6 to 8, and chroma of 1 with strong brown, yellowish red, and brownish yellow mottles in most pedons. It is sandy clay or clay and extends below a depth of 80 inches.

The Ocilla soils in Columbia County are taxadjuncts to the Ocilla series because they have an argillic horizon that is grayer in the upper part than is typical for the series. In addition, they have a clayey IICg horizon below a depth of 60 inches. These differences do not affect the usefulness or behavior of the soil.

Oleno Series

The Oleno series is a member of the clayey over loamy, montmorillonitic, acid, thermic family of Vertic Haplaquepts. The series consists of poorly drained, slowly permeable soils that formed in clayey sediments over loamy deposits on the flood plains of the coastal plains. These nearly level soils occur along rivers, streams, and drainageways. The slope is less than 2 percent. The water table is at a depth of 6 to 18 inches for 6 to 8 months in most years. It is at a depth of 18 to 36 inches for about 4 months and below a depth of 36 inches the remainder of the year. The soils are flooded occasionally for brief periods after unusually high rainfall periods.

The Oleno soils are closely associated with the Bigbee, Chipley, Chiefland, Electra Variant, and Pedro Variant soils. The Oleno soils have clay within a depth of 20 inches and are more poorly drained than the associated soils. The Bigbee and Chipley soils are sandy to a depth of 80 inches or more. The Electra Variant soils have a spodic horizon. The Chiefland and Pedro Variant soils are in higher positions on the landscape than the Oleno soils and have limestone in the solum.

Typical pedon of Oleno clay, in an area on the flood plain of the Santa Fe River about 2 miles east of junction of Oak Ridge Road and U.S. Highway 441, SW1/4SE1/4 sec. 11, T. 7 S., R. 17 E.

A1—0 to 6 inches; dark gray (10YR 4/1) clay; common fine faint black (10YR 2/1) and few fine distinct yellowish brown mottles; massive; very firm, sticky and plastic when wet; common fine and medium roots; very strongly acid; clear wavy boundary.

B21g—6 to 24 inches; gray (10YR 5/1) clay; moderate fine subangular blocky structure; firm, sticky and plastic when wet; common fine and medium roots; very strongly acid; clear wavy boundary. (This horizon was subdivided for tests to determine physical and chemical properties.)

B22g—24 to 32 inches; gray (10YR 5/1) clay; common medium faint dark gray (10YR 4/1) mottles; friable; few roots; extremely acid; clear wavy boundary.

IIA21—32 to 42 inches; grayish brown (10YR 5/2) fine sandy loam; many fine faint light gray mottles; weak fine granular structure; very friable; few roots; strongly acid; gradual wavy boundary.

IIA22—42 to 55 inches; gray (10YR 5/1) fine sandy loam (sand and sandy clay loam before mixing); weak medium granular structure; very friable; few roots; strongly acid; clear wavy boundary.

IIB1g—55 to 71 inches; dark gray (10YR 4/1) fine sandy loam; many medium faint gray (10YR 6/1) and light brownish gray (10YR 6/2) mottles; moderate medium granular structure; friable; few small pockets of sandy clay loam; medium acid; clear wavy boundary.

IIB2g—71 to 77 inches; gray (5Y 6/1) sandy clay loam; common medium distinct brownish yellow (10YR 6/6), common large faint light gray (10YR 7/1), and few medium distinct greenish gray (5GY 6/1)

mottles; moderate medium subangular blocky structure; firm; slightly acid; clear wavy boundary.
IICg—77 to 80 inches; greenish gray (5BG 6/1) clay; massive; very firm; few fine and medium light gray nodules and fragments of limestone; neutral.

Depth to a horizon that has a sandy loam, loamy sand, or sand texture ranges from 26 to 47 inches. Depth to soft limestone is 40 to 60 inches in about 30 percent of the pedons. Reaction ranges from extremely acid to medium acid in the A horizon and from extremely acid to mildly alkaline below the A horizon.

The A1 horizon is 4 to 10 inches thick. It has hue of 10YR, value of 2 through 5, and chroma of 1 or 2. Reaction ranges from extremely acid to medium acid.

The B21g horizon is 10 to 20 inches thick. It has hue of 10YR, value of 3 through 6, and chroma of 1 or 2. The B22g horizon is 8 to 12 inches thick. It has hue of 10YR, value of 3 through 6, and chroma of 1 or 2. Dark gray mottles range from none to many in this horizon. Texture of the B22g horizon is clay. Reaction of the B horizon ranges from extremely acid to slightly acid.

The IIA horizon is 18 to 30 inches thick. It has hue of 10YR, value of 3 through 7, and chroma of 1 or 2. Light gray mottles range from none to many. Texture is sandy loam, loamy sand, or sand. Freshwater shell deposits in this horizon range from none to many. Reaction of the IIA horizon ranges from very strongly acid to mildly alkaline.

The IIB horizon is 18 to 25 inches thick. It has hue of 10YR, value of 3 through 6, and chroma of 1 or 2; or it has hue of 5Y, value of 4 through 7, and chroma of 1 or 2. Yellow, brown, and gray mottles range from few to many. Texture ranges from sandy loam to sandy clay. Freshwater shell deposits and limestone fragments range from none to many.

The IICg horizon is 3 to 10 inches thick. It has hue of 5BG, value of 4 through 6, and chroma of 1; or hue of 5B, value of 5 or 6, and chroma of 1. Texture is clay or sandy clay. Limestone fragments range from none to many. Reaction of the IIB and IIC horizons ranges from medium acid to mildly alkaline.

Olustee Series

The Olustee series is a member of the sandy, siliceous, thermic family of Ultic Haplaquods. It consists of poorly drained, moderately permeable soils that formed in thick, sandy and loamy marine deposits. These nearly level soils occur in the flatwoods and along the edges of swamps. The slope is less than 2 percent. The water table is at the soil surface for periods of up to 2 months during heavy rainfall seasons. It is within a depth of about 10 inches for 1 to 4 months during most years. In the higher areas, the water table recedes to a depth of more than 40 inches during dry seasons.

The Olustee soils are closely associated with the Mascotte, Leon, Pamlico, Plummer, and Surrency soils. The Mascotte, Leon, and Plummer soils have an A2 horizon. The Pamlico soils are organic, and the Surrency soils do not have a Bh horizon. Additionally, the Pamlico and Surrency soils are very poorly drained.

Typical pedon of Olustee fine sand, thick surface, in the Osceola National Forest about 50 yards north of Forest Service Road 263, 1 1/2 miles east of U.S. Highway 441, SE1/4SW1/4 sec. 15, T. 2 S., R. 17 E.

A11—0 to 5 inches; black (10YR 2/1) fine sand; moderate medium granular structure; very friable; many roots; extremely acid; gradual smooth boundary.
A12—5 to 18 inches; very dark gray (10YR 3/1) fine sand; common medium faint black (10YR 2/1) mottles; single grained; loose; few roots; common uncoated sand grains; very strongly acid; clear smooth boundary.
B2h—18 to 23 inches; dark reddish brown (5YR 3/2) fine sand; weak fine subangular blocky structure; firm; friable; many roots; very strongly acid; gradual smooth boundary.
A'2—23 to 37 inches; light gray (10YR 7/2) fine sand; common medium distinct dark brown (10YR 3/3) mottles; single grained; loose; few roots; very strongly acid; clear wavy boundary.
B'2tg—37 to 63 inches; light brownish gray (10YR 6/2) fine sandy loam; common medium distinct yellowish brown (10YR 5/6) and strong brown (7.5YR 5/6) mottles; weak fine subangular blocky structure; wet, sticky; very strongly acid.
Cg—63 to 80 inches; light brownish gray (10YR 6/2) loamy fine sand; common fine distinct yellowish brown (10YR 5/6) mottles; very weak fine subangular blocky structure; friable; few light gray sandy loam pockets; very strongly acid.

Reaction ranges from extremely acid to strongly acid throughout the solum.

The A1 horizon is 9 to 18 inches thick. It has hue of 10YR, value of 2 through 4, and chroma of 1.

The Bh horizon is 5 to 15 inches thick. It has hue of 5YR to 7.5YR, value of 2 or 3, and chroma of 1 through 4; or it has hue of 10YR, value of 2 or 3, and chroma of 1 or 2. Sand grains are well coated with organic matter. Texture is sand or fine sand.

The A'2 horizon is 10 to 14 inches thick. It has hue of 10YR, value of 6 to 8, and chroma of 2. This horizon has mottles or weakly cemented bodies that are the same color as that of the Bh horizon.

The B'2tg horizon is 13 to 30 inches thick. It has hue of 10YR, value of 5 through 7, and chroma of 1 or 2 with or without mottles of yellow, brown, or red. Texture is fine sandy loam or sandy clay loam.

The Cg horizon has hue of 10YR or 5Y, value of 5 to 7, and chroma of 1 or 2. Texture ranges from fine sand to sandy clay.

Orangeburg Series

The Orangeburg series is a member of the fine-loamy, siliceous, thermic family of Typic Paleudults. It consists of well drained, moderately permeable soils that formed in loamy and clayey deposits. The soils are gently sloping to sloping. They are on knolls and hillsides. The slope ranges from 2 to 8 percent. The water table is at a depth of more than 72 inches at all times.

The Orangeburg soils are closely associated with the Blanton, Troup, Ocilla, Goldsboro, and Bonneau soils. The Blanton, Troup, Bonneau, and Ocilla soils have a Bt horizon below a depth of 20 inches. The Goldsboro soils are moderately well drained and have mottles associated with wetness at a shallower depth.

Typical pedon of Orangeburg loamy fine sand, 2 to 5 percent slopes, 50 feet north of Florida Highway 349, 1 1/4 mile east of U.S. Highway 441, SW1/4NW1/4 sec. 25, T. 5 S., R. 17 E.

Ap—0 to 8 inches; brown (10YR 4/3) loamy fine sand; weak fine granular structure; very friable; many fine roots; strongly acid; gradual smooth boundary.

B1—8 to 13 inches; yellowish red (5YR 5/8) sandy loam; moderate fine granular structure; friable; many fine roots; strongly acid; gradual smooth boundary.

B21t—13 to 35 inches; yellowish red (5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; firm; few iron concretions; very strongly acid; gradual smooth boundary.

B22t—35 to 51 inches; yellowish red (5YR 4/6) sandy clay; moderate medium subangular blocky structure; very firm; few fine roots; few soft white silica cemented nodules; many red and black concretions; very strongly acid; gradual smooth boundary.

B3t—51 to 80 inches; reticulately mottled strong brown (7.5YR 5/6), yellowish red (5YR 4/6), and gray (10YR 6/1) sandy clay loam; moderate medium subangular blocky structure; firm; few rock fragments; common iron concretions and silica cemented nodules; very strongly acid.

Reaction is strongly acid or very strongly acid, except where the soil has been limed.

The Ap or A1 horizon is 6 to 8 inches thick with hue of 10YR and either value of 3 and chroma of 3 or value of 4 through 5 and chroma of 2 through 4. Some pedons have an A2 horizon that has hue of 10YR, value of 5 or 6, and chroma of 4 or 6. It is up to 16 inches thick. The A horizon is loamy fine sand or fine sand.

The B1 horizon has hue of 10YR or 7.5YR, value of 5, and chroma of 4; or hue of 10YR or 5YR, value of 5, and chroma of 6 or 8; or hue of 7.5YR and either value of 6 and chroma of 6 or 8 or value of 4 and chroma of 4; or hue of 5YR, value of 4, and chroma of 8.

The B21t horizon is 20 to 36 inches thick. It has hue of 5YR, value of 4 or 5, and chroma of 6 or 8. Weighted average clay content in the upper 20 inches of the Bt horizon is 20 to 32 percent. This horizon also has none to few iron concretions up to 5 centimeters in diameter.

The B22t horizon is 16 to 30 inches thick and has the same color range as the B21t horizon. Its texture is sandy clay loam or sandy clay with few to common iron concretions.

The B3t horizon is reticulately mottled gray, yellow, brown, or red; or it has hue of 5YR or 7.5YR, value of 5, and chroma of 6; or hue of 7.5YR, value of 5, and chroma of 8; or hue of 5YR, value of 4, and chroma of 6 with yellow, brown, or red mottles. Texture is sandy clay loam or sandy clay. The gray colors are interpreted as resulting from the parent material, not from wetness. The horizon extends to a depth of 80 inches or more.

Pamlico Series

The Pamlico series is a member of the sandy or sandy-skeletal, siliceous, dysic, thermic family of Terric Medisaprists. It consists of very poorly drained, slowly permeable soils that formed from nonwoody fibrous hydrophytic plant remains underlain by sandy mineral sediments. These nearly level soils occur on tributaries of major streams and in drainageways, depressions, and large swamps. The slope is less than 1 percent. Under natural conditions, the water table either is at a depth of less than 10 inches or the soil is covered with water for more than 6 months during most years.

The Pamlico soils are closely associated with the Surrency, Leon, Mascotte, and Pelham soils and with Plummer muck, depressional. The associated soils are mineral soils, except for Plummer muck.

Typical pedon of Pamlico muck, loamy substratum, 1 mile south of the Georgia state line and 0.75 mile southeast of Florida Highway 2 on woods trail, SW1/4NE1/4 sec. 24, T. 2 N., R. 18 E.

Oa1—0 to 12 inches; black (N 2/0) muck; 30 percent fiber, 10 percent rubbed; medium fine granular structure; friable; slightly sticky; common live roots; sodium pyrophosphate extract color is yellowish brown (10YR 5/4); extremely acid; gradual wavy boundary.

Oa2—12 to 24 inches; black (N 2/0) muck; 25 percent fiber, 10 percent rubbed; weak fine granular structure; friable; slightly sticky; common live roots; sodium pyrophosphate extract color is yellowish brown (10YR 5/4); extremely acid; gradual wavy boundary.

IIC1—24 to 48 inches; dark grayish brown (10YR 4/2) fine sand; single grained; loose; common medium pockets of sandy loam; very strongly acid; clear smooth boundary.

IIC2—48 to 80 inches; dark gray (10YR 4/1) sandy clay loam; weak medium subangular blocky structure; firm; very strongly acid.

Reaction is very strongly acid or extremely acid throughout.

The Oa horizon is 10 to 40 inches thick. It has hue of 10YR, value of 2 or 3, and chroma of 1 or 2; or it is neutral with value of 2. Fiber content is 10 to 30 percent unrubbed and is 16 percent or less after rubbing.

The IIC horizon has hue of 10YR, value of 3 to 5, and chroma of 1 or 2. Texture is fine sand, sandy loam, or sandy clay loam. Strata of loamy material range from none to common.

Pantego Series

The Pantego series is a member of the fine-loamy, siliceous, thermic family of Umbric Paleaquults. It consists of very poorly drained, moderately permeable soils that formed in thick, loamy sediments on the coastal plains. These nearly level soils occur in concave depressions and drainageways. The water table is at the surface for more than 6 months during most years; however, it may recede to a depth of more than 40 inches during dry periods. The soils are ponded for short periods during rainy seasons.

The Pantego soils are closely associated with the Blanton, Plummer, and Bonneau soils. These associated soils are better drained than the Pantego soils. The Blanton, Albany, and Plummer soils have a sandy A horizon more than 40 inches thick, and the Bonneau and Ocilla soils have a sandy A horizon 20 to 40 inches thick.

Typical pedon of Pantego fine sandy loam, in a small drainageway 0.4 mile west of Payne Road, 0.4 mile north of Gabe Road, NW1/4NW1/4 sec. 2, T. 5 S., R. 17 E.

O1—2 inches to 0; partially decomposed leaves, roots, and twigs.

A11—0 to 12 inches; black (N 2/0) fine sandy loam, moderate fine granular structure; friable; high organic matter content; many fine roots; very strongly acid; gradual wavy boundary.

A12—12 to 17 inches; black (10YR 2/1) loamy fine sand; few medium faint grayish brown (10YR 5/2) mottles; weak fine granular structure; very friable; moderate organic matter content; very strongly acid; clear smooth boundary.

A2—17 to 18 inches; grayish brown (10YR 5/2) fine sand; single grained; loose; very strongly acid; abrupt wavy boundary.

B21tg—18 to 70 inches; dark gray (10YR 5/1) sandy clay loam; common medium distinct yellowish brown (10YR 5/8) and common coarse distinct yellowish red (5YR 4/6) mottles; strong medium subangular blocky structure; very firm; few light gray (10YR 7/2) sand pockets; very strongly acid; gradual wavy boundary.

B22tg—70 to 80 inches; light gray (2.5Y 7/2) sandy clay loam; common coarse distinct gray (10YR 5/1) sandy clay lumps; strong medium subangular blocky structure; very firm; very strongly acid.

Reaction ranges from extremely acid to strongly acid throughout the solum.

The A1 horizon is 10 to 20 inches thick. It has hue of 10YR, value of 2 or 3, and chroma of 1; or it is neutral with value of 2. The A2 horizon is about 2 inches thick. It has hue of 10YR, value of 5 to 7, and chroma of 1. Texture is fine sand or loamy fine sand.

The B2tg horizon has hue of 10YR and either value of 4 and chroma of 1 or value of 5 or 6 and chroma of 1 or 2; or it has hue of 2.5Y, value of 6 or 7, and chroma of 2. The horizon is sandy clay loam or sandy clay and extends to a depth of 80 inches or more.

Pedro Variant

Pedro Variant soils are a member of the fine-loamy, siliceous, thermic family of Lithic Hapludalfs. The soils are well drained and moderately rapidly permeable. They formed in sandy and loamy marine sediments over limestone. These are gently sloping to sloping soils on an upland karst landscape and along the banks of rivers and creeks. They were mapped as a complex with the Chiefland soils. The slope ranges from 2 to 8 percent. The water table is at a depth of more than 72 inches.

The Pedro Variant soils are closely associated with the Lakeland, Alpin, Blanton, Chiefland, Chipley, Bigbee, Troup, and Lucy soils. These associated soils do not have limestone within a depth of 80 inches. The Chiefland soils have limestone below a depth of 20 inches.

Typical pedon of Pedro Variant fine sand, in an area of Chiefland-Pedro Variant complex, 0 to 5 percent slopes, approximately 0.75 mile west of U.S. Highway 27, 0.65 mile north of County Highway 138, 25 feet east of subdivision trail, NW1/4SW1/4 sec. 19, T. 7 S., R. 17 E.

A1—0 to 3 inches; gray (10YR 5/1) fine sand; weak fine granular structure; very friable; few fine and medium roots; many uncoated sand grains; slightly acid; clear wavy boundary.

A2—3 to 8 inches; dark brown (10YR 4/3) fine sand; single grained; loose; few fine and medium roots; neutral; clear irregular boundary.

B2t—8 to 11 inches; dark brown (10YR 3/3) sandy clay loam; weak fine subangular blocky structure; friable; few fragments of limestone 1 to 15 millimeters in diameter, about 5 percent, by volume; mildly alkaline; abrupt irregular boundary.

IICr—11 to 14 inches; white (10YR 8/2) weathered limestone; soft enough to be cut with a spade; common hard limestone fragments 1 to 15 millimeters in diameter; moderately alkaline; gradual irregular boundary.

IIR—14 inches; hard limestone.

The thickness of the solum and depth to soft, weathered limestone are 6 to 20 inches, but in solution holes the solum may extend to a depth of about 60 inches.

The A1 horizon is 2 to 5 inches thick. It has hue of 10YR, value of 4 through 6, and chroma of 1 or 2. The A2 horizon is 5 to 18 inches thick. It has hue of 10YR, value of 3 through 6, and chroma of 1 through 3. The A horizon is medium acid to neutral.

The Bt horizon is 3 to 10 inches thick. It has hue of 10YR, and either value of 3 or 4 and chroma of 3 or value of 5 or 6 and chroma of 6 or 8. Fragments of limestone range from few to common.

Depth to limestone is less than 20 inches. The limestone is 60 or more inches thick.

These soils are a variant of the Pedro series because they are in the thermic temperature family rather than in the hyperthermic temperature family and because they have limestone bedrock at a depth of less than 20 inches. Other than these differences, these soils are within the concepts of the Pedro series.

Pelham Series

The Pelham series is a member of the loamy, siliceous, thermic family of Arenic Paleaquults. It consists of poorly drained, moderately permeable soils that formed in unconsolidated marine sediments. These nearly level soils occur in shallow depressions, on broad low-lying flats in the flatwoods, and in nearly level areas on the uplands. The slope ranges from 0 to 2 percent. The water table is at a depth of 6 to 18 inches for 3 months during most years. It recedes to a depth of 40 inches during dry periods. Some areas of these soils are flooded for long periods in about 1 year out of 10.

The Pelham soils are closely associated with the Albany, Blanton, Pantego, Mascotte, Plummer, Surrency, and Bonneau soils. The Pelham soils have a Bt horizon at a depth of 20 to 40 inches, whereas the Albany, Blanton, and Plummer soils have a Bt horizon at a depth of more than 40 inches, and the Pantego soils have a Bt horizon within a depth of 20 inches. The Mascotte soils have a Bh horizon. The Bonneau soils are moderately well drained. The Surrency soils have an umbric epipedon and are very poorly drained.

Typical pedon of Pelham fine sand, 1.45 miles south of U.S. Highway 90, 1.3 miles west of Baker County line, NW1/4NE1/4 sec. 2, T. 4 S., R. 18 E.

Ap—0 to 6 inches; very dark gray (10YR 3/1) fine sand; weak fine granular structure; very friable; many fine roots; extremely acid; gradual smooth boundary.

A21—6 to 10 inches; grayish brown (10YR 5/2) fine sand; common medium faint dark grayish brown (10YR 4/2) mottles; weak fine granular structure; very friable; common fine roots; extremely acid; gradual smooth boundary.

A22—10 to 16 inches; grayish brown (10YR 5/2) fine sand; single grained; loose; few fine and medium roots; extremely acid; gradual wavy boundary.

A23—16 to 31 inches; dark gray (10YR 4/1) fine sand; weak fine granular structure; very friable; few fine and medium roots; extremely acid; clear wavy boundary.

B21tg—31 to 51 inches; gray (10YR 5/1) sandy clay loam; common fine prominent yellowish brown (10YR 5/6), brownish yellow (10YR 6/8), light yellowish brown (10YR 6/4), and common gray and light gray (10YR 6/1) mottles; weak medium subangular blocky structure; friable; extremely acid; gradual wavy boundary.

B22tg—51 to 66 inches; mottled gray (10YR 5/1), light gray (10YR 7/1), and yellowish red (5YR 5/6) sandy clay loam; weak medium subangular blocky structure; friable; extremely acid; gradual wavy boundary.

Cg—66 to 80 inches; gray (10YR 6/1) fine sandy loam; many medium prominent yellowish red (5YR 5/8) mottles; weak fine subangular blocky structure; very friable; extremely acid.

The thickness of the solum is more than 60 inches. Reaction ranges from strongly acid to extremely acid, except where the soil has been limed.

The A1 or Ap horizon is 2 to 8 inches thick. It has hue of 10YR, value of 2 through 4, and chroma of 1. The A2 horizon has hue of 10YR, value of 4 through 7, and chroma of 1 or 2. It is 20 to 38 inches thick. Texture is loamy sand, sand, or fine sand.

The B21tg and B22tg horizons have hue of 10YR, value of 5 through 7, and chroma of 1 or 2. Mottles throughout this horizon range from none to many and from fine to coarse; they are yellowish brown, brownish yellow, gray, light gray, and red. The B2tg horizon is sandy loam or sandy clay loam. It extends to a depth below 60 inches.

The Cg horizon has the same colors as the B2tg horizon. It is fine sandy loam or sandy clay. This horizon extends to a depth of 80 inches or more.

Plummer Series

The Plummer series is a member of the loamy, siliceous, thermic family of Grossarenic Paleaquults. It consists of poorly drained, moderately slowly permeable soils that formed in marine sediments. These nearly level soils occur on flat or depressional landscapes, in shallow water ponds, on river flood plains, and along drainageways. The slope ranges from 0 to 2 percent. The water table is above the surface or within a depth of 15 inches for up to 6 months during most years. Depressional or ponded areas are under water for periods of up to 8 months during most years. Flood

prone areas are submerged for long periods about once every 10 years.

The Plummer soils are closely associated with the Albany, Hurricane, Ocilla, Pelham, and Surrency soils. The Albany, Hurricane, and Ocilla soils are better drained than the Plummer soils. In addition, the Hurricane soils do not have a Bt horizon within a depth of 80 inches. The Pelham and Surrency soils have a Bt horizon at a depth of 20 to 40 inches, and the Surrency soils have an umbric epipedon.

Typical pedon of Plummer fine sand, 0 to 2 percent slopes, 3/8 mile west of Florida Highway 133, 3/4 mile north of Florida Highway 252, SW1/4SE1/4 sec. 9, T. 4 S., R. 17 E.

A11—0 to 4 inches; very dark gray (10YR 3/1) fine sand; weak fine granular structure; very friable; many uncoated sand grains; very strongly acid; gradual smooth boundary.

A12—4 to 9 inches; dark grayish brown (2.5Y 4/2) fine sand; common fine distinct very dark gray (10YR 3/1) mottles; weak fine granular structure; very friable; very strongly acid; gradual wavy boundary.

A21—9 to 27 inches; gray (5Y 5/1) fine sand; common medium faint grayish brown (10YR 5/2) splotches; weak fine granular structure; very friable; strongly acid; gradual wavy boundary.

A22—27 to 39 inches; white (10YR 8/2) fine sand; common fine distinct yellow (10YR 7/8), common coarse distinct grayish brown (10YR 5/2), and common medium faint light gray (10YR 7/2) mottles; single grained; loose; strongly acid; gradual wavy boundary. (This horizon was subdivided for tests to determine physical and chemical properties.)

A23—39 to 56 inches; white (N 8/0) fine sand; few fine faint yellow and very pale brown mottles; single grained; loose; strongly acid; clear wavy boundary.

B21tg—56 to 58 inches; light gray (2.5Y 7/2) fine sandy loam; common distinct pockets of white (10YR 8/1) fine sand; moderate medium granular structure; friable; very strongly acid; gradual wavy boundary.

B22tg—58 to 80 inches; light gray (2.5Y 7/2) sandy clay loam; common fine distinct brownish yellow (10YR 6/8) mottles; few fine sand pockets; weak medium subangular blocky structure; friable; very strongly acid.

Reaction ranges from extremely acid to strongly acid in all horizons.

The A1 horizon is 4 to 12 inches thick. It has hue of 10YR, value of 2 through 4, and chroma of 1; or it has hue of 2.5Y, value of 4, and chroma of 2. Where value is 2 or 3, the horizon is 6 inches thick or less.

The A2 horizon is 37 to 60 inches thick. It has hue of 10YR and either value of 6 or 7 and chroma of 1 or value of 8 and chroma of 2; or it has hue of 5Y, value of 5, and chroma of 1; or it is neutral with value of 8. Few to common grayish brown, pale brown, and yellow mottles occur in this horizon in some pedons. Depth to the B2tg horizon ranges from 40 to 70 inches.

The Btg horizon has hue of 10YR, value of 5 through 7, and chroma of 1; or hue of 2.5Y, value of 7, and chroma of 2; or hue of 5Y, value of 5 or 6, and chroma of 1. Few to many strong brown, yellowish brown, brownish yellow, and yellow mottles are in this horizon. The Btg horizon is fine sandy loam or sandy clay loam.

The C horizon, where present, has hue of 10YR, value of 6 to 8, and chroma of 1 or 2. It is fine sand or loamy sand and extends to a depth of 80 inches or more.

Sapelo Series

The Sapelo series is a member of the sandy, siliceous, thermic family of Ultic Haplaquods. It consists of poorly drained, moderately permeable soils that formed in sandy and loamy marine deposits. These nearly level soils occur in flatwood areas. The slope is 0 to 2 percent. The water table is at a depth of 15 to 30 inches for 2 to 4 months and is within a depth of 15 inches during rainy periods. It is at a depth of more than 30 inches for most of the rest of the year.

The Sapelo soils are closely associated with the Mascotte, Pelham, Plummer, Ocilla, and Leon soils. The Mascotte soils have a Bt horizon above a depth of 40 inches. The Leon soils are sandy to a depth of more than 80 inches. The Pelham, Plummer, and Ocilla soils do not have a Bh horizon. In addition, the Ocilla soils are somewhat poorly drained.

Typical pedon of Sapelo fine sand, in a flatwoods area 3,000 feet west of McFarlane Avenue and 1 mile due south of Florida Highway 341, west of Summers Elementary School, NE1/4SW1/4 sec. 6, T. 4 S., R. 17 E.

A1—0 to 4 inches; black (10YR 2/1) fine sand; weak medium granular structure; friable; many fine roots; very strongly acid; clear smooth boundary.

A2—4 to 11 inches; gray (10YR 5/1) fine sand; weak fine granular structure; friable; few brown (10YR 5/3) streaks; few fine roots; very strongly acid; abrupt wavy boundary.

B2h—11 to 17 inches; very dark brown (10YR 2/2) fine sand; common fine faint very dark gray mottles; weak fine subangular blocky structure; friable; common fine roots; sand grains coated with organic matter; very strongly acid; gradual wavy boundary.

A'21—17 to 31 inches; pale yellow (5Y 7/3) fine sand; few fine prominent yellow (10YR 7/6) mottles; single grained; loose; very strongly acid; gradual smooth boundary.

A'22—31 to 50 inches; light gray (10YR 7/1) fine sand; single grained; loose; very strongly acid; clear wavy boundary.

B'21tg—50 to 62 inches; light gray (5Y 7/2) sandy clay loam; common fine distinct yellow (2/.5Y 7/6)

mottles; weak fine subangular blocky structure; firm; very strongly acid; gradual wavy boundary.

B'22tg—62 to 80 inches; gray (5Y 6/1) sandy clay loam; many medium distinct olive yellow (2.5Y 6/6) and yellowish red (5YR 5/8) mottles; weak medium subangular blocky structure; firm; very strongly acid.

Reaction ranges from extremely acid to strongly acid. Depth to the Bh horizon ranges from 10 to 30 inches, and depth to the B'2t horizon is 40 inches or more.

The A1 horizon is 4 to 7 inches thick. It has hue of 10YR, value of 2 through 4, and chroma of 1; or it is neutral with value of 2. The A2 horizon is 7 to 20 inches thick. It has hue of 10YR, value of 5 to 7, and chroma of 1 or 2.

The Bh horizon is 5 to 12 inches thick. It has hue of 10YR or 5YR, value of 2, and chroma of 1 or 2.

The A'2 horizon is 31 to 38 inches thick. Where it has hue of 10YR it has value of 7 and chroma of 1 or 2, or value of 5 and chroma of 2, or value of 6 and chroma of 2 or 3; or it has hue of 5Y, value of 7, and chroma of 3. Few to common yellow and brown mottles may occur in this horizon in some pedons.

The B'2tg horizon has hue of 10YR, value of 6 or 7, and chroma of 1; or it has hue of 5Y and either value of 6 or 7 and chroma of 1 or value of 7 and chroma of 2. It has mottles in shades of red, yellow, and brown. Texture is sandy loam or sandy clay loam; there are lenses or pockets of clay or sand in some pedons.

Surrency Series

The Surrency series is a member of the loamy, siliceous, thermic family of Arenic Umbric Paleaquults. It consists of very poorly drained, moderately permeable soils that formed in marine deposits of loamy materials. These nearly level soils occur along upland drainageways, in depressions, and in shallow ponds. The slope is less than 1 percent. The water table is at the surface for most of the year, and ponding is common.

The Surrency soils are closely associated with the Albany, Blanton, Alpin, Plummer, Pamlico, Dorovan, Leefield, and Mascotte soils. The Surrency soils differ from all of these associated soils in having an umbric epipedon. The Albany, Alpin, Blanton, Plummer, Leefield, and Mascotte soils are better drained than the Surrency soils. In addition, the Blanton and Plummer soils have an A horizon more than 40 inches thick, the Alpin soils have lamellae and do not have a Bt horizon, and the Mascotte soils have a spodic horizon. The Pamlico and Dorovan soils are organic and do not have a Bt horizon.

Typical pedon of Surrency fine sand, in a grassy pond 1 1/4 miles north of Florida Highway S-242 and 300 feet east of Birley Road, SW1/4SE1/4 sec. 17, R. 16 E., T. 4 S.

A11—0 to 8 inches; black (10YR 2/1) fine sand; weak medium granular structure; friable; extremely acid; gradual wavy boundary.

A12—8 to 16 inches; very dark gray (10YR 3/1) fine sand; moderate medium granular structure; nonsticky; extremely acid; clear wavy boundary.

A2—16 to 38 inches; gray (10YR 6/1) fine sand; weak fine granular structure; friable; very strongly acid; gradual smooth boundary.

B2tg—38 to 80 inches; grayish brown (10YR 5/2) sandy clay loam; common coarse distinct yellowish brown (10YR 5/8) mottles; moderate medium subangular blocky structure; slightly sticky; sand grains coated and bridged with clay; strongly acid.

The thickness of the solum ranges from 60 to more than 80 inches. Reaction is extremely acid or very strongly acid in all horizons.

The A1 horizon is 10 to 16 inches thick. It has hue of 10YR, value of 2 or 3, and chroma of 1; or it is neutral with value of 2. The A2 horizon is 10 to 24 inches thick. It has hue of 10YR, and either value of 5 through 7 and chroma of 2 or value of 7 and chroma of 1. The A horizon is 20 to 40 inches thick. It is loamy fine sand or fine sand.

The B2tg horizon has hue of 10YR, value of 5 or 6, and chroma of 1 or 2. Common to many gray, brown, and yellow mottles occur in this horizon. Texture is fine sandy loam or sandy clay loam. This horizon extends to a depth of 60 inches or more.

Some pedons have a Cg horizon below a depth of 65 inches. It has hue of 2.5Y, value of 5 or 6, and chroma of 1; or it is neutral with value of 4. The texture is loamy sand or sandy clay.

Troup Series

The Troup series is a member of the loamy, siliceous, thermic family of Grossarenic Paleudults. It consists of well drained, moderately permeable soils that formed in sandy and loamy marine deposits. The soils are gently sloping to sloping. They are on upland slopes and ridges. The slope ranges from 2 to 8 percent. The water table is at a depth of more than 72 inches throughout the year.

The Troup soils are closely associated with the Blanton, Lucy, Orangeburg, and Fort Meade Variant soils. The Troup soils are better drained than Blanton soils, and they have a redder Bt horizon. The Fort Meade Variant soils do not have a Bt horizon and have an umbric epipedon. The Lucy soils have an A horizon that is 20 to 40 inches thick. The Orangeburg soils have a Bt horizon within a depth of 20 inches.

Typical pedon of Troup fine sand, 2 to 5 percent slopes, 0.75 mile west of Florida Highway 245, 50 feet north of Florida Highway 349, SW1/4NW1/4 sec. 25, T. 5 S., R. 17 E.

Ap—0 to 8 inches; dark brown (10YR 3/3) fine sand; weak fine granular structure; very friable; neutral; abrupt smooth boundary.

A21—8 to 38 inches; reddish yellow (7.5YR 6/6) loamy sand; single grained; loose; few iron concretions; strongly acid; gradual wavy boundary.

A22—38 to 52 inches; strong brown (7.5YR 5/6) loamy sand; few medium distinct white (10YR 8/2) mottles; single grained; loose; medium acid; gradual wavy boundary.

B21t—52 to 58 inches; strong brown (7.5YR 5/6) fine sandy loam; weak fine granular structure; friable; few iron concretions; medium acid; gradual wavy boundary.

B22t—58 to 67 inches; yellowish red (5YR 4/6) sandy clay loam; weak fine subangular blocky structure; firm; few iron concretions; very strongly acid; gradual wavy boundary.

B23t—67 to 80 inches; yellowish red (5YR 4/6) sandy clay loam; few medium distinct brown (7.5YR 5/2) mottles; moderate fine subangular blocky structure; firm; common iron concretions, common silica-cemented nodules; strongly acid.

Reaction is very strongly acid or strongly acid, except where the soil has been limed.

The A1 or Ap horizon is 6 to 8 inches thick. It has hue of 10YR and value of 3 or 5 and chroma of 2 through 4 or value of 4 and chroma of 2 or 3. Its texture is loamy sand or fine sand. The A2 horizon is 32 to 62 inches thick. It has hue of 10YR, with value of 4, and chroma of 6, or value of 5 and chroma of 4 through 8, or value of 6 and chroma of 3 through 8; or it has hue of 7.5YR and either value of 4 and chroma of 4 or value of 5 or 6 and chroma of 6 or 8. The texture is loamy sand or fine sand.

The B1 horizon, where present, has hue of 10YR and either value of 4 and chroma of 3 or value of 5 and chroma of 8; or hue of 7.5YR and either value of 5 and chroma of 4 through 8 or value of 6 and chroma of 6; or hue of 5YR, value of 5, and chroma of 8. It is up to 6 inches thick.

The B2t horizon is 15 to 25 inches or more thick. It has hue of 10YR, value of 4 or 5, and chroma of 6 or 8; or hue of 7.5YR, value of 5 or 6, and chroma of 6; or hue of 5YR, value of 4, and chroma of 6 or 8. A few brown mottles occur in this horizon, and few to common light gray faint mottles occur in the lower 15 inches of this horizon in some pedons. Silica-cemented nodules and concretions range from few to many. The texture is sandy loam, fine sandy loam, or sandy clay loam.

Formation of the Soils

In this section, the factors of soil formation are discussed and related to the soils in Columbia County. In addition, the processes of soil formation are described.

Factors of Soil Formation

Soil is formed when parent material, climate, relief, and plants and animals interact for a period of time. These factors determine the nature of the soil and affect the formation of each soil, but the relative importance of each factor differs from place to place. In some areas, one factor may dominate in the formation of a soil and determine most of the soil properties. For example, if the parent material is pure quartz sand, which is highly resistant to weathering, the soils generally have faint horizons. A distinct profile can form in such soils, however, if the vegetation is of certain types, relief is low and flat, and the water table is high.

The five factors of soil formation are discussed in the paragraphs that follow.

Parent Material

Parent material is the unconsolidated mass from which soil forms. It mainly determines the chemical and mineral composition of a soil. In Columbia County, the parent material is sandy or loamy marine sediment.

Differences in parent material within the county are largely the result of the ways in which the sands, silts, and clays were sorted and deposited by the ocean and streams of the Pleistocene Epoch.

Most soils in Columbia County formed in several lower marine and estuarine terrace deposits. The Mascotte and Olustee soils are typical of these deposits. Soils along the Suwannee River and in parts of southern Columbia County are underlain by unnamed coarse clastics and by formations of the Alum Bluff Group. The Albany, Blanton, and Chipley soils are the major soils that formed in this area. The extreme southern part of the county is underlain by Suwannee Limestone and by formations of the Jackson Group. The Alpin and Chiefland soils formed in this area.

Climate

Climate, particularly temperature and rainfall, largely determines the rate and nature of the physical, chemical, and biological processes that affect the weathering of soil material. Rainfall, changing temperatures, wind, and sun help to advance the breakdown of rocks and minerals, the release of chemicals, and other processes that affect the development of the soils. The amount of water that percolates through the soil depends on rainfall, relative humidity, soil permeability, and physiographic position. Temperature influences the kinds of organisms and their growth and the speed of physical and chemical reactions in the soils.

The warm, humid climate of Columbia County is characterized by long, hot summers and short, mild winters. Because most of the rainfall percolates through the soil and moves downward, the soils are generally low in bases. The rainfall is generally well enough distributed that most of the soils are moist most of the year. The climate throughout the survey area is uniform and has had about the same effect on soil development in all parts of the county. Most of the soils in this survey area are highly weathered, leached, strongly acid, and low in natural fertility and in organic matter.

Relief

Relief has affected the formation of soils in Columbia County primarily through its influence on soil-water relationships and through its effect on erosion. Other factors of soil formation normally associated with relief, such as temperature and plant cover, are of minor importance in the survey area.

Five general relief areas—flatwoods, broad swamps, sandhills, rolling uplands, and flood plains—are in the county. There are differences in soils in these general areas that are directly related to relief.

The soils in the swamps and flatwoods have a high water table and are periodically wet at the surface. These soils are not so highly leached as those on the sandhills and the rolling uplands. The soils on the sandhills, such as the Lakeland soils, are deep sandy soils that are subject to droughtiness. The soils on the rolling uplands, such as the Orangeburg soils, are mostly loamy and clayey and are subject to erosion. The soils on flood plains, Oleno soils, for example, are subject to flooding and prolonged wetness.

The most prominent example of relief affecting soil formation is at Sandlin Bay, Impassable Bay, and Pinhook Swamp. These areas drain into large depressions that have few or no outlets, resulting in a water table at or above the surface most of the time. This prolonged saturation and the partly decomposed

organic matter prevent the rapid oxidation and weathering of the soils.

Plants and Animals

Plants, animals, bacteria, and other organisms are active in the soil-forming processes. The changes they bring about depend on the kinds of life processes peculiar to each. The kinds of plants and animals that live on and in the soil are affected, in turn, by climate, parent material, relief, and age of the soil.

Plants provide a cover that reduces erosion and stabilizes the surface so that the soil-forming processes can continue. The leaves, twigs, roots, and entire plants that accumulate on the surface and in the soil under forest are decomposed by percolating water, micro-organisms, earthworms, and other forms of life.

Small animals, earthworms, insects, and micro-organisms also influence the formation of soils by mixing organic matter into the soil and by breaking down the residue of plants. Small animals burrow into the soils and thus mix the layers. Earthworms and other small invertebrates feed on the organic matter in the upper few inches of the soil. They slowly but continuously mix the soil material and in some places alter it chemically. Bacteria, fungi, and other micro-organisms hasten the weathering of rocks and the decomposition of organic matter.

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 geologic material and the influence of the other factors. Some minerals from which soils are formed weather fairly rapidly, but others are chemically inert and show little change over long periods of time. The processes of translocation of fine particles within the soil to form the various horizons are variable under different conditions, but these processes always involve relatively long periods of time.

In Columbia County, the dominant geological materials are inactive. The sands are almost pure quartz and are highly resistant to weathering. The finer textured silts and clays are the product of earlier weathering. Limestone materials are the only ones in the survey area that erode relatively fast, resulting in the formation of sinkholes.

Relatively little geological time has elapsed since the soil material in the county was laid down by the sea. The loamy and clayey horizons formed in place through processes of clay translocation. Coherent subsurface horizons stained by organic matter formed in place where surface organic matter and minerals were leached through the soils and settled at a point of equilibrium.

Processes of Soil Formation

Soil morphology refers to the process involved in the formation of a soil horizon or soil horizon differentiation. The differentiation of horizons in soils in Columbia County is the result of the accumulation of organic matter, the leaching of carbonates, the reduction and transfer of iron, the accumulation of silicate clay minerals, or more than one of these processes.

Some organic matter has accumulated in the upper part of most of the soils to form an A1 horizon. The content of organic matter is low in some of the soils and high in others.

Leaching of carbonates and salts has occurred in nearly all of the soils. The effect of leaching has been indirect in that the leaching permitted the subsequent translocation of silicate clay materials in some soils. Most of the soils in the county are leached to varying degrees.

Reduction and transfer of iron has occurred in most of the soils in the county except the organic soils. In some of the wet soils, iron has been segregated within the deeper horizons to form reddish brown mottles and concretions.

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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.

Area reclaim (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Association, soil. A group of soils geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

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.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

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.

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.

Coarse fragments. If round, mineral or rock particles 2 millimeters to 25 centimeters (10 inches) in diameter; if flat, mineral or rock particles (flagstone) up to 38.1 centimeters (15 inches) long.

Coarse textured soil. Sand or loamy sand.

Colluvium. Soil material, 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.

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.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Corrosive. High risk of corrosion to uncoated steel or deterioration of concrete.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Depth to rock (in tables). Bedrock is too near the surface for the specified use.

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.

Well drained.—Water is removed from the soil readily, but not rapidly. It is available to plants throughout most of the growing season, and wetness does not inhibit growth of roots for significant periods during most growing seasons. Well drained soils are commonly medium textured. They are mainly free of mottling.

Moderately well drained.—Water is removed from the soil somewhat slowly during some periods. Moderately well drained soils are wet for only a short time during the growing season, but periodically they are wet long enough that most mesophytic crops are affected. They commonly have a slowly pervious layer within or directly below the solum, or periodically receive high rainfall, or both.

Somewhat poorly drained.—Water is removed slowly enough that the soil is wet for significant periods during the growing season. Wetness markedly restricts the growth of mesophytic crops unless artificial drainage is provided. Somewhat poorly drained soils commonly have a slowly pervious layer, a high water table, additional water from seepage, nearly continuous rainfall, or a combination of these.

Poorly drained.—Water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Free water is commonly at or near the surface for long enough during the growing season that most mesophytic crops cannot be grown unless the soil is artificially drained. The soil is not continuously saturated in layers directly below plow depth. Poor drainage results from a high water table, a slowly pervious layer within the profile, seepage, nearly continuous rainfall, or a combination of these.

Very poorly drained.—Water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. Unless the soil is artificially drained, most mesophytic crops cannot be grown. Very poorly drained soils are commonly level or depressed and are frequently ponded. Yet, where rainfall is high and nearly continuous, they can have moderate or high slope gradients.

Drainage, surface. Runoff, or surface flow of water, from an area.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of the activities of man or other animals or of a catastrophe in nature, for example, fire, that exposes the surface.

Excess fines (in tables). Excess silt and clay in the soil. The soil is not a source of gravel or sand for construction purposes.

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, and clay.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

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 7.5 centimeters) in diameter. An individual piece is a pebble.

Ground water (geology). Water filling all the unblocked pores of underlying 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.

Hardpan. A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an upper case letter represents the major horizons. Numbers or lower case letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the *Soil Survey Manual.* The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue at the surface of a mineral soil.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

B horizon.—The mineral horizon below an O, A, or E horizon. The B horizon is in part a layer of transition from the overlying horizon to the underlying C horizon. The B horizon also has distinctive characteristics such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these. The combined A and B horizons are generally called the solum, or true soil. If a soil does not have a B horizon, the A horizon alone is the solum.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the A or B horizon. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, the Arabic numeral 2 precedes the letter C.

R layer.—Consolidated rock beneath the soil. The rock commonly underlies a C horizon, but can be directly below an A or a B horizon.

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.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be

limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

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—*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.

Karst (topography). The relief of an area underlain by limestone that dissolves in differing degrees, thus forming numerous depressions or small basins.

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.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

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.

Moderately coarse textured soil. Sandy loam and fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, and silty clay loam.

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 colored, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Munsell notation. A designation of color by degrees of the three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color of 10YR hue, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value between 6.6 and 7.3. (See Reaction, soil.)

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Peat. Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

Percs slowly (in tables). The slow movement of water through the soil adversely affecting the specified use.

Permeability. The quality of the soil that enables water to move downward through the profile. Permeability is measured as the number of inches per hour that water moves downward through the saturated soil. Terms describing permeability are:

Very slow	less than 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management. For example, slope, stoniness, and thickness.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plinthite. The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents. It commonly appears as red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates on repeated wetting and drying, especially if it is exposed also to heat from the sun. In a moist soil, plinthite can be cut with a spade. It is a form of laterite.

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.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degree of acidity or alkalinity is expressed as—

	pH
Extremely acid	below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Medium acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Relief. The elevations or inequalities of a land surface, considered collectively.

Residuum (residual soil material). Unconsolidated, weathered, or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Rippable. Bedrock or hardpan can be excavated using a single-tooth ripping attachment mounted on a tractor with a 200-300 draw bar horsepower rating.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

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.

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.

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer or of the underlying material. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shrink-swell. The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

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.

Sinkhole. A depression in the landscape where limestone has been dissolved.

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.

Slickensides. Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may occur at the bases of slip surfaces on the steeper slopes; on faces of blocks, prisms, and columns; and in swelling clayey soils, where there is marked change in moisture content.

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.

Slow intake (in tables). The slow movement of water into the soil.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in 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 of separates recognized in the United States are as follows:

	Millimeters
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 and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and plant and animal activities are largely confined to the solum.

Stripcropping. Growing crops in a systematic arrangement of strips or bands which provide vegetative barriers to wind 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 wind 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 A2 horizon. Generally refers to a leached horizon lighter in color and lower in content of organic matter than the overlying surface layer.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet.

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 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.

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.

Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, are in soils in extremely small amounts. They are essential to plant growth.

Triticale. A small grain that is a hybrid of wheat and rye.

Unstable fill (in tables). Risk of caving or sloughing on banks of fill material.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Variant, soil. A soil having properties sufficiently different from those of other known soils to justify a new series name, but occurring in such a limited geographic area that creation of a new series is not justified.

Water table. The upper surface of ground water or that level in the ground where the water is at atmospheric pressure.

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.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically 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 1951-1974 at Lake City 2E, Florida]

Month	Temperature					Precipitation				
				Mean number of days with temperature of--					Mean number of days with rainfall of--	
	Monthly normal mean	Normal daily maximum	Normal daily minimum	90° F or higher	32° F or lower	Normal total	Maximum total	Minimum total	0.10 inch or more	0.50 inch or more
	°F	°F	°F			In	In	In		
January	54.5	66.4	42.5	0	7	3.57	9.18	0.33	6	2
February	56.0	68.4	43.6	0	4	3.89	7.77	.76	6	3
March	61.8	74.6	48.9	0	2	3.98	8.71	.76	6	3
April	68.4	81.4	55.3	1	0	3.28	10.03	.95	5	2
May	74.5	87.3	61.6	10	0	4.30	11.45	.39	6	3
June	79.0	90.5	67.5	19	0	7.08	15.31	2.62	10	4
July	80.8	91.4	70.1	23	0	7.03	12.72	2.95	12	5
August	80.9	91.6	70.1	23	0	6.99	13.86	2.05	11	5
September	78.1	88.5	67.7	14	0	5.83	12.34	.26	7	3
October	70.0	81.5	58.4	2	0	2.55	9.68	.06	4	2
November	61.1	73.5	48.7	0	2	2.24	6.90	.05	4	2
December	55.6	67.8	43.4	0	6	3.44	10.24	.26	5	2
Year	68.4	80.2	56.5	92	21	54.18			82	36

TABLE 2.--FREEZE PROBABILITIES*

[Recorded in the period 1951-1974 at Lake City 2E, Florida]

Probability (in percent)	Temperature				
	32° F	28° F	24° F	20° F	16° F
Later date in spring than--					
10 percent	Mar. 29	Mar. 9	Feb. 18	Feb. 6	**
30 percent	Mar. 19	Feb. 22	Feb. 1	Jan. 11	**
50 percent	Mar. 11	Feb. 12	Jan. 20	**	**
70 percent	Mar. 4	Feb. 2	Jan. 5	**	**
90 percent	Feb. 21	Jan. 18	**	**	**
Earlier date in fall than--					
10 percent	Nov. 5	Nov. 13	Dec. 1	Dec. 16	**
30 percent	Nov. 15	Nov. 27	Dec. 20	Jan. 21	**
50 percent	Nov. 22	Dec. 6	Jan. 3	**	**
70 percent	Nov. 29	Dec. 16	Jan. 23	**	**
90 percent	Dec. 9	Dec. 30	**	**	**
Longer freeze-free period (days) than--					
10 percent	282	325	365	365	365
30 percent	266	308	365	365	365
50 percent	255	296	365	365	365
70 percent	243	285	328	365	365
90 percent	227	268	310	333	365

* As an example of the use of this table, based on freeze data records there is a 30 percent probability of the temperature dropping to 28° F before November 27 in any given year.

** Probability of occurrence of freeze threshold temperature is zero.

TABLE 3.--SOIL RATINGS AND LIMITATIONS OF GENERAL SOIL MAP UNITS

[The overall rating for the map unit is based on the underlined rating for the dominant soil (the soil that makes up the greatest percentage of the map unit) or soils, if more than one soil has the same rating]

Map unit and component soils[1]	Estimated[2] percentage of map unit	Soil limitations for--		Potential productivity for--	Limitations for--		
		Crops	Pasture	Woodland (pine trees)	Sanitary facilities[3]	Building sites[4]	Recreational areas[5]
1. Blanton-Alpin-Troup (5 percent)		Severe----------	Moderate--------	Moderately high-------	Moderate-------	Slight--------	Severe.
Blanton----------	40	Severe: droughty, rapid leaching.	Moderate: droughty.	Moderately high: equipment limitation, seedling mortality.	Moderate: wetness.	Slight--------	Severe: too sandy.
Alpin----------	25	Severe: droughty, low fertility.	Moderate: droughty, low fertility.	Moderately high: equipment limitation, seedling mortality.	Severe: seepage, too sandy.	Slight--------	Severe: too sandy.
Troup----------	10	Severe: droughty.	Moderate: droughty.	Moderately high: equipment limitation, seedling mortality.	Moderate: too sandy.	Slight--------	Severe: too sandy.
Other----------	25						
2. Blanton-Alpin-Bonneau (10 percent)		Severe----------	Moderate--------	Moderately high-------	Moderate-------	Slight--------	Severe.
Blanton----------	45	Severe: droughty, rapid leaching.	Moderate: droughty.	Moderately high: equipment limitation, seedling mortality.	Moderate: wetness.	Slight--------	Severe: too sandy.
Alpin----------	15	Severe: droughty, low fertility.	Moderate: droughty, low fertility.	Moderately high: equipment limitation, seedling mortality.	Severe: seepage, too sandy.	Slight--------	Severe: too sandy.
Bonneau----------	15	Moderate: droughty, rapid leaching.	Slight: droughty.	High: equipment limitation, seedling mortality.	Moderate: wetness.	Slight--------	Severe.
Other----------	25						
3. Lakeland-Alpin-Chiefland (5.5 percent)		Severe----------	Moderate--------	Moderately high-------	Severe---------	Slight--------	Severe.
Lakeland---------	60	Severe: droughty, rapid leaching, low fertility.	Moderate: droughty, low fertility.	Moderately high: equipment limitation, seedling mortality.	Severe: seepage, too sandy.	Slight--------	Severe: too sandy.

See footnotes at end of table.

TABLE 3.--SOIL RATINGS AND LIMITATIONS OF GENERAL SOIL MAP UNITS--Continued

Map unit and component soils[1]	Estimated[2] percentage of map unit	Soil limitations for--		Potential productivity for--	Limitations for--		
		Crops	Pasture	Woodland (pine trees)	Sanitary facilities[3]	Building sites[4]	Recreational areas[5]
Alpin----------	10	Severe: droughty, low fertility.	Moderate: droughty, low fertility.	Moderately high: equipment limitation, seedling mortality.	Severe: seepage, too sandy.	Slight--------	Severe: too sandy.
Chiefland--------	10	Severe: droughty, low fertility.	Moderate: droughty, low fertility.	Moderately high: equipment limitation, seedling mortality.	Severe: depth to rock.	Slight--------	Severe: too sandy.
Other----------	20						
4. Bonneau-Blanton-Ichetucknee (11.6 percent)		Moderate--------	Slight----------	High----------	Moderate-------	Slight--------	Severe.
Bonneau----------	45	Moderate: droughty, rapid leaching.	Slight: droughty.	High: equipment limitation, seedling mortality.	Moderate: wetness.	Slight--------	Severe: too sandy.
Blanton----------	25	Severe: droughty, rapid leaching.	Moderate: droughty.	Moderately high: equipment limitation, seedling mortality.	Moderate: wetness.	Slight--------	Severe: too sandy.
Ichetucknee------	5	Severe: wetness, erosion hazard.	Moderate: low fertility.	High: equipment limitation.	Severe: wetness, depth to rock.	Moderate: wetness.	Severe: too sandy.
Other----------	25						
5. Bonneau-Blanton (3 percent)		Moderate--------	Slight----------	High----------	Moderate-------	Slight--------	Severe.
Bonneau----------	55	Moderate: droughty, rapid leaching.	Slight: droughty.	High: equipment limitation, seedling mortality.	Moderate: wetness.	Slight--------	Severe: too sandy.
Blanton----------	20	Severe: droughty, rapid leaching.	Moderate: droughty.	Moderately high: equipment limitation, seedling mortality.	Moderate: wetness.	Slight--------	Severe: too sandy.
Other----------	25						
6. Blanton-Troup-Lucy (3.5 percent)		Severe----------	Moderate--------	Moderately high-------	Moderate-------	Slight--------	Severe.
Blanton----------	60	Severe: droughty, rapid leaching.	Moderate: droughty.	Moderately high: equipment limitation, seedling mortality.	Moderate: wetness.	Slight--------	Severe: too sandy.

See footnotes at end of table.

TABLE 3.--SOIL RATINGS AND LIMITATIONS OF GENERAL SOIL MAP UNITS--Continued

Map unit and component soils[1]	Estimated[2] percentage of map unit	Soil limitations for--		Potential productivity for--	Limitations for--		
		Crops	Pasture	Woodland (pine trees)	Sanitary facilities[3]	Building sites[4]	Recreational areas[5]
Troup	10	Severe: droughty.	Moderate: droughty.	Moderately high: equipment limitation, seedling mortality.	Moderate: too sandy.	Slight	Severe: too sandy.
Lucy	5	Moderate: droughty.	Slight	Moderately high: equipment limitation, seedling mortality.	Slight	Slight	Moderate: too sandy.
Other	25						
7. Albany-Blanton-Chipley (7 percent)		Severe	Moderate	High	Severe	Moderate	Moderate.
Albany	40	Severe: wetness, low fertility.	Moderate: low fertility.	High: equipment limitation, seedling mortality.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
Blanton	20	Severe: droughty, rapid leaching.	Moderate: droughty.	Moderately high: equipment limitation, seedling mortality.	Moderate: wetness.	Slight	Severe: too sandy.
Chipley	20	Severe: droughty, rapid leaching.	Moderate: low fertility, droughty.	High: equipment limitation, plant competition.	Severe: wetness.	Moderate: wetness.	Severe: too sandy.
Other	20						
8. Albany-Ocilla-Hurricane (5.5 percent)		Severe	Moderate	High	Severe	Moderate	Severe.
Albany	40	Severe: wetness, low fertility.	Moderate: low fertility.	High: equipment limitation, seedling mortality.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
Ocilla	37	Severe: wetness, low fertility.	Moderate: low fertility.	Moderately high: equipment limitation, seedling mortality.	Severe: wetness.	Moderate: wetness.	Severe: too sandy.
Hurricane	13	Severe: wetness, rapid leaching.	Slight: wetness.	High: equipment limitation, seedling mortality.	Severe: wetness, seepage.	Moderate: wetness.	Severe: too sandy.
Other	10						

See footnotes at end of table.

TABLE 3.--SOIL RATINGS AND LIMITATIONS OF GENERAL SOIL MAP UNITS--Continued

Map unit and component soils[1]	Estimated[2] percentage of map unit	Soil limitations for--		Potential productivity for--	Limitations for--		
		Crops	Pasture	Woodland (pine trees)	Sanitary facilities[3]	Building sites[4]	Recreational areas[5]
9. Mascotte-Olustee-Surrency (29 percent)		Severe----------	Moderate--------	Moderate----------	Severe---------	Severe--------	Severe.
Mascotte---------	40	Severe: wetness, very low fertility.	Moderate: wetness, very low fertility.	Moderately high: equipment limitation, seedling mortality.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Olustee----------	20	Severe: wetness.	Moderate: wetness, very low fertility.	Moderately high: equipment limitation, seedling mortality.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Surrency---------	20	Severe: floods, ponding.	Severe: floods, ponding.	Unsuited: equipment limitation, seedling mortality.	Severe: floods, ponding.	Severe: floods, ponding.	Severe: ponding.
Other------------	20						
10. Plummer-Pelham-Albany (2 percent)		Severe----------	Moderate--------	High----------	Severe---------	Severe--------	Severe.
Plummer----------	50	Severe: wetness.	Moderate: wetness.	High: equipment limitation, seedling mortality.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Pelham-----------	35	Severe: wetness.	Moderate: wetness.	High: equipment limitation, seedling mortality.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Albany-----------	10	Severe: wetness, low fertility.	Moderate: low fertility.	High: equipment limitation, seedling mortality.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
Other------------	5						
11. Leon-Hurricane-Mandarin (1.5 percent)		Severe----------	Moderate--------	Moderate----------	Severe---------	Severe--------	Severe.
Leon-------------	65	Severe: wetness, low fertility.	Moderate: wetness, low fertility.	Moderate: equipment limitation, seedling mortality.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Hurricane--------	10	Severe: wetness, rapid leaching.	Slight: wetness.	High: equipment limitation, seedling mortality.	Severe: wetness, seepage.	Moderate: wetness.	Severe: too sandy.

See footnotes at end of table.

TABLE 3.--SOIL RATINGS AND LIMITATIONS OF GENERAL SOIL MAP UNITS--Continued

Map unit and component soils[1]	Estimated[2] percentage of map unit	Soil limitations for--		Potential productivity for--	Limitations for--		
		Crops	Pasture	Woodland (pine trees)	Sanitary facilities[3]	Building sites[4]	Recreational areas[5]
Mandarin	7	Severe: low fertility, droughty.	Moderate: droughty, low fertility.	Moderate	Severe: wetness.	Moderate: wetness.	Severe: too sandy.
Other	18						
12. Plummer-Pamlico (14 percent)		Severe	Severe	Low	Severe	Severe	Severe.
Plummer, depressional	37	Severe: wetness, floods.	Severe: wetness, floods.	Low: equipment limitation, seedling mortality.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Pamlico, loamy substratum	28	Severe: wetness, floods.	Severe: wetness, floods.	Very low: equipment limitation, seedling mortality.	Severe: wetness, seepage.	Severe: wetness, low strength.	Severe: wetness, floods.
Other	35						
13. Plummer-Bigbee-Oleno (2.5 percent)		Severe	Moderate	High	Severe	Severe	Severe.
Plummer	35	Severe: floods, wetness.	Moderate: floods, wetness.	High: equipment limitation, seedling mortality.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.
Bigbee	15	Severe: floods, droughty.	Moderate: droughty, low fertility.	High: equipment limitation, seedling mortality.	Severe: floods, wetness.	Severe: floods.	Severe: too sandy, floods.
Oleno	10	Severe: floods, too clayey.	Severe: floods, too clayey.	Moderate: equipment limitation, seedling mortality.	Severe: floods, wetness, too clayey.	Severe: floods, wetness.	Severe: too clayey, floods.
Other	40						

[1] The percentage in parentheses is the percentage of the county within the boundaries of the map unit. "Other" represents minor soils in the map unit.

[2] The percentage is not based on measured acreage.

[3] Ratings apply to septic tank absorption fields and trench sanitary landfills.

[4] Ratings apply to dwellings without basements, small commercial buildings, and local roads and streets.

[5] Ratings apply to camp areas, picnic areas, and playgrounds.

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
1	Albany fine sand, 0 to 5 percent slopes	25,385	5.0
2	Albany fine sand, occasionally flooded	623	0.1
3	Alpin fine sand, 0 to 5 percent slopes	17,610	3.5
4	Alpin fine sand, 5 to 12 percent slopes	971	0.2
5	Alpin fine sand, occasionally flooded	95	*
6	Arents, 0 to 5 percent slopes	118	*
7	Bigbee fine sand	2,465	0.5
8	Blanton fine sand, 0 to 5 percent slopes	56,731	11.3
9	Blanton fine sand, 5 to 8 percent slopes	3,090	0.6
10	Blanton fine sand, occasionally flooded	1,758	0.3
11	Blanton-Bonneau-Ichetucknee complex, 2 to 5 percent slopes	6,062	1.2
12	Blanton-Bonneau-Ichetucknee complex, 5 to 8 percent slopes	1,147	0.2
13	Bonneau fine sand, 2 to 5 percent slopes	32,563	6.5
14	Bonneau fine sand, 5 to 8 percent slopes	3,202	0.6
15	Bonneau-Blanton complex, 2 to 5 percent slopes	7,802	1.6
16	Bonneau-Blanton complex, 5 to 8 percent slopes	377	0.1
17	Chiefland-Pedro Variant complex, 0 to 5 percent slopes	3,153	0.6
18	Chiefland-Pedro Variant complex, 5 to 8 percent slopes	302	0.1
19	Chiefland-Pedro Variant complex, occasionally flooded	498	0.1
20	Chipley fine sand, 0 to 5 percent slopes	7,311	1.5
21	Dorovan muck	2,473	0.5
22	Electra Variant fine sand, 0 to 5 percent slopes	1,244	0.2
23	Electra Variant fine sand, occasionally flooded	814	0.2
24	Fort Meade Variant loamy fine sand, 0 to 5 percent slopes	182	*
25	Goldsboro loamy fine sand, 2 to 5 percent slopes	1,250	0.2
26	Hurricane fine sand	4,751	0.9
27	Ichetucknee fine sand, 2 to 5 percent slopes	2,788	0.6
28	Ichetucknee fine sand, 5 to 8 percent slopes	718	0.1
29	Lakeland fine sand, 0 to 5 percent slopes	17,011	3.4
30	Lakeland fine sand, 5 to 12 percent slopes	387	0.1
31	Leefield fine sand	631	0.1
32	Leon fine sand	5,486	1.1
33	Leon fine sand, occasionally flooded	491	0.1
34	Lucy loamy fine sand, 2 to 5 percent slopes	995	0.2
35	Lucy loamy fine sand, 5 to 8 percent slopes	254	0.1
36	Mandarin fine sand	620	0.1
37	Mascotte fine sand	67,569	13.4
38	Mascotte fine sand, depressional	2,162	0.4
39	Mascotte fine sand, occasionally flooded	1,417	0.3
40	Ocilla fine sand, 0 to 5 percent slopes	13,000	2.6
41	Oleno clay	2,021	0.4
42	Olustee fine sand, thick surface	30,914	6.1
43	Orangeburg loamy fine sand, 2 to 5 percent slopes	826	0.2
44	Orangeburg loamy fine sand, 5 to 8 percent slopes	685	0.1
45	Pamlico muck, loamy substratum	13,009	2.6
46	Pamlico, loamy substratum-Dorovan complex	2,050	0.4
47	Pantego fine sandy loam	1,173	0.2
48	Pelham fine sand	14,709	2.9
49	Pelham fine sand, occasionally flooded	1,071	0.2
50	Pits	457	0.1
51	Plummer fine sand	9,751	1.9
52	Plummer fine sand, depressional	6,430	1.3
53	Plummer fine sand, occasionally flooded	4,835	1.0
54	Plummer muck, depressional	10,017	2.0
55	Plummer, depressional-Pamlico, loamy substratum complex	25,958	5.2
56	Sapelo fine sand	30,529	6.1
57	Surrency fine sand	40,783	8.1
58	Surrency fine sand, occasionally flooded	3,630	0.7
59	Troup fine sand, 2 to 5 percent slopes	4,916	1.0
60	Troup fine sand, 5 to 8 percent slopes	254	0.1
61	Udorthents, 0 to 2 percent slopes	510	0.1
	Water	3,006	0.6
	Total	503,040	100.0

* Less than 0.1 percent.

TABLE 5.--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]

Map symbol and soil name	Corn	Soybeans	Tobacco*	Peanuts	Watermelons	Improved bermuda-grass	Bahiagrass
	Bu	Bu	Lb	Lb	Ton	Ton	AUM**
1, 2---------- Albany	75	20	2,100	1,700	12.0	6.6	6.5
3---------- Alpin	60	---	2,100	2,000	9.0	5.1	7.0
4---------- Alpin	---	---	---	---	4.4	5.0	7.0
5---------- Alpin	---	---	---	---	---	5.1	7.0
6. Arents							
7---------- Bigbee	50	---	---	---	---	4.8	7.5
8---------- Blanton	60	25	2,500	2,500	12.0	6.3	8.0
9---------- Blanton	50	20	2,200	2,200	10.0	6.3	8.0
10---------- Blanton	---	---	---	---	---	4.5	6.5
11---------- Blanton-Bonneau-Ichetucknee	71	29	2,318	---	---	6.5	7.9
12---------- Blanton-Bonneau-Ichetucknee	62	25	2,126	---	---	6.3	7.4
13---------- Bonneau	90	35	3,000	2,800	13.0	7.2	9.5
14---------- Bonneau	85	32	2,800	2,800	12.0	7.2	9.5
15---------- Bonneau-Blanton	74	28	2,500	2,500	12.0	6.5	8.5
16---------- Bonneau-Blanton	67	23	2,500	2,500	11.0	6.5	8.0
17---------- Chiefland-Pedro Variant	60	---	---	2,788	10.0	6.3	8.0
18, 19---------- Chiefland-Pedro Variant	52	---	---	2,676	9.0	6.3	8.0
20---------- Chipley	50	20	2,000	2,200	6.0	4.8	7.5
21---------- Dorovan	---	---	---	---	---	---	---
22---------- Electra Variant	40	---	---	---	---	3.9	6.0

See footnotes at end of table.

TABLE 5.--YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Map symbol and soil name	Corn	Soybeans	Tobacco*	Peanuts	Watermelons	Improved bermudagrass	Bahiagrass
	Bu	Bu	Lb	Lb	Ton	Ton	AUM**
23--- Electra Variant	---	---	---	---	---	3.6	6.0
24--- Fort Meade Variant	85	38	2,800	3,200	12.0	7.2	10.0
25--- Goldsboro	115	40	3,000	3,600	12.0	7.2	12.0
26--- Hurricane	65	20	---	---	6.0	5.7	8.5
27--- Ichetucknee	75	35	2,600	2,900	13.0	5.7	9.0
28--- Ichetucknee	60	32	2,300	2,600	10.0	5.4	8.5
29--- Lakeland	65	22	2,000	2,000	9.0	5.1	7.0
30--- Lakeland	---	---	---	---	---	5.1	7.0
31--- Leefield	70	---	2,300	---	---	5.7	8.0
32, 33--- Leon	50	---	1,500	---	8.0	4.2	7.5
34--- Lucy	95	40	2,900	3,200	12.0	7.2	10.0
35--- Lucy	85	38	2,800	2,500	12.0	7.2	10.0
36--- Mandarin	40	---	---	---	---	---	6.0
37--- Mascotte	50	20	1,500	---	8.5	---	8.0
38--- Mascotte	---	---	---	---	---	---	---
39--- Mascotte	---	---	---	---	---	---	7.5
40--- Ocilla	95	35	2,600	2,200	---	7.2	10.0
41--- Oleno	---	---	---	---	---	---	---
42--- Olustee	55	---	---	---	---	---	8.0
43--- Orangeburg	100	40	3,200	3,600	12.0	7.2	10.0
44--- Orangeburg	95	40	3,100	3,600	12.0	7.2	10.0
45--- Pamlico	---	---	---	---	---	---	---

See footnotes at end of table.

TABLE 5.--YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Map symbol and soil name	Corn	Soybeans	Tobacco*	Peanuts	Watermelons	Improved bermuda-grass	Bahiagrass
	Bu	Bu	Lb	Lb	Ton	Ton	AUM**
46---------- Pamlico-Dorovan	---	---	---	---	---	---	---
47---------- Pantego	---	---	---	---	---	---	---
48, 49---------- Pelham	---	---	---	---	---	---	8.5
50. Pits							
51---------- Plummer	50	20	---	---	---	5.1	8.0
52---------- Plummer	---	---	---	---	---	---	8.0
53---------- Plummer	---	---	---	---	---	---	---
54---------- Plummer	---	---	---	---	---	---	---
55---------- Plummer-Pamlico	---	---	---	---	---	---	---
56---------- Sapelo	50	---	1,500	---	8.0	---	7.5
57, 58---------- Surrency	---	---	---	---	---	---	---
59---------- Troup	80	30	2,500	3,000	10.0	5.4	8.0
60---------- Troup	75	28	2,400	3,000	9.5	5.4	8.0
61---------- Udorthents	---	---	---	---	---	---	8.5

* Yields are based on irrigated crops.

** 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 6.--CAPABILITY CLASSES AND SUBCLASSES

[Miscellaneous areas are excluded. Absence of an entry indicates no acreage]

Class	Total acreage	Major management concerns (Subclass)			
		Erosion (e)	Wetness (w)	Soil problem (s)	Climate (c)
		Acres	Acres	Acres	Acres
I	---	---	---	---	---
II	44,067	2,076	631	41,360	---
III	160,011	3,887	81,984	74,140	---
IV	163,724	2,788	119,171	41,765	---
V	35,665	---	35,665	---	---
VI	50,340	718	45,586	4,036	---
VII	45,770	---	45,652	118	---
VIII	---	---	---	---	---

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY

[Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available]

Map symbol and soil name	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	
1, 2--- Albany	2w	Moderate	Moderate	Slight	Moderate	Loblolly pine--- Slash pine--- Longleaf pine---	95 90 80	Loblolly pine, slash pine.
3, 4, 5--- Alpin	3s	Moderate	Moderate	Slight	Slight	Loblolly pine--- Slash pine--- Longleaf pine---	85 90 70	Slash pine, loblolly pine.
7--- Bigbee	2s	Moderate	Moderate	Slight	Slight	Loblolly pine--- Slash pine---	88 80	Loblolly pine.
8, 9--- Blanton	3s	Moderate	Moderate	Slight	Moderate	Slash pine--- Loblolly pine--- Longleaf pine--- Bluejack oak--- Turkey oak--- Southern red oak--- Live oak---	80 80 70 --- --- --- ---	Slash pine, loblolly pine.
10--- Blanton	3s	Moderate	Moderate	Slight	Moderate	Slash pine--- Loblolly pine--- Longleaf pine---	80 80 70	Slash pine.
11*, 12*: Blanton---	3s	Moderate	Moderate	Slight	Moderate	Slash pine--- Loblolly pine--- Longleaf pine--- Bluejack oak--- Turkey oak--- Southern red oak--- Live oak---	80 80 70 --- --- --- ---	Slash pine, loblolly pine.
Bonneau---	2s	Moderate	Moderate	Slight	---	Loblolly pine--- Longleaf pine--- Slash pine---	95 75 ---	Loblolly pine, slash pine, longleaf pine.
Ichetucknee---	2c	Moderate	Slight	Slight	Moderate	Slash pine--- Loblolly pine--- Longleaf pine--- Sweetgum--- Laurel oak--- Mockernut hickory--- Water oak---	90 87 70 --- --- --- ---	Slash pine, loblolly pine.
13, 14--- Bonneau	2s	Moderate	Moderate	Slight	---	Loblolly pine--- Longleaf pine--- Slash pine---	95 75 ---	Loblolly pine, slash pine.
15*, 16*: Bonneau---	2s	Moderate	Moderate	Slight	---	Loblolly pine--- Longleaf pine--- Slash pine---	95 75 ---	Loblolly pine, slash pine.
Blanton---	3s	Moderate	Moderate	Slight	Moderate	Slash pine--- Loblolly pine--- Longleaf pine--- Bluejack oak--- Turkey oak--- Southern red oak--- Live oak---	80 80 70 --- --- --- ---	Slash pine, loblolly pine.

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Map symbol and soil name	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	
17*, 18*, 19*: Chiefland	3s	Moderate	Moderate	Slight	Moderate	Slash pine Longleaf pine Hickory Live oak Post oak Sweetgum	85 65 --- --- --- ---	Slash pine.
Pedro Variant	3s	Moderate	Moderate	Moderate	Slight	Slash pine Loblolly pine Longleaf pine	80 80 70	Slash pine.
20--- Chipley	2s	Moderate	Slight	Slight	Moderate	Slash pine Loblolly pine Longleaf pine	90 90 80	Slash pine, loblolly pine.
21--- Dorovan	4w	Severe	Severe	---	---	Blackgum Sweetbay	70 ---	Baldcypress.
22--- Electra Variant	4s	Moderate	Severe	Slight	Slight	Slash pine Sand pine Longleaf pine	70 65 65	Slash pine, sand pine.
23--- Electra Variant	4s	Moderate	Severe	Slight	Slight	Slash pine Sand pine Longleaf pine	70 65 65	Slash pine, sand pine.
24--- Fort Meade Variant	3s	Slight	Slight	Slight	Moderate	Slash pine Loblolly pine Longleaf pine	90 90 70	Slash pine.
25--- Goldsboro	2w	Moderate	Slight	---	---	Loblolly pine Slash pine Longleaf pine Sweetgum Southern red oak White oak	90 93 77 90 --- ---	Loblolly pine, slash pine, yellow-poplar, American sycamore, sweetgum.
26--- Hurricane	2w	Moderate	Moderate	Slight	Moderate	Slash pine Longleaf pine Turkey oak Bluejack oak Post oak	90 80 --- --- ---	Slash pine, longleaf pine.
27, 28--- Ichetucknee	2c	Moderate	Slight	Slight	Moderate	Slash pine Loblolly pine Longleaf pine Sweetgum Laurel oak Mockernut hickory Water oak	90 87 70 --- --- --- ---	Slash pine, loblolly pine.
29, 30--- Lakeland	3s	Moderate	Moderate	Slight	Slight	Slash pine Loblolly pine Longleaf pine	80 80 70	Slash pine, loblolly pine.
31--- Leefield	3w	Moderate	Moderate	---	---	Loblolly pine Slash pine Longleaf pine	84 84 70	Loblolly pine, slash pine.
32, 33--- Leon	4w	Moderate	Moderate	Moderate	Moderate	Slash pine Longleaf pine	70 70	Slash pine, longleaf pine.
34, 35--- Lucy	3s	Moderate	Moderate	Slight	Moderate	Slash pine Longleaf pine Loblolly pine	84 70 80	Slash pine, longleaf pine, loblolly pine.

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Map symbol and soil name	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	
36---------- Mandarin	4s	Moderate	Severe	Slight	Moderate	Slash pine----------	70	Slash pine, sand pine.
						Longleaf pine-------	60	
37---------- Mascotte	3w	Moderate	Moderate	Slight	Moderate	Slash pine----------	80	Slash pine, loblolly pine.
						Loblolly pine-------	80	
						Longleaf pine-------	70	
38---------- Mascotte	4w	Severe	Severe	Severe	Severe	Slash pine----------	70	Slash pine.
						Loblolly pine-------	70	
						Longleaf pine-------	65	
39---------- Mascotte	3w	Moderate	Moderate	Slight	Moderate	Slash pine----------	80	Slash pine, loblolly pine.
						Loblolly pine-------	80	
						Longleaf pine-------	70	
40---------- Ocilla	3w	Moderate	Moderate	--------	--------	Loblolly pine-------	85	Slash pine, loblolly pine, longleaf pine.
						Slash pine----------	90	
						Longleaf pine-------	80	
41---------- Oleno	2w	Severe	Severe	Moderate	Moderate	Slash pine----------	---	Slash pine, loblolly pine, American sycamore, sweetgum.
						Loblolly pine-------	---	
						Sweetgum-----------	---	
						Water oak----------	---	
						Eastern cottonwood--	---	
42---------- Olustee	3w	Moderate	Moderate	Slight	Moderate	Slash pine----------	80	Slash pine, loblolly pine.
						Loblolly pine-------	80	
						Longleaf pine-------	70	
43, 44---------- Orangeburg	2o	Slight	Slight	--------	--------	Loblolly pine-------	80	Slash pine, loblolly pine.
						Slash pine----------	86	
						Longleaf pine-------	77	
45---------- Pamlico	4w	Severe	Severe	--------	--------	Slash pine----------	70	Water tupelo.
						Pond pine----------	55	
46*:								
Pamlico----------	4w	Severe	Severe	--------	--------	Slash pine----------	70	Slash pine, loblolly pine, water tupelo.
						Pond pine----------	55	
Dorovan----------	4w	Severe	Severe	--------	--------	Blackgum-----------	70	Baldcypress.
						Sweetbay-----------	---	
47---------- Pantego	1w	Severe	Severe	--------	--------	Pond pine----------	73	Sweetgum, American sycamore, water tupelo.
						Baldcypress---------	---	
						Water tupelo--------	---	
						Water oak----------	---	
48, 49---------- Pelham	2w	Severe	Severe	--------	--------	Slash pine----------	90	Slash pine, loblolly pine.
						Loblolly pine-------	90	
						Longleaf pine-------	80	
						Sweetgum-----------	80	
						Blackgum-----------	80	
						Water oak----------	80	
51---------- Plummer	2w	Severe	Severe	--------	--------	Slash pine----------	88	Loblolly pine, slash pine.
						Loblolly pine-------	91	
52---------- Plummer	4w	Severe	Severe	--------	--------	Pond pine----------	60	
						Baldcypress---------	---	
						Swamp tupelo--------	---	
53---------- Plummer	2w	Severe	Severe	--------	--------	Slash pine----------	88	Loblolly pine, slash pine.
						Loblolly pine-------	91	

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Map symbol and soil name	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	
54---------- Plummer	4w	Severe	Severe	---	---	Pond pine----------	60	
						Baldcypress---------	---	
						Swamp tupelo--------	---	
55*:								
Plummer----------	4w	Severe	Severe	---	---	Pond pine----------	60	
						Baldcypress---------	---	
						Swamp tupelo--------	---	
Pamlico----------	4w	Severe	Severe	---	---	Slash pine----------	70	Water tupelo.
						Pond pine----------	55	
56---------- Sapelo	3w	Moderate	Moderate	---	---	Loblolly pine-------	77	Slash pine, loblolly pine, longleaf pine.
						Slash pine----------	77	
						Longleaf pine-------	70	
57, 58---------- Surrency	2w	Severe	Severe	Slight	Severe	Sweetgum----------	90	Sweetgum, American sycamore, water tupelo, longleaf pine.
						Blackgum----------	---	
						Water oak----------	---	
						Baldcypress---------	---	
						Water tupelo--------	---	
59, 60---------- Troup	3s	Moderate	Moderate	Slight	Slight	Loblolly pine-------	82	Loblolly pine, longleaf pine, slash pine.
						Longleaf pine-------	64	
						Slash pine----------	84	
61---------- Udorthents	3c	Moderate	Moderate	Moderate	Moderate	Slash pine----------	80	Slash pine.
						Loblolly pine-------	80	

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 8.--RECREATIONAL DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated]

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
1---------- Albany	Severe: wetness, too sandy.	Severe: too sandy.	Severe: too sandy, wetness.	Severe: too sandy.	Severe: droughty.
2---------- Albany	Severe: flooding, wetness, too sandy.	Severe: too sandy.	Severe: too sandy, wetness.	Severe: too sandy.	Severe: droughty.
3---------- Alpin	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty.
4---------- Alpin	Severe: too sandy.	Severe: too sandy.	Severe: too sandy, slope.	Severe: too sandy.	Moderate: droughty.
5---------- Alpin	Severe: too sandy, flooding.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty, flooding.
6*. Arents					
7---------- Bigbee	Severe: flooding, too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty, flooding.
8---------- Blanton	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
9---------- Blanton	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Severe: droughty.
10---------- Blanton	Severe: too sandy, flooding.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty, flooding.
11*: Blanton----------	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
Bonneau----------	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty.
Ichetucknee----------	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: wetness.
12*: Blanton----------	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Severe: droughty.
Bonneau----------	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Moderate: droughty.
Ichetucknee----------	Severe: too sandy.	Severe: too sandy.	Severe: too sandy, slope.	Severe: too sandy.	Moderate: wetness.
13---------- Bonneau	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
14---------- Bonneau	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Moderate: droughty.
15*: Bonneau----------	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty.
Blanton----------	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
16*: Bonneau----------	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Moderate. droughty.
Blanton----------	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Severe: droughty.
17*: Chiefland----------	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
Pedro Variant--------	Severe: too sandy, depth to rock.	Severe: too sandy, depth to rock.	Severe: too sandy, depth to rock.	Severe: too sandy.	Severe: thin layer.
18*: Chiefland----------	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Severe: droughty.
Pedro Variant--------	Severe: too sandy, depth to rock.	Severe: too sandy, depth to rock.	Severe: too sandy, depth to rock, slope.	Severe: too sandy.	Severe: thin layer.
19*: Chiefland----------	Severe: flooding, too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
Pedro Variant--------	Severe: too sandy, depth to rock, flooding.	Severe: too sandy, depth to rock.	Severe: too sandy, depth to rock.	Severe: too sandy.	Severe: thin layer, flooding.
20---------- Chipley	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
21---------- Dorovan	Severe: flooding, ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding, flooding.	Severe: ponding, excess humus.	Severe: ponding, flooding, excess humus.
22---------- Electra Variant	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Slight.
23---------- Electra Variant	Severe: flooding, too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: flooding.
24---------- Fort Meade Variant	Slight----------	Slight----------	Slight----------	Slight----------	Slight.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
25--Goldsboro	Moderate: wetness.	Moderate: wetness.	Moderate: slope, wetness.	Slight	Slight.
26--Hurricane	Moderate: wetness.	Moderate: wetness.	Severe: too sandy.	Slight	Severe: too sandy, droughty.
27--Ichetucknee	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: wetness.
28--Ichetucknee	Severe: too sandy.	Severe: too sandy.	Severe: too sandy, slope.	Severe: too sandy.	Moderate: wetness.
29--Lakeland	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty.
30--Lakeland	Severe: slope, too sandy.	Severe: slope, too sandy.	Severe: slope, too sandy.	Severe: too sandy, slope.	Moderate: droughty, slope, too sandy.
31--Leefield	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: wetness, droughty, too sandy.
32--Leon	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness, droughty.
33--Leon	Severe: wetness, too sandy, flooding.	Severe: wetness, too sandy, flooding.	Severe: too sandy, wetness, flooding.	Severe: wetness, too sandy, flooding.	Severe: wetness, droughty.
34--Lucy	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
35--Lucy	Slight	Slight	Severe: slope.	Slight	Moderate: droughty.
36--Mandarin	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty, too sandy.
37--Mascotte	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: wetness.
38--Mascotte	Severe: ponding, too sandy.	Severe: ponding, too sandy.	Severe: ponding, too sandy.	Severe: ponding, too sandy.	Severe: ponding.
39--Mascotte	Severe: flooding, wetness, too sandy.	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: wetness.
40--Ocilla	Moderate: wetness.	Moderate: wetness.	Severe: too sandy.	Moderate: wetness.	Moderate: wetness, droughty.
41--Oleno	Severe: flooding, too clayey, wetness.	Severe: too clayey, wetness.	Severe: too clayey, wetness.	Severe: too clayey, wetness.	Severe: wetness, too clayey.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
42---------- Olustee	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness.
43---------- Orangeburg	Slight----------	Slight----------	Moderate: slope.	Slight----------	Slight.
44---------- Orangeburg	Slight----------	Slight----------	Severe: slope.	Slight----------	Slight.
45---------- Pamlico	Severe: flooding, wetness, excess humus.	Severe: wetness, excess humus.	Severe: excess humus, wetness.	Severe: wetness, excess humus.	Severe: wetness, excess humus.
46*: Pamlico----------	Severe: flooding, wetness, excess humus.	Severe: wetness, excess humus.	Severe: excess humus, wetness.	Severe: wetness, excess humus.	Severe: wetness, excess humus.
Dorovan----------	Severe: flooding, ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding, flooding.	Severe: ponding, excess humus.	Severe: ponding, flooding, excess humus.
47---------- Pantego	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
48---------- Pelham	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: wetness.
49---------- Pelham	Severe: flooding, wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness.
50*. Pits					
51---------- Plummer	Severe: flooding, wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness, droughty.
52---------- Plummer	Severe: ponding, too sandy.	Severe: ponding, too sandy.	Severe: too sandy, ponding.	Severe: ponding, too sandy.	Severe: ponding.
53---------- Plummer	Severe: flooding, wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness, droughty.
54---------- Plummer	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
55*: Plummer----------	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
Pamlico----------	Severe: flooding, wetness, excess humus.	Severe: wetness, excess humus.	Severe: excess humus, wetness.	Severe: wetness, excess humus.	Severe: wetness, excess humus.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
56---------- Sapelo	Severe: too sandy, wetness.	Severe: too sandy, wetness.	Severe: too sandy, wetness.	Severe: too sandy, wetness.	Severe: droughty, wetness.
57, 58---------- Surrency	Severe: flooding, ponding, too sandy.	Severe: ponding, too sandy.	Severe: too sandy, ponding, flooding.	Severe: ponding, too sandy.	Severe: ponding.
59---------- Troup	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty.
60---------- Troup	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Moderate: droughty.
61---------- Udorthents	Severe: too clayey, percs slowly.	Severe: too clayey, percs slowly.	Severe: too clayey, percs slowly.	Severe: too clayey, percs slowly.	Severe: too clayey.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 9.--WILDLIFE HABITAT

[See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated]

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
1, 2---------- Albany	Fair	Fair	Fair	Fair	Fair	Fair	Poor	Fair	Fair	Poor.
3, 4, 5---------- Alpin	Poor	Fair	Fair	Poor	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
6*. Arents										
7---------- Bigbee	Poor	Fair	Fair	Poor	Fair	Very poor.	Very poor.	Fair	Poor	Very poor.
8, 9---------- Blanton	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
10---------- Blanton	Poor	Fair	Fair	Poor	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
11*, 12*:										
Blanton----------	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Bonneau----------	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Ichetucknee-------	Fair	Fair	Fair	Good	Good	Poor	Poor	Fair	Fair	Poor.
13, 14---------- Bonneau	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
15*, 16*:										
Bonneau----------	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Blanton----------	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
17*, 18*, 19*:										
Chiefland---------	Poor	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Pedro Variant-----	Poor	Fair	Fair	Poor	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
20---------- Chipley	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
21---------- Dorovan	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good.
22, 23---------- Electra Variant	Poor	Poor	Fair	Poor	Poor	Poor	Poor	Poor	Poor	Poor.
24---------- Fort Meade Variant	Fair	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
25---------- Goldsboro	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
26---------- Hurricane	Poor	Poor	Fair	Fair	Fair	Poor	Very poor.	Poor	Fair	Very poor.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
27, 28---- Ichetucknee	Fair	Fair	Fair	Good	Good	Poor	Poor	Fair	Fair	Poor.
29, 30---- Lakeland	Poor	Fair	Fair	Poor	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
31---- Leefield	Fair	Fair	Good	Fair	Fair	Fair	Fair	Fair	Fair	Fair.
32, 33---- Leon	Poor	Fair	Good	Poor	Fair	Fair	Poor	Fair	Fair	Poor.
34, 35---- Lucy	Poor	Fair	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
36---- Mandarin	Very poor.	Poor	Poor	Poor	Fair	Very poor.	Very poor.	Poor	Poor	Very poor.
37, 38, 39---- Mascotte	Poor	Fair	Fair	Poor	Fair	Poor	Fair	Fair	Fair	Poor.
40---- Ocilla	Fair	Fair	Good	Fair	Good	Fair	Fair	Fair	Good	Fair.
41---- Oleno	Poor	Fair	Fair	Fair	Poor	Fair	Good	Fair	Fair	Fair.
42---- Olustee	Poor	Fair	Fair	Poor	Fair	Poor	Fair	Fair	Fair	Poor.
43---- Orangeburg	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
44---- Orangeburg	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
45---- Pamlico	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
46*: Pamlico----	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Dorovan----	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good.
47---- Pantego	Fair	Good	Good	Good	Good	Poor	Fair	Good	Good	Poor.
48, 49---- Pelham	Poor	Poor	Fair	Fair	Fair	Fair	Fair	Poor	Fair	Fair.
50*. Pits										
51---- Plummer	Poor	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair.
52---- Plummer	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
53---- Plummer	Poor	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair.
54---- Plummer	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
55*:										
Plummer	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Pamlico	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
56--- Sapelo	Poor	Fair	Fair	Poor	Fair	Fair	Fair	Fair	Fair	Fair.
57, 58--- Surrency	Poor	Poor	Poor	Poor	Poor	Fair	Good	Poor	Poor	Fair.
59, 60--- Troup	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
61--- Udorthents	Fair	Fair	Fair	Good	Good	Poor	Poor	Fair	Good	Poor.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 10.--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. It does not eliminate the need for onsite investigation]

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
1--- Albany	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Severe: droughty.
2--- Albany	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding.	Severe: droughty.
3--- Alpin	Severe: cutbanks cave.	Slight---	Slight---	Slight---	Slight---	Moderate: droughty.
4--- Alpin	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty.
5--- Alpin	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.	Moderate: droughty, flooding.
6*. Arents						
7--- Bigbee	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: droughty, flooding.
8--- Blanton	Severe: cutbanks cave.	Slight---	Moderate: wetness.	Slight---	Slight---	Severe: droughty.
9--- Blanton	Severe: cutbanks cave.	Slight---	Moderate: wetness.	Moderate: slope.	Slight---	Severe: droughty.
10--- Blanton	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.	Moderate: droughty, flooding.
11*:						
Blanton---	Severe: cutbanks cave.	Slight---	Moderate: wetness.	Slight---	Slight---	Severe: droughty.
Bonneau---	Moderate: wetness.	Slight---	Moderate: wetness.	Slight---	Slight---	Moderate: droughty.
Ichetucknee---	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: low strength.	Moderate: wetness.
12*:						
Blanton---	Severe: cutbanks cave.	Slight---	Moderate: wetness.	Moderate: slope.	Slight---	Severe: droughty.
Bonneau---	Moderate: wetness.	Slight---	Moderate: wetness.	Moderate: slope.	Slight---	Moderate: droughty.
Ichetucknee---	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell, slope.	Severe: low strength.	Moderate: wetness.
13--- Bonneau	Moderate: wetness.	Slight---	Moderate: wetness.	Slight---	Slight---	Moderate: droughty.
14--- Bonneau	Moderate: wetness.	Slight---	Moderate: wetness.	Moderate: slope.	Slight---	Moderate: droughty.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
15*:						
Bonneau	Moderate: wetness.	Slight	Moderate: wetness.	Slight	Slight	Moderate: droughty.
Blanton	Severe: cutbanks cave.	Slight	Moderate: wetness.	Slight	Slight	Severe: droughty.
16*:						
Bonneau	Moderate: wetness.	Slight	Moderate: wetness.	Moderate: slope.	Slight	Moderate: droughty.
Blanton	Severe: cutbanks cave.	Slight	Moderate: wetness.	Moderate: slope.	Slight	Severe: droughty.
17*:						
Chiefland	Severe: cutbanks cave.	Slight	Moderate: depth to rock.	Slight	Slight	Severe: droughty.
Pedro Variant	Severe: depth to rock, cutbanks cave.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: thin layer.
18*:						
Chiefland	Severe: cutbanks cave.	Slight	Moderate: depth to rock.	Moderate: slope.	Slight	Severe: droughty.
Pedro Variant	Severe: depth to rock, cutbanks cave.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: thin layer.
19*:						
Chiefland	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: droughty.
Pedro Variant	Severe: depth to rock, cutbanks cave.	Severe: depth to rock, flooding.	Severe: depth to rock, flooding.	Severe: depth to rock, flooding.	Severe: depth to rock, flooding.	Severe: thin layer, flooding.
20--- Chipley	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Severe: droughty.
21--- Dorovan	Severe: excess humus, ponding.	Severe: flooding, ponding, low strength.	Severe: flooding, ponding.	Severe: flooding, ponding, low strength.	Severe: ponding, flooding.	Severe: ponding, flooding, excess humus.
22--- Electra Variant	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Slight.
23--- Electra Variant	Severe: cutbanks cave, wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding.	Moderate: flooding.
24--- Fort Meade Variant	Severe: cutbanks cave.	Slight	Slight	Slight	Slight	Slight.
25--- Goldsboro	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Slight.
26--- Hurricane	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Moderate: wetness.	Severe: too sandy, droughty.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
27--Ichetucknee	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: low strength.	Moderate: wetness.
28--Ichetucknee	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell, slope.	Severe: low strength.	Moderate: wetness.
29--Lakeland	Severe: cutbanks cave.	Slight---	Slight---	Slight---	Slight---	Moderate: droughty.
30--Lakeland	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: droughty, slope, too sandy.
31--Leefield	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness, droughty, too sandy.
32--Leon	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, droughty.
33--Leon	Severe: cutbanks cave, wetness, flooding.	Severe: wetness, flooding.	Severe: wetness, flooding.	Severe: wetness, flooding.	Severe: wetness, flooding.	Severe: wetness, droughty.
34--Lucy	Moderate: cutbanks cave.	Slight---	Slight---	Slight---	Slight---	Moderate: droughty.
35--Lucy	Moderate: cutbanks cave.	Slight---	Slight---	Moderate: slope.	Slight---	Moderate: droughty.
36--Mandarin	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: droughty, too sandy.
37--Mascotte	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
38--Mascotte	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
39--Mascotte	Severe: cutbanks cave.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: wetness.
40--Ocilla	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, droughty.
41--Oleno	Severe: cutbanks cave, wetness.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, low strength.	Severe: wetness, too clayey.
42--Olustee	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
43--Orangeburg	Slight---	Slight---	Slight---	Slight---	Slight---	Slight.
44--Orangeburg	Slight---	Slight---	Slight---	Moderate: slope.	Slight---	Slight.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
45--- Pamlico	Severe: cutbanks cave, excess humus, wetness.	Severe: wetness, flooding.	Severe: wetness, flooding.	Severe: flooding, wetness.	Severe: low strength, wetness.	Severe: wetness, excess humus.
46*: Pamlico---	Severe: cutbanks cave, excess humus, wetness.	Severe: wetness, flooding.	Severe: wetness, flooding.	Severe: flooding, wetness.	Severe: low strength, wetness.	Severe: wetness, excess humus.
Dorovan---	Severe: excess humus, ponding.	Severe: flooding, ponding, low strength.	Severe: flooding, ponding.	Severe: flooding, ponding, low strength.	Severe: ponding, flooding.	Severe: ponding, flooding, excess humus.
47--- Pantego	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
48--- Pelham	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
49--- Pelham	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness.
50*. Pits						
51--- Plummer	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, droughty.
52--- Plummer	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
53--- Plummer	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: wetness, droughty.
54--- Plummer	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
55*: Plummer---	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
Pamlico---	Severe: cutbanks cave, excess humus, wetness.	Severe: wetness, flooding.	Severe: wetness, flooding.	Severe: flooding, wetness.	Severe: low strength, wetness.	Severe: wetness, excess humus.
56--- Sapelo	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Severe: droughty, wetness.
57--- Surrency	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
58--- Surrency	Severe: cutbanks cave, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: ponding, flooding.	Severe: ponding.
59--- Troup	Severe: cutbanks cave.	Slight---	Slight---	Slight---	Slight---	Moderate: droughty.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
60---------- Troup	Severe: cutbanks cave.	Slight----------	Slight----------	Moderate: slope.	Slight----------	Moderate: droughty.
61---------- Udorthents	Moderate: too clayey, wetness.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Severe: too clayey.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 11.--SANITARY FACILITIES

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition. It does not eliminate the need for onsite investigation]

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
1---------- Albany	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: wetness, too sandy.	Severe: seepage, wetness.	Poor: too sandy, wetness.
2---------- Albany	Severe: flooding, wetness, poor filter.	Severe: seepage, flooding, wetness.	Severe: flooding, wetness, too sandy.	Severe: flooding, seepage, wetness.	Poor: too sandy, wetness.
3---------- Alpin	Slight----------	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: too sandy, seepage.
4---------- Alpin	Moderate: slope.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: too sandy, seepage.
5---------- Alpin	Severe: flooding.	Severe: seepage, flooding.	Severe: seepage, too sandy, flooding.	Severe: seepage, flooding.	Poor: too sandy, seepage.
6*. Arents					
7---------- Bigbee	Severe: flooding, wetness, poor filter.	Severe: seepage, flooding.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage.	Poor: seepage, too sandy.
8, 9---------- Blanton	Moderate: wetness.	Severe: seepage.	Severe: too sandy.	Severe: seepage.	Poor: too sandy, seepage.
10---------- Blanton	Severe: flooding.	Severe: seepage, flooding.	Severe: too sandy, flooding.	Severe: seepage, flooding.	Poor: too sandy, seepage.
11*, 12*: Blanton----------	Moderate: wetness.	Severe: seepage.	Severe: too sandy.	Severe: seepage.	Poor: too sandy, seepage.
Bonneau----------	Moderate: wetness.	Severe: seepage.	Severe: wetness.	Moderate: wetness.	Good.
Ichetucknee--------	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, too clayey, depth to rock.	Moderate: wetness, depth to rock.	Poor: too clayey.
13, 14---------- Bonneau	Moderate: wetness.	Severe: seepage.	Severe: wetness.	Moderate: wetness.	Good.
15*, 16*: Bonneau----------	Moderate: wetness.	Severe: seepage.	Severe: wetness.	Moderate: wetness.	Good.
Blanton----------	Moderate: wetness.	Severe: seepage.	Severe: too sandy.	Severe: seepage.	Poor: too sandy, seepage.

See footnotes at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
17*, 18*: Chiefland	Severe: depth to rock.	Severe: seepage, depth to rock.	Severe: depth to rock, too sandy.	Severe: depth to rock, seepage.	Poor: area reclaim, seepage, too sandy.
Pedro Variant	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: area reclaim, seepage.
19*: Chiefland	Severe: flooding, depth to rock.	Severe: seepage, depth to rock, flooding.	Severe: flooding, depth to rock, too sandy.	Severe: flooding, depth to rock, seepage.	Poor: area reclaim, seepage, too sandy.
Pedro Variant	Severe: depth to rock, flooding.	Severe: depth to rock, flooding.	Severe: depth to rock, seepage, flooding.	Severe: seepage, depth to rock, flooding.	Poor: area reclaim, seepage, thin layer.
20--- Chipley	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: too sandy, seepage.
21--- Dorovan	Severe: flooding, ponding, poor filter.	Severe: flooding, excess humus, ponding.	Severe: flooding, seepage, ponding.	Severe: flooding, ponding.	Poor: ponding, excess humus.
22--- Electra Variant	Severe: wetness.	Severe: seepage, wetness.	Severe: wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy.
23--- Electra Variant	Severe: flooding, wetness.	Severe: flooding, wetness, seepage.	Severe: flooding, wetness, too sandy.	Severe: flooding, wetness, seepage.	Poor: too sandy, seepage.
24--- Fort Meade Variant	Slight	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: seepage, too sandy.
25--- Goldsboro	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: wetness.
26--- Hurricane	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: wetness, seepage, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy.
27, 28--- Ichetucknee	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, too clayey, depth to rock.	Moderate: wetness, depth to rock.	Poor: too clayey.
29**--- Lakeland	Slight	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
30**--- Lakeland	Moderate: slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, slope.

See footnotes at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
31---------- Leefield	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: wetness.	Severe: seepage, wetness.	Fair: wetness.
32---------- Leon	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
33---------- Leon	Severe: wetness, poor filter, flooding.	Severe: seepage, wetness, flooding.	Severe: seepage, wetness, flooding.	Severe: seepage, wetness, flooding.	Poor: seepage, too sandy, wetness.
34, 35---------- Lucy	Slight----------	Severe: seepage.	Slight----------	Severe: seepage.	Good.
36---------- Mandarin	Severe: wetness.	Severe: seepage, wetness.	Severe: wetness, too sandy.	Severe: wetness, seepage.	Poor: seepage, too sandy.
37---------- Mascotte	Severe: wetness.	Severe: seepage, wetness.	Severe: wetness.	Severe: seepage, wetness.	Poor: wetness.
38---------- Mascotte	Severe: ponding, percs slowly.	Severe: seepage, ponding.	Severe: ponding, too sandy.	Severe: seepage, ponding.	Poor: ponding, seepage.
39---------- Mascotte	Severe: flooding, wetness, percs slowly.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: too sandy, wetness, seepage.
40---------- Ocilla	Severe: wetness.	Severe: seepage, wetness.	Severe: wetness.	Severe: seepage, wetness.	Fair: wetness.
41---------- Oleno	Severe: flooding, percs slowly, wetness.	Severe: flooding, wetness, seepage.	Severe: flooding,	Severe: flooding, wetness, seepage.	Poor: wetness, too sandy.
42---------- Olustee	Severe: wetness.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
43, 44---------- Orangeburg	Slight----------	Moderate: seepage, slope.	Slight----------	Slight----------	Good.
45---------- Pamlico	Severe: wetness, percs slowly.	Severe: excess humus, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
46*: Pamlico----------	Severe: wetness, percs slowly.	Severe: excess humus, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
Dorovan----------	Severe: flooding, ponding, poor filter	Severe: flooding, excess humus, ponding.	Severe: flooding, seepage, ponding.	Severe: flooding, ponding.	Poor: ponding, excess humus.

See footnotes at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
47---------- Pantego	Severe: wetness.	Severe: seepage, wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
48---------- Pelham	Severe: wetness.	Severe: seepage, wetness.	Severe: wetness.	Severe: seepage, wetness.	Poor: wetness, too sandy.
49---------- Pelham	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, seepage, wetness.	Poor: wetness, too sandy.
50*. Pits					
51---------- Plummer	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
52---------- Plummer	Severe: ponding.	Severe: seepage, ponding.	Severe: ponding, too sandy.	Severe: seepage, ponding.	Poor: seepage, too sandy, ponding.
53---------- Plummer	Severe: flooding, wetness, percs slowly.	Severe: seepage, flooding, wetness.	Severe: flooding, wetness, too sandy.	Severe: flooding, seepage, wetness.	Poor: seepage, too sandy, wetness.
54---------- Plummer	Severe: ponding.	Severe: seepage, ponding.	Severe: ponding.	Severe: seepage, ponding.	Poor: seepage, ponding.
55*: Plummer----------	Severe: ponding.	Severe: seepage, ponding.	Severe: ponding.	Severe: seepage, ponding.	Poor: seepage, ponding.
Pamlico----------	Severe: wetness, percs slowly.	Severe: excess humus, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
56---------- Sapelo	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
57---------- Surrency	Severe: ponding, poor filter.	Severe: seepage, ponding.	Severe: ponding, too sandy.	Severe: seepage, ponding.	Poor: too sandy, ponding.
58---------- Surrency	Severe: flooding, ponding, poor filter.	Severe: seepage, flooding, ponding.	Severe: flooding, ponding, too sandy.	Severe: flooding, seepage, ponding.	Poor: too sandy, ponding.
59, 60---------- Troup	Slight----------	Severe: seepage.	Severe: too sandy.	Severe: seepage.	Poor: too sandy.
61---------- Udorthents	Severe: wetness, percs slowly.	Severe: wetness.	Severe: seepage, too clayey.	Slight----------	Severe: too clayey, hard to pack.

* See description of the map unit for composition and behavior characteristics of the map unit.
** Because of poor infiltration, ground-water contamination is a hazard if there are many septic tanks in a given area.

TABLE 12.--CONSTRUCTION MATERIALS

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," "poor," "probable," and "improbable." Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition. It does not eliminate the need for onsite investigation]

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
1, 2--- Albany	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy.
3, 4--- Alpin	Good---	Probable---	Improbable: too sandy.	Poor: too sandy.
5--- Alpin	Good---	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy.
6*. Arents				
7--- Bigbee	Good---	Probable---	Improbable: too sandy.	Poor: too sandy.
8, 9--- Blanton	Good---	Probable---	Improbable: too sandy.	Poor: too sandy.
10--- Blanton	Good---	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy.
11*, 12*: Blanton---	Good---	Probable---	Improbable: too sandy.	Poor: too sandy.
Bonneau---	Good---	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy.
Ichetucknee---	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy.
13, 14--- Bonneau	Good---	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy.
15*, 16*: Bonneau---	Good---	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy.
Blanton---	Good---	Probable---	Improbable: too sandy.	Poor: too sandy.
17*, 18*, 19*: Chiefland---	Poor: area reclaim.	Improbable: thin layer.	Improbable: too sandy.	Poor: too sandy.
Pedro Variant---	Poor: area reclaim, thin layer.	Improbable: thin layer.	Improbable: too sandy, thin layer.	Poor: too sandy, area reclaim.
20--- Chipley	Fair: wetness.	Probable---	Improbable: too sandy.	Poor: too sandy.
21--- Dorovan	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess humus, wetness.
22, 23--- Electra Variant	Fair: wetness.	Probable---	Improbable: too sandy.	Poor: too sandy.
24--- Fort Meade Variant	Good---	Probable---	Improbable: too sandy.	Fair: too sandy.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
25--- Goldsboro	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
26--- Hurricane	Fair: wetness.	Probable---	Improbable: too sandy.	Poor: too sandy.
27, 28--- Ichetucknee	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy.
29--- Lakeland	Good---	Probable---	Improbable: too sandy.	Poor: too sandy.
30--- Lakeland	Poor: slope.	Probable---	Improbable: too sandy.	Poor: too sandy, slope.
31--- Leefield	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy.
32, 33--- Leon	Poor: wetness.	Probable---	Improbable: too sandy.	Poor: too sandy, wetness.
34, 35--- Lucy	Good---	Improbable: excess fines, thin layer.	Improbable: excess fines.	Fair: too sandy.
36--- Mandarin	Fair: wetness.	Improbable: thin layer.	Improbable: too sandy.	Poor: too sandy.
37--- Mascotte	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy, wetness.
38--- Mascotte	Poor: wetness.	Probable---	Improbable: too sandy.	Poor: too sandy, wetness.
39--- Mascotte	Poor: wetness.	Improbable: excess fines.	Improbable: too sandy.	Poor: too sandy, wetness, thin layer.
40--- Ocilla	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy.
41--- Oleno	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
42--- Olustee	Poor: wetness.	Probable---	Improbable: too sandy.	Poor: too sandy, wetness.
43, 44--- Orangeburg	Good---	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
45--- Pamlico	Poor: low strength, wetness.	Probable---	Improbable: too sandy.	Poor: excess humus.
46*: Pamlico---	Poor: low strength, wetness.	Probable---	Improbable: too sandy.	Poor: excess humus.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
46*: Dorovan	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess humus, wetness.
47 Pantego	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
48, 49 Pelham	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy, wetness.
50*. Pits				
51 Plummer	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness.
52 Plummer	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy, wetness.
53 Plummer	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness.
54 Plummer	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
55*: Plummer	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Pamlico	Poor: low strength, wetness.	Probable	Improbable: too sandy.	Poor: excess humus.
56 Sapelo	Poor: wetness.	Improbable: excess fines.	Improbable: too sandy.	Poor: too sandy, wetness.
57, 58 Surrency	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy, wetness.
59, 60 Troup	Good	Probable	Improbable: too sandy.	Poor: too sandy.
61 Udorthents	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 13.--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. It does not eliminate the need for onsite investigation]

Map symbol and soil name	Limitations for--		Features affecting--			
	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
1---------- Albany	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy.	Wetness, droughty.
2---------- Albany	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Flooding, slope, cutbanks cave.	Wetness, droughty, fast intake.	Wetness, too sandy.	Wetness, droughty.
3---------- Alpin	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, soil blowing.	Too sandy, soil blowing.	Droughty.
4---------- Alpin	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, soil blowing.	Slope, too sandy, soil blowing.	Slope, droughty.
5---------- Alpin	Severe: seepage, piping.	Severe: no water.	Deep to water, flooding.	Droughty, soil blowing, flooding.	Too sandy, soil blowing.	Droughty.
6*. Arents						
7---------- Bigbee	Severe: seepage, piping.	Severe: cutbanks cave.	Deep to water, cutbanks cave.	Droughty, fast intake, flooding.	Too sandy------	Droughty.
8, 9---------- Blanton	Severe: seepage.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
10---------- Blanton	Severe: seepage.	Severe: no water.	Deep to water, flooding.	Droughty, fast intake.	Too sandy, soil blowing.	Droughty.
11*, 12*: Blanton----------	Severe: seepage.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
Bonneau----------	Slight---------	Severe: cutbanks cave.	Deep to water	Droughty, fast intake, slope.	Soil blowing---	Droughty.
Ichetucknee------	Moderate: wetness, piping.	Severe: no water.	Percs slowly, slope.	Wetness, percs slowly, slope.	Wetness, soil blowing.	Percs slowly.
13, 14---------- Bonneau	Slight---------	Severe: cutbanks cave.	Deep to water	Droughty, fast intake, slope.	Soil blowing---	Droughty.
15*, 16*: Bonneau----------	Slight---------	Severe: cutbanks cave.	Deep to water	Droughty, fast intake, slope.	Soil blowing---	Droughty.
Blanton----------	Severe: seepage.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
17*, 18*: Chiefland--------	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Depth to rock, too sandy, soil blowing.	Droughty, depth to rock.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--		Features affecting--			
	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
17*, 18*: Pedro Variant	Severe: seepage, thin layer.	Severe: no water.	Deep to water, depth to rock, cutbanks cave.	Droughty, seepage, depth to rock.	Depth to rock, too sandy, soil blowing.	Droughty, depth to rock.
19*: Chiefland	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Depth to rock, too sandy, soil blowing.	Droughty, depth to rock.
Pedro Variant	Severe: seepage, thin layer.	Severe: no water.	Deep to water	Droughty, seepage, depth to rock.	Depth to rock, too sandy, soil blowing.	Droughty, depth to rock.
20--- Chipley	Severe: seepage.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Droughty.
21--- Dorovan	Severe: excess humus, ponding.	Severe: cutbanks cave.	Ponding, flooding, subsides.	Ponding, flooding.	Ponding	Wetness.
22--- Electra Variant	Severe: seepage.	Severe: slow refill, cutbanks cave.	Cutbanks cave	Wetness, fast intake, soil blowing.	Wetness, too sandy, soil blowing.	Favorable.
23--- Electra Variant	Severe: cutbanks cave.	Severe: cutbanks cave.	Flooding, cutbanks cave.	Wetness, fast intake.	Wetness, soil blowing.	Droughty.
24--- Fort Meade Variant	Severe: seepage.	Severe: no water.	Deep to water	Droughty, fast intake.	Too sandy, soil blowing.	Droughty.
25--- Goldsboro	Moderate: wetness.	Moderate: deep to water.	Slope	Wetness, fast intake.	Wetness	Favorable.
26--- Hurricane	Severe: seepage, piping.	Severe: cutbanks cave.	Slope, cutbanks cave.	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Droughty.
27, 28--- Ichetucknee	Moderate: wetness, piping.	Severe: no water.	Percs slowly, slope.	Wetness, percs slowly, slope.	Wetness, soil blowing.	Percs slowly.
29--- Lakeland	Severe: seepage.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
30--- Lakeland	Severe: seepage.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Slope, too sandy, soil blowing.	Slope, droughty.
31--- Leefield	Severe: piping, wetness.	Severe: slow refill, cutbanks cave.	Favorable	Wetness, droughty, fast intake.	Wetness	Droughty.
32--- Leon	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Slope, cutbanks cave.	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Wetness, droughty.
33--- Leon	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Cutbanks cave, flooding.	Wetness, droughty, flooding.	Wetness, too sandy, soil blowing.	Wetness, droughty.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--		Features affecting--			
	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
34, 35---------- Lucy	Moderate: piping.	Severe: no water.	Deep to water	Droughty, fast intake, slope.	Favorable------	Droughty.
36---------- Mandarin	Severe: seepage, piping.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Too sandy, soil blowing, wetness.	Droughty.
37---------- Mascotte	Severe: piping, wetness.	Severe: cutbanks cave.	Favorable------	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Wetness, droughty.
38---------- Mascotte	Severe: seepage, ponding.	Severe: cutbanks cave.	Ponding, cutbanks cave.	Ponding, fast intake, soil blowing.	Ponding, too sandy, soil blowing.	Wetness.
39---------- Mascotte	Severe: wetness, seepage.	Severe: cutbanks cave, slow refill.	Flooding, cutbanks cave.	Wetness, fast intake, flooding.	Wetness, soil blowing, too sandy.	Wetness.
40---------- Ocilla	Severe: piping, wetness.	Severe: cutbanks cave.	Favorable------	Wetness, droughty, fast intake.	Wetness--------	Droughty.
41---------- Oleno	Severe: piping, wetness.	Severe: slow refill, cutbanks cave.	Percs slowly, flooding, cutbanks cave.	Flooding, slow intake, wetness.	Slow intake, wetness, percs slowly.	Wetness, percs slowly.
42---------- Olustee	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, fast intake, soil blowing.	Wetness, too sandy, soil blowing.	Wetness.
43, 44---------- Orangeburg	Moderate: piping.	Severe: no water.	Deep to water	Fast intake, slope.	Favorable------	Favorable.
45---------- Pamlico	Severe: seepage, wetness.	Severe: cutbanks cave.	Subsides, cutbanks cave.	Wetness--------	Wetness--------	Wetness, droughty.
46*: Pamlico----------	Severe: seepage, wetness.	Severe: cutbanks cave.	Subsides, cutbanks cave.	Wetness--------	Wetness--------	Wetness, droughty.
Dorovan----------	Severe: excess humus, ponding.	Severe: cutbanks cave.	Ponding, flooding, subsides.	Ponding, flooding.	Ponding--------	Wetness.
47---------- Pantego	Severe: wetness.	Moderate: slow refill.	Favorable------	Wetness--------	Wetness--------	Wetness.
48---------- Pelham	Severe: piping, wetness.	Severe: cutbanks cave.	Favorable------	Wetness, fast intake.	Wetness--------	Wetness.
49---------- Pelham	Severe: piping, wetness.	Severe: cutbanks cave.	Flooding-------	Flooding, fast intake.	Wetness--------	Wetness.
50*. Pits						
51---------- Plummer	Severe: seepage, piping, wetness.	Severe: slow refill, cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy.	Wetness, droughty.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--		Features affecting--			
	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
52---- Plummer	Severe: seepage, piping, ponding.	Severe: cutbanks cave.	Ponding, cutbanks cave.	Ponding----	Ponding, too sandy.	Wetness.
53---- Plummer	Severe: seepage, piping, wetness.	Severe: slow refill, cutbanks cave.	Flooding, cutbanks cave.	Wetness, droughty, fast intake.	Wetness, too sandy.	Wetness, droughty.
54---- Plummer	Severe: seepage, piping, ponding.	Severe: cutbanks cave.	Ponding, cutbanks cave.	Ponding----	Ponding, too sandy.	Wetness.
55*: Plummer----	Severe: seepage, piping, ponding.	Severe: cutbanks cave.	Ponding, cutbanks cave.	Ponding----	Ponding, too sandy.	Wetness.
Pamlico----	Severe: seepage, wetness.	Severe: cutbanks cave.	Subsides, cutbanks cave.	Wetness----	Wetness----	Wetness, droughty.
56---- Sapelo	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy.	Droughty, wetness.
57---- Surrency	Severe: seepage, piping, ponding.	Severe: cutbanks cave.	Ponding, cutbanks cave.	Ponding, droughty, fast intake.	Ponding, too sandy.	Wetness, droughty, rooting depth.
58---- Surrency	Severe: seepage, piping, ponding.	Severe: cutbanks cave.	Ponding, flooding, cutbanks cave.	Ponding, droughty, fast intake.	Ponding, too sandy.	Wetness, droughty, rooting depth.
59, 60---- Troup	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake, slope.	Too sandy----	Droughty.
61---- Udorthents	Severe: hard to pack.	Severe: no water.	Percs slowly---	Slow intake, percs slowly.	Percs slowly---	Percs slowly.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 14.--ENGINEERING INDEX PROPERTIES

[The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated. Some soils may have Unified classifications and USDA textures in addition to those shown. In general, the dominant classifications and textures are shown]

Map symbol and soil name	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
1, 2---------- Albany	0-55	Fine sand--------	SM	A-2	0	100	100	75-98	12-23	---	NP
	55-65	Sandy loam-------	SM	A-2	0	100	100	75-98	22-30	---	NP
	65-80	Sandy clay loam, sandy loam, fine sandy loam.	SC, SM, SM-SC	A-2, A-4, A-6	0	97-100	95-100	70-100	25-50	<40	NP-17
3---------- Alpin	0-6	Fine sand--------	SP-SM, SM	A-3, A-2-4	0	95-100	90-100	60-100	5-20	---	NP
	6-52	Fine sand, sand	SP-SM, SM	A-3, A-2-4	0	95-100	90-100	60-100	5-20	---	NP
	52-80	Fine sand, sand	SP-SM, SM	A-2-4	0	95-100	90-100	60-100	11-20	---	NP
4---------- Alpin	0-3	Fine sand--------	SP-SM, SM	A-3, A-2-4	0	95-100	90-100	60-100	5-20	---	NP
	3-65	Fine sand, sand	SP-SM, SM	A-3, A-2-4	0	95-100	90-100	60-100	5-20	---	NP
	65-80	Fine sand, sand	SP-SM, SM	A-2-4	0	95-100	90-100	60-100	11-20	---	NP
5---------- Alpin	0-4	Fine sand--------	SP-SM, SM	A-3, A-2-4	0	95-100	90-100	60-100	5-20	---	NP
	4-52	Fine sand, sand	SP-SM, SM	A-3, A-2-4	0	95-100	90-100	60-100	5-20	---	NP
	52-80	Fine sand, sand	SP-SM, SM	A-2-4	0	95-100	90-100	60-100	11-20	---	NP
6*. Arents											
7---------- Bigbee	0-7	Fine sand--------	SM, SP-SM	A-2-4, A-3	0	100	95-100	80-95	5-30	---	NP
	7-80	Sand, fine sand	SP-SM, SM	A-2-4, A-3	0	85-100	85-100	80-100	5-20	---	NP
8---------- Blanton	0-52	Fine sand--------	SP-SM, SM	A-3, A-2-4	0	100	100	65-100	5-14	---	NP
	52-80	Sandy clay loam, sandy loam, fine sandy loam.	SC, SM-SC, SM	A-4, A-2-4, A-2-6, A-6	0	100	100	69-98	25-50	<40	NP-22
9---------- Blanton	0-49	Fine sand--------	SP-SM, SM	A-3, A-2-4	0	100	100	65-100	5-14	---	NP
	49-80	Sandy clay loam, sandy loam, fine sandy loam.	SC, SM-SC, SM	A-4, A-2-4, A-2-6, A-6	0	100	100	69-98	25-50	<40	NP-22
10---------- Blanton	0-7	Fine sand--------	SP-SM, SM	A-2-4	0	100	100	65-98	5-14	---	NP
	7-52	Fine sand--------	SP-SM, SM	A-3, A-2-4	0	100	100	65-100	5-15	---	NP
	52-80	Sandy clay loam, sandy loam, fine sandy loam.	SC, SM-SC, SM	A-4, A-2-4, A-2-6, A-6	0	100	100	69-98	25-50	<40	NP-20
11*: Blanton----------	0-52	Fine sand--------	SP-SM, SM	A-3, A-2-4	0	100	100	65-100	5-14	---	NP
	52-80	Sandy clay loam, sandy loam, fine sandy loam.	SC, SM-SC, SM	A-4, A-2-4, A-2-6, A-6	0	100	100	69-98	25-50	<40	NP-22

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
11*:											
Bonneau---------	0-27	Fine sand--------	SM, SP-SM	A-2, A-3	0	100	100	60-98	8-20	---	NP
	27-80	Sandy loam, sandy clay loam, sandy clay.	CL, SC, SM-SC, CL-ML	A-4, A-6, A-2, A-7	0	100	100	60-100	34-60	20-41	4-23
Ichetucknee-----	0-13	Fine sand--------	SP-SM, SM	A-2-4, A-3	0	100	100	90-100	5-25	---	NP
	13-55	Sandy clay, clay	CL, ML	A-7	0	100	100	90-100	60-90	41-50	14-22
	55	Weathered bedrock	---	---	---	---	---	---	---	---	---
12*:											
Blanton---------	0-52	Fine sand--------	SP-SM, SM	A-3, A-2-4	0	100	100	65-100	5-14	---	NP
	52-80	Sandy clay loam, sandy loam, fine sandy loam.	SC, SM-SC, SM	A-4, A-2-4, A-2-6, A-6	0	100	100	69-98	25-50	<40	NP-22
Bonneau---------	0-27	Fine sand--------	SM, SP-SM	A-2, A-3	0	100	100	60-98	8-20	---	NP
	27-80	Sandy loam, sandy clay loam, sandy clay.	CL, SC, SM-SC, CL-ML	A-4, A-6, A-2, A-7	0	100	100	60-100	34-60	20-41	4-23
Ichetucknee-----	0-7	Fine sand--------	SP-SM, SM	A-2-4, A-3	0	100	100	90-100	5-25	---	NP
	7-60	Sandy clay, clay	CL, ML	A-7	0	100	100	90-100	60-90	41-50	14-22
	60	Weathered bedrock	---	---	---	---	---	---	---	---	---
13----------	0-27	Fine sand--------	SM, SP-SM	A-2, A-3	0	100	100	60-98	8-20	---	NP
Bonneau	27-80	Sandy loam, sandy clay loam, sandy clay.	CL, SC, SM-SC, CL-ML	A-4, A-6, A-2, A-7	0	100	100	60-100	34-60	20-41	4-23
14----------	0-28	Fine sand--------	SM, SP-SM	A-2, A-3	0	100	100	60-98	8-20	---	NP
Bonneau	28-80	Sandy loam, sandy clay loam, sandy clay.	CL, SC, SM-SC, CL-ML	A-4, A-6, A-2, A-7	0	100	100	60-100	34-60	20-41	4-23
15*:											
Bonneau---------	0-27	Fine sand--------	SM, SP-SM	A-2, A-3	0	100	100	60-98	8-20	---	NP
	27-80	Sandy loam, sandy clay loam, sandy clay.	CL, SC, SM-SC, CL-ML	A-4, A-6, A-2, A-7	0	100	100	60-100	34-60	20-41	4-23
Blanton---------	0-52	Fine sand--------	SP-SM, SM	A-3, A-2-4	0	100	100	65-100	5-14	---	NP
	52-80	Sandy clay loam, sandy loam, fine sandy loam.	SC, SM-SC, SM	A-4, A-2-4, A-2-6, A-6	0	100	100	69-98	25-50	<40	NP-22
16*:											
Bonneau---------	0-28	Fine sand--------	SM, SP-SM	A-2, A-3	0	100	100	60-98	8-20	---	NP
	28-80	Sandy loam, sandy clay loam, sandy clay.	CL, SC, SM-SC, CL-ML	A-4, A-6, A-2, A-7	0	100	100	60-100	34-60	20-41	4-23
Blanton---------	0-52	Fine sand--------	SP-SM, SM	A-3, A-2-4	0	100	100	65-100	5-14	---	NP
	52-80	Sandy clay loam, sandy loam, fine sandy loam.	SC, SM-SC, SM	A-4, A-2-4, A-2-6, A-6	0	100	100	69-98	25-50	<40	NP-22

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
17*:											
Chiefland-------	0-8	Fine sand---------	SP-SM, SM	A-2-4, A-3	0-4	96-100	96-100	80-95	5-20	---	NP
	8-33	Sand, fine sand	SP-SM, SM	A-2-4, A-3	0	100	100	80-95	5-20	---	NP
	33-39	Sandy loam, fine sandy loam, sandy clay loam.	SM, SM-SC, SC	A-2-4, A-2-6	0-10	90-100	85-100	80-95	20-35	25-40	NP-15
	39-80	Weathered bedrock	---	---	---	---	---	---	---	---	---
Pedro Variant---	0-8	Fine sand---------	SP-SM	A-2-4, A-3	0-1	100	95-100	90-100	5-12	---	NP
	8-11	Sandy clay loam	SC	A-2, A-4, A-6	0-1	90-100	85-100	80-100	25-40	25-35	8-16
	11-14	Weathered bedrock	---	---	---	---	---	---	---	---	---
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
18*:											
Chiefland-------	0-8	Fine sand---------	SP-SM, SM	A-2-4, A-3	0-4	96-100	96-100	80-95	5-20	---	NP
	8-30	Sand, fine sand	SP-SM, SM	A-2-4, A-3	0	100	100	80-95	5-20	---	NP
	30-35	Sandy loam, fine sandy loam, sandy clay loam.	SM, SM-SC, SC	A-2-4, A-2-6	0-10	90-100	85-100	80-95	20-35	25-40	NP-15
	35-80	Weathered bedrock	---	---	---	---	---	---	---	---	---
Pedro Variant---	0-8	Fine sand---------	SP-SM	A-2-4, A-3	0-1	100	95-100	90-100	5-12	---	NP
	8-11	Sandy clay loam	SC	A-2, A-4, A-6	0-1	90-100	85-100	80-100	25-40	25-35	8-16
	11-14	Weathered bedrock	---	---	---	---	---	---	---	---	---
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
19*:											
Chiefland-------	0-5	Fine sand---------	SP-SM, SM	A-2-4, A-3	0-4	96-100	96-100	80-95	5-20	---	NP
	5-23	Sand, fine sand	SP-SM, SM	A-2-4, A-3	0	100	100	80-95	5-20	---	NP
	23-30	Sandy loam, fine sandy loam, sandy clay loam.	SM, SM-SC, SC	A-2-4, A-2-6	0-10	90-100	85-100	80-95	20-35	25-40	NP-15
	30-80	Weathered bedrock	---	---	---	---	---	---	---	---	---
Pedro Variant---	0-8	Fine sand---------	SP-SM	A-3, A-2-4	0-1	100	95-100	90-100	5-12	---	NP
	8-11	Sandy clay loam	SC	A-2, A-4, A-6	0-1	90-100	85-100	80-100	25-40	25-35	8-16
	11-14	Weathered bedrock	---	---	---	---	---	---	---	---	---
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
20--------------- Chipley	0-7	Fine sand---------	SP-SM	A-3, A-2-4	0	100	100	80-100	6-12	---	NP
	7-80	Sand, fine sand	SP-SM	A-3, A-2-4	0	100	100	80-100	6-12	---	NP

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
21--Dorovan	0-80	Muck	PT	---	0	---	---	---	---	---	---
22--Electra Variant	0-4	Fine sand	SP, SP-SM	A-3	0	100	95-100	75-99	3-10	---	NP
	4-38	Fine sand	SP, SP-SM	A-3	0	100	95-100	75-99	3-10	---	NP
	38-53	Fine sand	SP-SM, SM	A-3, A-2-4	0	100	100	80-99	8-15	---	NP
	53-80	Sandy clay loam, fine sandy loam.	SM-SC, SM	A-2-4, A-4	0	100	100	80-99	20-45	<40	NP-20
23--Electra Variant	0-2	Fine sand	SP, SP-SM	A-3	0	100	95-100	75-99	3-10	---	NP
	2-39	Fine sand	SP, SP-SM	A-3	0	100	95-100	75-99	3-10	---	NP
	39-58	Fine sand	SP-SM, SM	A-3, A-2-4	0	100	100	80-99	8-15	---	NP
	58-80	Sandy clay loam, fine sandy loam.	SC, SM-SC, SM	A-2-6, A-4	0	100	100	80-99	20-45	<40	NP-20
24--Fort Meade Variant	0-16	Loamy fine sand	SM	A-2-4	0	95-100	90-100	80-100	13-25	---	NP
	16-80	Loamy fine sand, fine sand.	SM, SP-SM	A-2-4, A-3	0	95-100	90-100	70-100	10-25	---	NP
25--Goldsboro	0-13	Loamy fine sand, loamy sand.	SM, SP-SM	A-2-4, A-3	0	100	100	80-100	5-15	---	NP
	13-45	Sandy clay loam, sandy loam.	SM-SC, SC	A-2, A-4, A-6	0	98-100	95-100	60-95	25-55	16-37	4-18
	45-80	Sandy clay loam, sandy clay.	SC, CL, CL-ML, CH	A-4, A-6, A-7	0	95-100	90-100	65-95	36-70	25-45	6-15
26--Hurricane	0-56	Fine sand	SP, SP-SM	A-3	0	100	100	90-100	4-9	---	NP
	56-80	Sand, fine sand, loamy sand.	SP-SM, SM	A-3, A-2-4	0	100	100	80-100	5-15	---	NP
27--Ichetucknee	0-13	Fine sand	SP-SM, SM	A-2-4, A-3	0	100	100	90-100	5-25	---	NP
	13-55	Sandy clay, clay	CL, ML	A-7	0	100	100	90-100	60-90	41-50	14-22
	55	Weathered bedrock	---	---	---	---	---	---	---	---	---
28--Ichetucknee	0-7	Fine sand	SP-SM, SM	A-2-4, A-3	0	100	100	90-100	5-25	---	NP
	7-60	Sandy clay, clay	CL, ML	A-7	0	100	100	90-100	59-90	41-50	14-22
	60	Weathered bedrock	---	---	---	---	---	---	---	---	---
29--Lakeland	0-55	Fine sand	SP-SM	A-3, A-2-4	0	90-100	90-100	60-100	5-12	---	NP
	55-80	Sand, fine sand	SP, SP-SM	A-3, A-2-4	0	90-100	90-100	50-100	1-12	---	NP
30--Lakeland	0-44	Fine sand	SP-SM	A-3, A-2-4	0	90-100	90-100	60-100	5-12	---	NP
	44-80	Sand, fine sand	SP, SP-SM	A-3, A-2-4	0	90-100	90-100	50-100	1-12	---	NP
31--Leefield	0-27	Fine sand	SM, SW-SM, SP-SM	A-2	0	98-100	95-100	65-95	10-20	---	NP
	27-80	Sandy loam, sandy clay loam.	SC, SM, SM-SC	A-2, A-4, A-6	0	95-100	95-100	65-90	20-40	<40	NP-20
32--Leon	0-8	Fine sand	SP, SP-SM	A-3, A-2-4	0	100	100	80-100	2-12	---	NP
	8-19	Sand, fine sand, loamy sand.	SM, SP-SM, SP	A-3, A-2-4	0	100	100	80-100	3-20	---	NP
	19-80	Sand, fine sand	SP, SP-SM	A-3, A-2-4	0	100	100	80-100	2-12	---	NP

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
33---------- Leon	0-12	Fine sand--------	SP, SP-SM	A-3, A-2-4	0	100	100	80-100	2-12	---	NP
	12-23	Fine sand--------	SM, SP-SM, SP	A-3, A-2-4	0	100	100	80-100	3-20	---	NP
	23-80	Fine sand--------	SP, SP-SM	A-3, A-2-4	0	100	100	80-100	2-12	---	NP
34---------- Lucy	0-29	Loamy fine sand	SM, SP-SM	A-2-4, A-3	0	98-100	95-100	80-95	10-25	---	NP
	29-80	Sandy loam, sandy clay loam.	SC, SM-SC, SM	A-2, A-6, A-4	0	100	95-100	60-95	20-50	<40	NP-20
35---------- Lucy	0-29	Loamy fine sand	SM, SP-SM	A-2-4, A-3	0	98-100	95-100	80-95	10-25	---	NP
	29-80	Sandy loam, sandy clay loam.	SC, SM-SC, SM	A-2, A-6, A-4	0	100	95-100	60-95	20-50	<40	NP-20
36---------- Mandarin	0-16	Fine sand--------	SP, SP-SM	A-3	0	100	100	90-100	2-10	---	NP
	16-26	Fine sand, sand	SP-SM, SM	A-3, A-2-4	0	100	100	90-100	5-15	---	NP
	26-64	Fine sand, sand	SP, SP-SM	A-3	0	100	100	90-100	2-7	---	NP
	64-80	Fine sand, sand	SP, SP-SM	A-3, A-2-4	0	100	100	90-100	3-12	---	NP
37---------- Mascotte	0-7	Fine sand--------	SP-SM	A-3, A-2-4	0	100	100	85-100	5-12	---	NP
	7-15	Fine sand, sand, loamy fine sand.	SP-SM, SM	A-3, A-2-4	0	100	100	85-100	8-15	---	NP
	15-37	Fine sand, sand, loamy fine sand.	SP-SM, SM	A-3, A-2-4	0	100	100	85-100	8-17	---	NP
	37-67	Sandy clay loam, sandy loam, fine sandy loam.	SC, SM-SC, SM	A-2, A-4, A-6	0	100	100	85-100	19-45	<38	NP-15
	67-80	Fine sand, sand, loamy sand.	SP-SM, SM	A-3, A-2-4	0	100	100	85-100	8-15	---	NP
38---------- Mascotte	0-20	Fine sand--------	SP-SM	A-3, A-2-4	0	100	100	85-100	5-12	---	NP
	20-36	Fine sand, loamy fine sand.	SP-SM, SM	A-3, A-2-4	0	100	100	85-100	8-17	---	NP
	36-80	Fine sandy loam, sandy clay loam.	SM, SM-SC	A-4, A-6	0	100	100	85-100	19-45	<38	NP-15
39---------- Mascotte	0-19	Fine sand--------	SP-SM	A-3, A-2-4	0	100	100	85-100	5-12	---	NP
	19-34	Fine sand--------	SP-SM, SM	A-3, A-2-4	0	100	100	85-100	8-15	---	NP
	34-38	Fine sand--------	SP-SM, SM	A-3, A-2-4	0	100	100	85-100	8-17	---	NP
	38-80	Sandy clay loam, sandy loam, fine sandy loam.	SM-SC, SM	A-2-4, A-4, A-6	0	100	100	85-100	19-45	<38	NP-15
40---------- Ocilla	0-32	Fine sand--------	SM, SP-SM	A-2-4, A-3	0	100	94-100	75-100	8-35	---	NP
	32-80	Sandy loam, sandy clay loam.	SM, CL, SC	A-2, A-4, A-6	0	100	95-100	80-100	30-55	<40	NP-18
41---------- Oleno	0-32	Clay----------	CH	A-7-5, A-7-6	0	100	100	85-95	60-90	65-100	40-65
	32-71	Fine sandy loam, loamy sand, sand.	SM, SC, SM-SC	A-4, A-2-4	0	100	100	60-70	30-40	<25	NP-5
	71-77	Sandy clay, sandy clay loam.	CL, SC	A-6	0	100	100	60-90	40-85	20-28	10-16
	77-82	Clay, sandy clay	CH	A-7-5, A-7-6	0	100	100	90-100	75-90	68-100	40-65

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
42---------- Olustee	0-18	Fine sand--------	SP-SM	A-3	0	100	100	90-100	5-12	---	NP
	18-23	Fine sand--------	SP-SM, SM	A-3, A-2-4	0	100	100	90-100	8-17	---	NP
	23-37	Fine sand--------	SP-SM	A-3	0	100	100	90-100	5-12	---	NP
	37-63	Fine sandy loam, sandy clay loam.	SC	A-4, A-2-6	0	100	100	95-100	20-40	20-30	8-15
	63-80	Fine sand, loamy fine sand, sandy clay.	SM, SC	A-2-4, A-4, A-7	0	100	100	95-100	10-60	<50	NP-25
43---------- Orangeburg	0-8	Loamy fine sand	SM	A-2	0	98-100	95-100	60-87	14-28	---	NP
	8-13	Sandy loam-------	SM	A-2	0	98-100	95-100	70-96	25-35	<30	NP-4
	13-51	Sandy clay loam, sandy loam.	SC, CL, SM, SM-SC	A-6, A-4	0	98-100	95-100	71-96	38-58	22-40	3-19
	51-80	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
44---------- Orangeburg	0-7	Loamy fine sand	SM	A-2	0	98-100	95-100	60-87	14-28	---	NP
	7-12	Sandy loam-------	SM	A-2	0	98-100	95-100	70-96	25-35	<30	NP-4
	12-38	Sandy clay loam, sandy loam.	SC, CL, SM, SM-SC	A-6, A-4	0	98-100	95-100	71-96	38-58	22-40	3-19
	38-80	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
45---------- Pamlico	0-24	Muck-------------	PT	---	---	---	---	---	---	---	---
	24-48	Fine sand, loamy fine sand.	SM, SP-SM	A-2, A-3	0	100	100	70-95	5-20	---	NP
	48-80	Fine sandy loam, sandy clay loam.	SM, SC	A-4, A-2-6	0	100	100	90-100	20-35	20-35	12-21
46*:											
Pamlico---------	0-24	Muck-------------	PT	---	---	---	---	---	---	---	---
	24-48	Fine sand, loamy fine sand.	SM, SP-SM	A-2, A-3	0	100	100	70-95	5-20	---	NP
	48-80	Fine sandy loam, sandy clay loam.	SM, SC	A-4, A-2-6	0	100	100	90-100	20-35	20-35	12-21
Dorovan---------	0-80	Muck-------------	PT	---	0	---	---	---	---	---	---
47---------- Pantego	0-18	Fine sandy loam, loamy fine sand.	SM, SM-SC, CL, ML	A-2, A-4	0	100	95-100	60-95	25-75	<35	NP-10
	18-80	Sandy clay loam, sandy clay.	SC, CL, SM-SC	A-4, A-6, A-2	0	100	95-100	80-100	30-80	20-40	4-16
48---------- Pelham	0-31	Fine sand--------	SM	A-2-4	0	100	95-100	80-100	15-30	---	NP
	31-66	Sandy clay loam, sandy loam.	SM, SC, SM-SC	A-2, A-4, A-6	0	100	95-100	80-100	25-40	<30	NP-12
	66-80	Sandy clay loam, sandy loam, sandy clay.	SC, SM-SC, ML, CL	A-2, A-4, A-6, A-7	0	100	95-100	65-90	30-65	20-45	5-20
49---------- Pelham	0-29	Fine sand--------	SM	A-2-4	0	100	95-100	80-100	15-30	---	NP
	29-45	Sandy clay loam, sandy loam.	SM, SC, SM-SC	A-2, A-4, A-6	0	100	95-100	80-100	25-40	<30	NP-12
	45-80	Sandy clay loam, sandy loam, sandy clay.	SC, SM-SC, ML, CL	A-2, A-4, A-6, A-7	0	100	95-100	65-90	30-65	20-45	5-20

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
50*. Pits											
51---------- Plummer	0-56	Fine sand--------	SM, SP-SM	A-2-4, A-3	0	100	100	75-96	5-26	---	NP
	56-80	Sandy loam, sandy clay loam, fine sandy loam.	SM, SC, SM-SC	A-2-4, A-2-6, A-4	0	100	97-100	76-96	20-48	<31	NP-14
52---------- Plummer	0-5	Fine sand--------	SM, SP-SM	A-2-4, A-3	0	---	---	---	---	---	---
	5-57	Sand, fine sand, loamy sand.	SM, SP-SM	A-2-4, A-3	0	100	100	75-96	5-26	---	NP
	57-80	Sandy loam, sandy clay loam, fine sandy loam.	SM, SC, SM-SC	A-2-4, A-2-6, A-4	0	100	97-100	76-96	20-48	<31	NP-14
53---------- Plummer	0-60	Fine sand--------	SM, SP-SM	A-2-4, A-3	0	100	100	75-96	5-26	---	NP
	60-80	Sandy loam, sandy clay loam, fine sandy loam.	SM, SC, SM-SC	A-2-4, A-2-6, A-4	0	100	97-100	76-96	20-48	<31	NP-14
54---------- Plummer	0-8	Muck----------	PT	---	0	---	---	---	---	---	---
	8-55	Sand, fine sand, loamy sand.	SM, SP-SM	A-2-4, A-3	0	100	100	75-96	5-26	---	NP
	55-80	Sandy loam, sandy clay loam, fine sandy loam.	SM, SC, SM-SC	A-2-4, A-2-6, A-4	0	100	97-100	76-96	20-48	<31	NP-14
55*: Plummer----------	0-8	Muck----------	PT	---	0	---	---	---	---	---	---
	8-55	Sand, fine sand, loamy sand.	SM, SP-SM	A-2-4, A-3	0	100	100	75-96	5-26	---	NP
	55-80	Sandy loam, sandy clay loam, fine sandy loam.	SM, SC, SM-SC	A-2-4, A-2-6, A-4	0	100	97-100	76-96	20-48	<31	NP-14
Pamlico----------	0-24	Muck----------	PT	---	---	---	---	---	---	---	---
	24-48	Fine sand, loamy fine sand.	SM, SP-SM	A-2, A-3	0	100	100	70-95	5-20	---	NP
	48-80	Fine sandy loam, sandy clay loam.	SM, SC	A-4, A-2-6	0	100	100	90-100	20-35	20-35	12-21
56---------- Sapelo	0-11	Fine sand--------	SM, SP, SP-SM	A-2, A-3	0	100	100	90-100	4-20	---	NP
	11-17	Fine sand, sand, loamy fine sand.	SM, SP-SM	A-2, A-3	0	100	100	95-100	8-20	---	NP
	17-50	Fine sand, sand	SM, SP, SP-SM	A-2, A-3	0	100	100	90-100	4-15	---	NP
	50-80	Sandy loam, sandy clay loam, fine sandy loam.	SM, SC, SM-SC	A-2, A-4, A-6	0	100	100	90-100	20-50	<40	NP-20
57---------- Surrency	0-38	Fine sand--------	SM	A-2	0	100	95-100	50-98	10-26	---	NP
	38-80	Sandy clay loam	SM, SC, SM-SC	A-2, A-6, A-4	0	100	95-100	80-98	30-44	<34	NP-21
58---------- Surrency	0-38	Fine sand--------	SM	A-2	0	100	95-100	50-98	10-26	---	NP
	38-80	Sandy clay loam	SM, SC, SM-SC	A-2, A-6, A-4	0	100	95-100	80-98	30-44	<34	NP-21
59---------- Troup	0-52	Fine sand--------	SM, SP-SM	A-2-4 A-3, A-4	0	100	100	50-94	10-40	---	NP
	52-80	Sandy clay loam, sandy loam, fine sandy loam.	SC, SM-SC, CL-ML, CL	A-4, A-2-4	0	95-100	95-100	60-94	24-55	<34	NP-12

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
60---------- Troup	0-50	Fine sand--------	SM, SP-SM	A-2-4, A-3, A-4	0	100	100	50-94	10-40	---	NP
	50-80	Sandy clay loam, sandy loam, fine sandy loam.	SC, SM-SC, CL-ML, CL	A-4, A-2-4	0	95-100	95-100	60-94	24-55	<34	NP-12
61---------- Udorthents	0-48	Variable---------	---	---	---	---	---	---	---	---	---
	48-80	Sand, fine sand, loamy sand.	SM, SP-SM	A-3, A-2-4	0	95-100	90-100	85-95	5-20	---	NP

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 15.--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]

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	G/cm³	In/hr	In/in	pH	mmhos/cm					Pct
1, 2----------	0-55	1-10	1.35-1.55	6.0-20	0.02-0.04	3.6-6.5	<2	Low--------	0.10	5	2	1-2
Albany	55-65	10-20	1.55-1.75	2.0-6.0	0.08-0.10	4.5-6.0	<2	Low--------	0.20			
	65-80	15-35	1.55-1.75	0.6-2.0	0.10-0.16	4.5-6.0	<2	Low--------	0.24			
3----------	0-6	1-12	1.35-1.55	2.0-6.0	0.05-0.10	4.5-6.0	<2	Very low	0.10	5	2	0-2
Alpin	6-52	1-7	1.40-1.55	6.0-20.0	0.03-0.09	4.5-6.0	<2	Very low	0.10			
	52-80	5-8	1.45-1.65	2.0-6.0	0.06-0.09	4.5-6.0	<2	Very low	0.10			
4----------	0-3	1-12	1.35-1.55	2.0-6.0	0.05-0.10	4.5-6.0	<2	Very low	0.10	5	2	0-2
Alpin	3-65	1-7	1.40-1.55	6.0-20.0	0.03-0.09	4.5-6.0	<2	Very low	0.10			
	65-80	1-8	1.45-1.65	2.0-6.0	0.06-0.09	4.5-6.0	<2	Very low	0.10			
5----------	0-4	1-12	1.35-1.55	2.0-6.0	0.05-0.10	4.5-6.0	<2	Very low	0.10	5	2	0-2
Alpin	4-52	1-7	1.40-1.55	6.0-20.0	0.03-0.09	4.5-6.0	<2	Very low	0.10			
	52-80	1-8	1.45-1.65	2.0-6.0	0.06-0.09	4.5-6.0	<2	Very low	0.10			
6*.												
Arents												
7----------	0-7	4-10	1.40-1.50	6.0-20	0.05-0.10	4.5-6.0	<2	Low--------	0.17	5	2	.5-2
Bigbee	7-80	<5	1.40-1.50	6.0-20	0.05-0.08	4.5-6.0	<2	Low--------	0.17			
8----------	0-52	2-7	1.30-1.60	6.0-20	0.03-0.07	4.5-6.0	<2	Very low	0.10	5	2	.5-1
Blanton	52-80	12-30	1.60-1.70	0.6-2.0	0.10-0.15	4.5-5.5	<2	Low--------	0.20			
9----------	0-49	2-7	1.30-1.60	6.0-20	0.03-0.07	4.5-6.0	<2	Very low	0.10	5	2	.5-1
Blanton	49-80	12-30	1.60-1.70	0.6-2.0	0.10-0.15	4.5-5.5	<2	Low--------	0.20			
10----------	0-7	1-7	1.35-1.60	2.0-6.0	0.08-0.12	4.5-6.0	<2	Very low	0.10	5	2	.5-2
Blanton	7-52	2-7	1.35-1.65	2.0-6.0	0.05-0.12	4.5-5.5	<2	Very low	0.10			
	52-80	12-30	1.70-1.90	0.06-0.2	0.07-0.15	4.5-5.5	<2	Low--------	0.24			
11*:												
Blanton---------	0-52	2-7	1.30-1.60	6.0-20	0.03-0.07	4.5-6.0	<2	Very low	0.10	5	2	.5-1
	52-80	12-30	1.60-1.70	0.6-2.0	0.10-0.15	4.5-5.5	<2	Low--------	0.20			
Bonneau---------	0-27	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
	27-80	15-40	1.40-1.60	0.6-2.0	0.10-0.16	4.5-5.5	<2	Low--------	0.20			
Ichetucknee-----	0-13	2-5	1.35-1.45	6.0-20	0.05-0.08	4.5-5.5	<2	Low--------	0.17	5	2	1-4
	13-55	45-85	1.55-1.65	0.06-0.2	0.12-0.18	5.1-7.3	<2	Moderate	0.24			
	55	---	---	---	---	---	---	----------	----			
12*:												
Blanton---------	0-52	2-7	1.30-1.60	6.0-20	0.03-0.07	4.5-6.0	<2	Very low	0.10	5	2	.5-1
	52-80	12-30	1.60-1.70	0.6-2.0	0.10-0.15	4.5-5.5	<2	Low--------	0.20			
Bonneau---------	0-27	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
	27-80	15-40	1.40-1.60	0.6-2.0	0.10-0.16	4.5-5.5	<2	Low--------	0.20			
Ichetucknee-----	0-7	2-5	1.35-1.45	6.0-20	0.05-0.08	4.5-5.5	<2	Low--------	0.15	5	2	1-4
	7-60	45-85	1.55-1.65	0.06-0.2	0.12-0.18	5.1-7.3	<2	Moderate	0.24			
	60	---	---	---	---	---	---	----------	----			
13----------	0-27	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
Bonneau	27-80	15-40	1.40-1.60	0.6-2.0	0.10-0.16	4.5-5.5	<2	Low--------	0.20			
14----------	0-28	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
Bonneau	28-80	15-40	1.40-1.60	0.6-2.0	0.10-0.16	4.5-5.5	<2	Low--------	0.20			

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	G/cm³	In/hr	In/in	pH	mmhos/cm					Pct
15*:												
Bonneau	0-27	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
	27-80	15-40	1.40-1.60	0.6-2.0	0.10-0.16	4.5-5.5	<2	Low	0.20			
Blanton	0-52	2-7	1.30-1.60	6.0-20	0.03-0.07	4.5-6.0	<2	Very low	0.10	5	2	.5-1
	52-80	12-30	1.60-1.70	0.6-2.0	0.10-0.15	4.5-5.5	<2	Low	0.20			
16*:												
Bonneau	0-28	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
	28-80	15-40	1.40-1.60	0.6-2.0	0.10-0.16	4.5-5.5	<2	Low	0.20			
Blanton	0-52	2-7	1.30-1.60	6.0-20	0.03-0.07	4.5-6.0	<2	Very low	0.10	5	2	.5-1
	52-80	12-30	1.60-1.70	0.6-2.0	0.10-0.15	4.5-5.5	<2	Low	0.20			
17*:												
Chiefland	0-8	1-5	1.35-1.50	6.0-20	0.02-0.05	5.1-7.3	<2	Low	0.10	3	2	.5-2
	8-33	1-3	1.45-1.55	6.0-20	0.02-0.05	5.6-7.3	<2	Low	0.10			
	33-39	15-35	1.60-1.70	0.6-2.0	0.07-0.12	5.6-8.4	<2	Low	0.20			
	39-80	---	---	---	---	---	---	---	---			
Pedro Variant	0-8	1-5	1.35-1.50	6.0-20	0.03-0.08	5.1-6.5	<2	Low	0.10	1	2	0-4
	8-11	15-35	1.50-1.70	2.0-6.0	0.12-0.15	6.1-7.8	<2	Low	0.28			
	11-14	---	---	---	---	---	---	---	---			
	14	---	---	---	---	---	---	---	---			
18*:												
Chiefland	0-8	1-5	1.35-1.50	6.0-20	0.02-0.05	5.1-7.3	<2	Low	0.10	3	2	.5-2
	8-30	1-3	1.45-1.55	6.0-20	0.02-0.05	5.6-7.3	<2	Low	0.10			
	30-35	15-35	1.60-1.70	0.6-2.0	0.07-0.12	5.6-8.4	<2	Low	0.20			
	35-80	---	---	---	---	---	---	---	---			
Pedro Variant	0-8	1-5	1.35-1.50	6.0-20	0.03-0.08	5.1-6.5	<2	Low	0.10	1	2	0-4
	8-11	15-35	1.50-1.70	2.0-6.0	0.12-0.15	6.1-7.8	<2	Low	0.28			
	11-14	---	---	---	---	---	---	---	---			
	14	---	---	---	---	---	---	---	---			
19*:												
Chiefland	0-5	1-5	1.35-1.50	6.0-20	0.02-0.05	5.1-7.3	<2	Low	0.10	3	2	.5-2
	5-23	1-3	1.45-1.55	6.0-20	0.02-0.05	5.6-7.3	<2	Low	0.10			
	23-30	15-35	1.60-1.70	0.6-2.0	0.07-0.12	5.6-8.4	<2	Low	0.20			
	30-80	---	---	---	---	---	---	---	---			
Pedro Variant	0-8	1-5	1.35-1.50	6.0-20	0.03-0.08	5.1-6.5	<2	Low	0.10	1	2	0-4
	8-11	15-35	1.50-1.70	2.0-6.0	0.12-0.15	6.1-7.8	<2	Low	0.28			
	11-14	---	---	---	---	---	---	---	---			
	14	---	---	---	---	---	---	---	---			
20	0-7	1-5	1.35-1.45	6.0-20	0.05-0.10	3.6-6.0	<2	Very low	0.10	5	2	2-5
Chipley	7-80	1-7	1.45-1.60	6.0-20	0.03-0.08	4.5-6.5	<2	Very low	0.10			
21	0-80	---	0.35-0.55	0.6-2.0	0.25-0.50	3.6-4.4	<2	---	0.10	2	2	---
Dorovan												
22	0-4	0-6	1.25-1.55	6.0-20	0.10-0.15	4.5-6.5	<2	Very low	0.10	5	2	1-2
Electra Variant	4-38	0-6	1.45-1.70	2.0-6.0	0.10-0.15	4.5-5.5	<2	Very low	0.10			
	38-53	1-9	1.50-1.70	0.6-2.0	0.15-0.20	4.5-5.5	<2	Very low	0.15			
	53-80	12-38	1.60-1.75	0.06-0.2	0.10-0.15	4.5-5.5	<2	Very low	0.28			
23	0-2	0-6	1.25-1.55	6.0-20	0.10-0.15	4.5-6.5	<2	Very low	0.10	5	2	1-2
Electra Variant	2-39	0-6	1.45-1.70	2.0-6.0	0.10-0.15	4.5-6.5	<2	Very low	0.10			
	39-58	1-9	1.50-1.70	0.6-2.0	0.15-0.20	4.5-6.5	<2	Very low	0.15			
	58-80	12-38	1.60-1.75	0.06-0.2	0.10-0.15	4.5-6.5	<2	Very low	0.28			
24	0-16	6-13	1.40-1.55	6.0-20	0.08-0.12	5.1-7.3	<2	Low	0.17	5	2	2-8
Fort Meade Variant	16-80	3-13	1.50-1.65	6.0-20	0.06-0.10	4.5-6.0	<2	Low	0.17			

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	G/cm³	In/hr	In/in	pH	mmhos/cm					Pct
25---------- Goldsboro	0-13	5-15	1.40-1.60	2.0-6.0	0.08-0.12	4.5-6.0	<2	Low--------	0.20	5	2	.5-2
	13-45	18-30	1.30-1.50	0.6-2.0	0.11-0.15	4.5-5.5	<2	Low--------	0.24			
	45-80	20-45	1.30-1.40	0.2-2.0	0.11-0.15	4.5-5.5	<2	Low--------	0.24			
26---------- Hurricane	0-56	1-4	1.40-1.60	6.0-20	0.03-0.07	4.5-6.0	<2	Low--------	0.10	5	1	<2
	56-80	2-8	1.55-1.65	2.0-6.0	0.10-0.15	4.5-6.0	<2	Low--------	0.15			
27---------- Ichetucknee	0-13	2-5	1.35-1.45	6.0-20	0.05-0.08	4.5-5.5	<2	Low--------	0.15	5	2	1-4
	13-55	45-85	1.55-1.65	0.06-0.2	0.12-0.18	5.1-7.3	<2	Moderate	0.24			
	55	---	---	---	---	---	---	----------	----			
28---------- Ichetucknee	0-7	2-5	1.35-1.45	6.0-20	0.05-0.08	4.5-5.5	<2	Low--------	0.17	5	2	1-4
	7-60	45-85	1.55-1.65	0.06-0.2	0.12-0.18	5.1-7.3	<2	Moderate	0.24			
	60	---	---	---	---	---	---	----------	----			
29---------- Lakeland	0-55	2-8	1.35-1.65	6.0-20	0.05-0.09	4.5-6.0	<2	Low--------	0.10	5	2	>1
	55-80	1-6	1.50-1.60	6.0-20	0.02-0.08	4.5-6.0	<2	Low--------	0.10			
30---------- Lakeland	0-44	2-8	1.35-1.65	6.0-20	0.05-0.09	4.5-6.0	<2	Low--------	0.10	5	2	>1
	44-80	1-6	1.50-1.60	6.0-20	0.02-0.08	4.5-6.0	<2	Low--------	0.10			
31---------- Leefield	0-8	5-10	---	6.0-20	0.04-0.07	4.5-6.0	<2	Low--------	0.10	5	2	1-2
	8-27	15-25	---	0.6-2.0	0.10-0.13	4.5-5.5	<2	Low--------	0.15			
	27-80	15-30	---	0.2-0.6	0.08-0.12	4.5-5.5	<2	Low--------	0.10			
32---------- Leon	0-8	1-6	1.40-1.65	6.0-20	0.02-0.05	3.6-5.5	<2	Low--------	0.10	5	2	.5-4
	8-19	2-8	1.50-1.70	0.6-6.0	0.05-0.10	3.6-5.5	<2	Low--------	0.15			
	19-80	1-6	1.40-1.65	0.6-6.0	0.02-0.05	3.6-5.5	<2	Low--------	0.10			
33---------- Leon	0-12	1-6	1.40-1.65	6.0-20	0.10-0.15	3.6-5.5	<2	Low--------	0.10	5	2	.5-4
	12-23	2-8	1.30-1.70	0.6-6.0	0.05-0.10	3.6-5.5	<2	Low--------	0.15			
	23-80	1-6	1.40-1.65	0.6-6.0	0.15-0.20	3.6-5.5	<2	Low--------	0.10			
34---------- Lucy	0-29	1-12	---	6.0-20	0.06-0.10	5.1-5.5	<2	Low--------	0.15	5	2	.5-1
	29-80	20-35	---	0.6-2.0	0.12-0.14	4.5-5.5	<2	Low--------	0.28			
35---------- Lucy	0-20	1-12	---	6.0-20	0.06-0.10	5.1-5.5	<2	Low--------	0.15	5	2	.5-1
	20-80	20-35	---	0.6-2.0	0.12-0.14	4.5-5.5	<2	Low--------	0.28			
36---------- Mandarin	0-16	<3	1.35-1.45	6.0-20	0.03-0.07	3.6-6.0	<2	Low--------	0.10	5	2	<3
	16-26	2-9	1.45-1.60	0.6-2.0	0.10-0.15	3.6-6.0	<2	Low--------	0.15			
	26-64	<3	1.35-1.45	6.0-20	0.03-0.07	4.5-7.3	<2	Low--------	0.10			
	64-80	2-9	1.45-1.60	0.6-2.0	0.10-0.15	5.6-7.3	<2	Low--------	0.15			
37---------- Mascotte	0-6	1-8	1.20-1.45	6.0-20	0.03-0.08	3.6-5.5	<2	Very low	0.10	5	2	2-11
	6-15	2-12	1.35-1.50	0.6-2.0	0.10-0.15	3.6-5.5	<2	Very low	0.15			
	15-37	2-8	1.35-1.50	6.0-20	0.03-0.08	3.6-5.5	<2	Very low	0.15			
	37-67	14-35	1.45-1.65	0.6-2.0	0.10-0.15	3.6-5.5	<2	Low--------	0.24			
	67-80	5-13	1.35-1.50	0.6-2.0	0.07-0.10	3.6-5.5	<2	Very low	0.20			
38---------- Mascotte	0-20	0.-5.	1.20-1.55	6.0-20	0.05-0.12	4.0-5.5	<2	Very low	0.10	5	2	3-11
	20-36	2-10	1.35-1.50	2.0-6.0	0.15-0.25	4.0-5.5	<2	Very low	0.15			
	36-80	14-35	1.50-1.75	<0.06	0.08-0.12	4.0-5.5	<2	Low--------	0.24			
39---------- Mascotte	0-19	0-5	1.20-1.55	6.0-20	0.05-0.12	4.0-5.5	<2	Very low	0.10	5	2	3-11
	19-34	3-10	1.35-1.50	2.0-6.0	0.15-0.25	4.0-5.5	<2	Very low	0.15			
	34-38	1-8	1.45-1.70	6.0-20	0.08-0.12	4.0-5.5	<2	Very low	0.10			
	38-80	14-35	1.50-1.75	<0.06	0.08-0.12	4.0-5.5	<2	Low--------	0.24			
40---------- Ocilla	0-32	4-10	---	2.0-20	0.05-0.08	4.5-5.5	<2	Low--------	0.10	5	2	1-2
	32-80	15-35	---	0.6-2.0	0.09-0.12	4.5-5.5	<2	Low--------	0.24			
41---------- Oleno	0-32	46-85	1.10-1.35	0.06-0.2	0.20-0.33	3.6-6.5	<2	High-------	0.37	5	4	1-3
	32-71	2-15	1.35-1.55	2.0-6.0	0.01-0.05	4.5-7.8	<2	Low--------	0.24			
	71-77	22-40	1.35-1.55	0.2-0.6	0.05-0.12	6.6-7.8	<2	Low--------	0.32			
	77-82	40-70	1.20-1.45	0.06-0.2	0.20-0.27	5.6-7.8	<2	High-------	0.32			

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	G/cm³	In/hr	In/in	pH	mmhos/cm					Pct
42----------	0-18	2-8	1.40-1.55	6.0-20	0.05-0.10	3.6-5.5	<2	Very low	0.10	5	2	2-6
Olustee	18-23	5-10	1.35-1.55	0.6-2.0	0.10-0.15	3.6-5.5	<2	Very low	0.15			
	23-37	2-8	1.35-1.55	6.0-20.0	0.03-0.08	4.5-5.5	<2	Very low	0.10			
	37-63	15-35	1.45-1.65	0.6-2.0	0.10-0.15	4.5-5.5	<2	Low-------	0.24			
	63-80	8-50	1.50-1.75	0.6-2.0	0.10-0.15	4.5-5.5	<2	Low-------	0.28			
43----------	0-8	4-10	---	2.0-6.0	0.06-0.09	4.5-6.0	<2	Low-------	0.10	5	2	.5-1
Orangeburg	8-13	7-18	---	2.0-6.0	0.09-0.12	4.5-6.0	<2	Low-------	0.20			
	13-51	18-35	---	0.6-2.0	0.11-0.14	4.5-5.5	<2	Low-------	0.24			
	51-80	20-45	---	0.6-2.0	0.11-0.14	4.5-5.5	<2	Low-------	0.24			
44----------	0-7	4-10	---	2.0-6.0	0.06-0.09	4.5-6.0	<2	Low-------	0.10	5	2	.5-1
Orangeburg	7-12	7-18	---	2.0-6.0	0.09-0.12	4.5-6.0	<2	Low-------	0.20			
	12-38	18-35	---	0.6-2.0	0.11-0.14	4.5-5.5	<2	Low-------	0.24			
	38-80	20-45	---	0.6-2.0	0.11-0.14	4.5-5.5	<2	Low-------	0.24			
45----------	0-24	---	0.40-0.65	0.6-6.0	0.24-0.26	3.6-4.4	<2	Low-------	0.10	2	2	20-80
Pamlico	24-48	5-10	1.60-1.75	6.0-20.0	0.03-0.06	3.6-5.5	<2	Low-------	0.10			
	48-80	15-35	1.65-1.75	0.06-0.2	0.03-0.06	3.6-5.5	<2	Low-------	0.12			
46*:												
Pamlico---------	0-24	---	0.40-0.65	0.6-6.0	0.24-0.26	3.6-4.4	<2	Low-------	0.10	2	2	20-80
	24-48	5-10	1.60-1.75	6.0-20.0	0.03-0.06	3.6-5.5	<2	Low-------	0.10			
	48-80	15-35	1.65-1.75	0.06-0.2	0.03-0.06	3.6-5.5	<2	Low-------	0.12			
Dorovan---------	0-80	---	0.35-0.55	0.6-2.0	0.25-0.50	3.6-4.4	<2	----------	0.10	2	2	---
47----------	0-18	5-15	1.40-1.60	2.0-6.0	0.10-0.20	3.6-5.5	<2	Low-------	0.15	5	3	4-10
Pantego	18-80	18-35	1.30-1.40	0.6-2.0	0.12-0.20	3.6-5.5	<2	Low-------	0.28			
48----------	0-31	5-10	1.50-1.70	6.0-20	0.05-0.08	4.5-5.5	<2	Very low	0.10	5	2	1-2
Pelham	31-66	15-30	1.30-1.60	0.6-2.0	0.10-0.13	4.5-5.5	<2	Low-------	0.24			
	66-80	15-40	1.30-1.60	0.6-2.0	0.10-0.16	4.5-5.5	<2	Low-------	0.24			
49----------	0-29	5-10	1.50-1.70	6.0-20	0.05-0.08	4.5-5.5	<2	Very low	0.10	5	2	1-2
Pelham	29-45	15-30	1.30-1.60	0.6-2.0	0.10-0.13	4.5-5.5	<2	Low-------	0.24			
	45-80	15-40	1.30-1.60	0.6-2.0	0.10-0.16	4.5-5.5	<2	Low-------	0.24			
50*.												
Pits												
51----------	0-56	1-7	1.35-1.65	2.0-20.0	0.03-0.20	3.6-5.5	<2	Very low	0.10	5	2	1-3
Plummer	56-80	15-30	1.50-1.70	0.2-0.6	0.07-0.15	3.6-5.5	<2	Very low	0.15			
52----------	0-5	1-7	1.35-1.65	2.0-20.0	0.03-0.08	3.6-5.5	<2	Very low	0.10	5	2	1-15
Plummer	5-57	1-7	1.35-1.65	2.0-20.0	0.03-0.20	3.6-5.5	<2	Very low	0.10			
	57-80	15-30	1.50-1.70	0.2-0.6	0.07-0.15	3.6-5.5	<2	Very low	0.15			
53----------	0-60	1-7	1.35-1.65	2.0-20.0	0.03-0.20	3.6-5.5	<2	Very low	0.10	5	2	1-3
Plummer	60-80	15-30	1.50-1.70	0.2-0.6	0.07-0.15	3.6-5.5	<2	Very low	0.15			
54----------	0-8	---	0.40-0.65	0.6-6.0	0.20-0.26	3.6-4.4	<2	Low-------	0.10	5	2	15-80
Plummer	8-55	1-7	1.35-1.65	2.0-20.0	0.03-0.20	3.6-5.5	<2	Very low	0.10			
	55-80	15-30	1.50-1.70	0.2-0.6	0.07-0.15	3.6-5.5	<2	Very low	0.15			
55*:												
Plummer---------	0-8	---	0.40-0.65	0.6-6.0	0.20-0.26	3.6-4.4	<2	Low-------	0.10	2	2	15-80
	8-55	1-7	1.35-1.65	2.0-20.0	0.03-0.20	3.6-5.5	<2	Very low	0.10			
	55-80	15-30	1.50-1.70	0.2-0.6	0.07-0.15	3.6-5.5	<2	Very low	0.15			
Pamlico---------	0-24	---	0.40-0.65	0.6-6.0	0.24-0.26	3.6-4.4	<2	Low-------	0.10	2	2	20-80
	24-48	5-10	1.60-1.75	6.0-20.0	0.03-0.06	3.6-5.5	<2	Low-------	0.10			
	48-80	15-35	1.65-1.75	0.06-0.2	0.03-0.06	3.6-5.5	<2	Low-------	0.12			
56----------	0-11	2-5	---	6.0-20	0.03-0.07	3.6-5.5	<2	Low-------	0.10	5	2	1-3
Sapelo	11-17	4-7	---	0.6-2.0	0.10-0.15	3.6-5.5	<2	Low-------	0.15			
	17-50	3-6	---	6.0-20	0.03-0.07	3.6-5.5	<2	Low-------	0.17			
	50-80	15-30	---	0.6-2.0	0.12-0.17	3.6-5.5	<2	Low-------	0.24			

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	G/cm³	In/hr	In/in	pH	mmhos/cm					Pct
57----------	0-38	<10	1.00-1.70	2.0-20	0.05-0.10	3.6-5.0	<2	Low-------	0.10	5	2	1-15
Surrency	38-80	22-35	1.65-1.85	0.6-2.0	0.10-0.15	3.6-5.5	<2	Low-------	0.15			
58----------	0-38	<10	1.00-1.70	2.0-20	0.05-0.10	3.6-5.0	<2	Low-------	0.10	5	2	1-15
Surrency	38-80	22-35	1.65-1.85	0.6-2.0	0.10-0.15	3.6-5.5	<2	Low-------	0.15			
59----------	0-52	1-10	---	6.0-20	0.05-0.10	4.5-5.5	<2	Very low	0.10	5	2	<1
Troup	52-80	15-35	---	0.6-2.0	0.10-0.13	4.5-5.5	<2	Low-------	0.20			
60----------	0-50	1-10	---	6.0-20	0.05-0.10	4.5-5.5	<2	Very low	0.10	5	2	<1
Troup	50-80	15-35	---	0.6-2.0	0.10-0.13	4.5-5.5	<2	Low-------	0.20			
61----------	0-48	2-72	1.35-1.70	0.06-6.0	0.10-0.20	5.1-7.3	<2	High------	0.32	4	7	.5-2
Udorthents	48-80	2-8	1.25-1.35	6.0-20.0	0.05-0.10	4.5-6.0	<2	Low-------	0.17			

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 16.--SOIL AND WATER FEATURES

["Flooding" and "water table" and terms such as "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]

Map symbol and soil name	Hydrologic group	Flooding			High water table			Bedrock		Subsidence		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Initial	Total	Uncoated steel	Concrete
					Ft			In		In	In		
1---------- Albany	C	None---------	---	---	1.0-2.5	Apparent	Dec-Mar	>60	---	---	---	High------	High.
2---------- Albany	C	Occasional	Long-------	Mar-Apr	1.0-2.5	Apparent	Dec-Mar	>60	---	---	---	High------	High.
3, 4---------- Alpin	A	None---------	---	---	>6.0	---	---	>60	---	---	---	Low-------	High.
5---------- Alpin	A	Occasional	Brief------	Mar-Apr	>6.0	---	---	>60	---	---	---	Low-------	High.
6*. Arents													
7---------- Bigbee	A	Occasional	Brief------	Jan-Mar	3.5-6.0	Apparent	Jan-Mar	>60	---	---	---	Low-------	Moderate.
8, 9---------- Blanton	A	None---------	---	---	5.0-6.0	Perched	Dec-Mar	>60	---	---	---	High------	High.
10---------- Blanton	A	Occasional	Long-------	Mar-Apr	5.0-6.0	Perched	Jun-Oct	>60	---	---	---	High------	High.
11*, 12*:													
Blanton----------	A	None---------	---	---	5.0-6.0	Perched	Dec-Mar	>60	---	---	---	High------	High.
Bonneau----------	A	None---------	---	---	3.5-5.0	Apparent	Dec-Mar	>60	---	---	---	Low-------	High.
Ichetucknee------	D	None---------	---	---	1.5-3.0	Perched	Mar-Oct	50-75	Soft	---	---	High------	High.
13, 14---------- Bonneau	A	None---------	---	---	3.5-5.0	Apparent	Dec-Mar	>60	---	---	---	Low-------	High.
15*, 16*:													
Bonneau----------	A	None---------	---	---	3.5-5.0	Apparent	Dec-Mar	>60	---	---	---	Low-------	High.
Blanton----------	A	None---------	---	---	5.0-6.0	Perched	Dec-Mar	>60	---	---	---	High------	High.
17*, 18*:													
Chiefland--------	B	None---------	---	---	>6.0	---	---	24-60	Soft	---	---	Low-------	Low.
Pedro Variant----	C	None---------	---	---	>6.0	---	---	10-20	Hard	---	---	Low-------	Moderate.
19*:													
Chiefland--------	B	Occasional	Long-------	Mar-Apr	>6.0	---	---	24-60	Soft	---	---	Low-------	Low.
Pedro Variant----	C	Occasional	Long-------	Mar-Apr	>6.0	---	---	10-20	---	---	---	Low-------	Moderate.

See footnotes at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Map symbol and soil name	Hydrologic group	Flooding			High water table			Bedrock		Subsidence		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Initial	Total	Uncoated steel	Concrete
					Ft			In		In	In		
20--Chipley	C	None	---	---	2.0-3.0	Apparent	Dec-Apr	>60	---	---	---	Low	High.
21**--Dorovan	D	Frequent	Very long	Jan-Dec	+1-0.5	Apparent	Jan-Dec	>60	---	4-12	51-80	High	High.
22--Electra Variant	C	None	---	---	2.0-3.5	Apparent	Jul-Oct	>60	---	---	---	Low	High.
23--Electra Variant	C	Occasional	Very long	Apr-Sep	2.0-3.5	Apparent	Jul-Oct	>60	---	---	---	Low	High.
24--Fort Meade Variant	A	None	---	---	>6.0	---	---	>60	---	---	---	Low	High.
25--Goldsboro	B	None	---	---	2.0-3.0	Apparent	Dec-Apr	>60	---	---	---	Moderate	High.
26--Hurricane	C	None	---	---	2.0-3.5	Apparent	Nov-Apr	>60	---	---	---	Low	Moderate.
27, 28--Ichetucknee	D	None	---	---	1.5-3.0	Perched	Mar-Oct	50-75	Soft	---	---	High	High.
29, 30--Lakeland	A	None	---	---	>6.0	---	---	>60	---	---	---	Low	Moderate.
31--Leefield	C	None	---	---	1.5-2.5	Apparent	Dec-Mar	>60	---	---	---	Moderate	High.
32--Leon	B/D	None	---	---	0-1.0	Apparent	Jun-Feb	>60	---	---	---	High	High.
33--Leon	B/D	Occasional	Long	Mar-May	0-1.0	Apparent	Jun-Feb	>60	---	---	---	High	High.
34, 35--Lucy	A	None	---	---	>6.0	---	---	>60	---	---	---	Low	High.
36--Mandarin	B/D	None	---	---	1.5-3.5	Apparent	Jun-Dec	>60	---	---	---	Moderate	High.
37--Mascotte	B/D	None	---	---	0-1.0	Apparent	Jun-Sep	>60	---	---	---	High	High.
38**--Mascotte	D	None	---	---	+1-1.0	Apparent	Mar-Sep	>60	---	---	---	High	High.
39--Mascotte	B/D	Occasional	Very long	Nov-Apr	0-1.0	Apparent	Jun-Sep	>60	---	---	---	High	High.

See footnotes at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Map symbol and soil name	Hydrologic group	Flooding			High water table			Bedrock		Subsidence		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Initial	Total	Uncoated steel	Concrete
					Ft			In		In	In		
40---- Ocilla	C	None----	---	---	1.0-2.5	Apparent	Dec-Apr	>60	---	---	---	High----	Moderate.
41---- Oleno	D	Occasional	Long----	Mar-Sep	0.5-1.5	Apparent	Mar-Sep	>60	---	---	---	High----	High.
42---- Olustee	B/D	None----	---	---	0-1.0	Apparent	May-Oct	>60	---	---	---	High----	High.
43, 44---- Orangeburg	B	None----	---	---	>6.0	---	---	>60	---	---	---	Moderate	Moderate.
45---- Pamlico	D	Rare----	---	---	0-1.0	Apparent	Jan-Dec	>60	---	4-12	10-25	High----	High.
46*:													
Pamlico----	D	Rare----	---	---	0-1.0	Apparent	Jan-Dec	>60	---	4-12	10-25	High----	High.
Dorovan**----	D	Frequent----	Very long	Jan-Dec	+1-0.5	Apparent	Jan-Dec	>60	---	4-12	51-80	High----	High.
47---- Pantego	B/D	None----	---	---	0-1.5	Apparent	Dec-May	>60	---	---	---	High----	High.
48---- Pelham	B/D	None----	---	---	0.5-1.5	Apparent	Jan-Apr	>60	---	---	---	High----	High.
49---- Pelham	B/D	Occasional	Brief----	Dec-Mar	0.5-1.5	Apparent	Jan-Apr	>60	---	---	---	High----	High.
50*. Pits													
51---- Plummer	B/D	None----	---	---	0-1.5	Apparent	Dec-Jul	>60	---	---	---	Moderate	High.
52**---- Plummer	D	None----	---	---	+2-1.5	Apparent	Dec-Jul	>60	---	---	---	Moderate	High.
53---- Plummer	B/D	Occasional	Brief----	Dec-Jul	0-1.5	Apparent	Dec-Jul	>60	---	---	---	Moderate	High.
54**---- Plummer	D	None----	---	---	+2-1.5	Apparent	Dec-Jul	>60	---	---	---	Moderate	High.
55*:													
Plummer**----	D	None----	---	---	+2-1.5	Apparent	Dec-Jul	>60	---	---	---	Moderate	High.
Pamlico----	D	Rare----	---	---	0-1.0	Apparent	Jan-Dec	>60	---	4-12	10-25	High----	High.
56---- Sapelo	B/D	None----	---	---	0.5-1.5	Apparent	Nov-Apr	>60	---	---	---	High----	High.

See footnotes at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Map symbol and soil name	Hydrologic group	Flooding			High water table			Bedrock		Subsidence		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Initial	Total	Uncoated steel	Concrete
					Ft			In		In	In		
57**--------- Surrency	D	None--------	---	---	+1-0.5	Apparent	Dec-Apr	>60	---	---	---	High-----	High.
58**--------- Surrency	D	Occasional	Very long	Dec-Mar	+1-0.5	Apparent	Dec-Apr	>60	---	---	---	High-----	High.
59, 60------- Troup	A	None--------	---	---	>6.0	---	---	>60	---	---	---	Low------	Moderate.
61--------- Udorthents	C	None--------	---	---	3.0-6.0	Perched	Jun-Oct	>60	---	---	---	High-----	Moderate.

* See description of the map unit for composition and behavior characteristics of the map unit.

** In the "High water table--Depth" column, a plus sign preceding the range in depth indicates that the water table is above the surface of the soil. The first numeral in the range indicates how high the water rises above the surface. The second numeral indicates the depth below the surface.

TABLE 17.--PHYSICAL PROPERTIES OF SELECTED SOILS

Soil name and sample number[1]	Depth	Horizon	Particle-size distribution (mm)								Hydraulic conductivity	Bulk density (field moist)	Water content		
			Sand						Silt	Clay			1/10 bar	1/3 bar	15 bar
			Very coarse (2.0-1.0)	Coarse (1.0-0.5)	Medium (0.5-0.25)	Fine (0.25-0.10)	Very fine (0.10-0.05)	Total (2.0-0.05)	(0.05-0.002)	(<0.002)					
	cm		Percent								cm/hr	G/cm^3	Percent (wt)		
Albany fine sand[2]:															
(S78FL-023-002)-1	0-18	A1	0.1	1.1	10.3	59.3	24.0	94.8	2.9	2.3	17.7	1.35	10.4	5.4	2.0
-2	18-38	A21	0.0	1.0	7.9	48.7	34.2	91.8	6.4	1.8	21.3	1.36	9.1	4.2	1.5
-3	38-76	A22	0.0	1.1	9.6	50.4	31.4	92.5	5.9	1.6	18.7	1.46	7.9	3.5	1.1
-4	76-140	A23	0.0	0.9	7.1	49.3	35.5	92.8	6.3	0.9	10.2	1.50	7.3	2.4	0.6
-5	140-165	B1	0.1	1.2	8.3	44.9	28.3	82.8	5.9	11.3	4.7	1.69	11.4	7.1	3.8
-6	165-203	B2tg	0.0	1.0	9.8	37.4	14.2	62.4	5.3	32.3	0.1	1.62	20.6	18.5	12.1
Alpin fine sand[2]:															
(S78FL-023-005)-1	0-15	A1	0.1	1.7	8.3	62.2	23.8	96.1	2.0	1.9	10.6	1.55	8.5	4.5	1.4
-2	15-38	A21	0.1	1.5	8.1	65.6	19.9	95.2	3.0	1.8	23.9	1.53	6.8	3.5	1.1
-3	38-69	A22	0.0	1.4	8.7	66.2	17.3	93.6	4.8	1.6	21.2	1.50	6.4	3.0	1.1
-4	69-97	A23	0.1	1.3	7.6	65.3	20.7	95.0	3.4	1.6	13.8	1.56	6.8	2.9	0.9
-5	97-132	A24	0.0	1.5	8.4	67.0	18.8	95.7	2.8	1.5	13.7	1.57	6.0	2.6	0.7
-6	132-203	A2&B1	0.1	1.3	6.7	63.4	23.9	95.4	3.4	1.2	13.5	1.61	6.6	3.1	1.0
Blanton fine sand[2]:															
(S78FL-023-003)-1	0-18	Ap	0.1	1.4	7.7	56.1	30.5	95.8	2.5	1.7	14.7	1.43	10.6	5.5	2.1
-2	18-94	A21	0.0	1.1	7.6	58.0	28.4	95.1	3.7	1.2	23.2	1.49	6.3	2.9	0.8
-3	94-132	A22	0.0	1.4	7.7	55.4	30.6	95.1	3.9	1.0	8.7	1.62	8.3	2.8	0.7
-4	132-157	B21t	0.0	1.0	7.1	43.2	25.8	77.1	5.6	17.3	0.2	1.75	15.4	12.7	6.6
-5	157-170	B22t	0.0	1.0	7.1	42.3	25.2	75.6	5.8	18.6	0.4	1.76	16.6	13.1	7.6
-6	170-203	B23t	0.0	0.9	7.0	39.5	27.2	74.6	6.0	19.4	0.2	1.87	15.9	12.7	6.2
Bonneau fine sand[2]:															
(S78FL-023-001)-1	0-18	A1	0.1	1.1	10.3	59.3	24.0	94.8	1.8	3.4	25.1	1.44	7.8	4.6	2.0
-2	18-38	A21	0.1	3.0	22.0	59.8	7.7	92.6	4.1	3.3	25.5	1.58	5.8	3.7	1.5
-3	38-69	A22	0.0	2.5	22.4	61.0	7.4	93.3	3.8	2.9	23.1	1.64	5.5	3.3	1.4
-4	69-76	B21t	0.1	2.2	14.0	52.6	6.8	75.7	4.8	19.5	0.6	1.70	16.3	13.7	8.8
-5	76-91	B21t	0.0	1.4	12.0	51.2	5.4	70.0	5.4	24.6	0.1	1.72	19.8	17.9	11.8
-6	91-147	B22t	0.0	0.4	9.8	44.8	9.8	64.8	4.8	30.4	0.0	1.62	25.7	24.2	17.1
-7	147-188	B23t	0.0	0.1	3.5	52.8	10.7	67.1	4.5	28.4	0.0	1.55	26.8	24.3	16.4
-8	188-203	B24t	0.0	0.1	4.0	63.2	5.7	73.0	3.6	23.4	0.1	1.61	23.1	20.1	13.7
Bonneau fine sand[3]:															
(S77FL-023-013)-1	2-18	A1	0.0	0.9	5.7	59.6	24.5	90.7	6.5	2.8	6.4	1.45	13.2	5.8	1.9
-2	18-43	A21	0.1	0.9	5.8	58.0	26.4	91.2	5.6	3.2	19.3	1.48	12.0	5.0	1.8
-3	43-61	A22	0.0	0.9	5.7	57.9	25.8	90.3	5.4	4.3	0.7	1.65	12.2	5.2	2.2
-4	61-74	B1	0.0	1.0	6.0	51.4	27.2	85.6	5.9	8.5	6.7	1.49	14.5	7.0	3.7
-5	74-94	B21t	0.0	1.2	4.8	45.0	27.4	78.4	6.8	14.8	2.7	1.53	16.3	11.0	6.8
-6	94-119	B22t	0.0	0.8	4.0	41.2	26.6	72.6	7.0	20.4	1.2	1.63	18.9	15.0	10.5
-7	119-203	B23t	0.0	0.2	3.8	40.8	12.2	57.0	7.3	35.7	0.1	1.55	23.7	21.3	16.4

See footnotes at end of table.

TABLE 17.--PHYSICAL PROPERTIES OF SELECTED SOILS--Continued

Soil name and sample number[1]	Depth	Horizon	Particle-size distribution (mm)								Hydraulic conductivity	Bulk density (field moist)	Water content		
			Sand						Silt	Clay			1/10 bar	1/3 bar	15 bar
			Very coarse (2.0-1.0)	Coarse (1.0-0.5)	Medium (0.5-0.25)	Fine (0.25-0.10)	Very fine (0.10-0.05)	Total (2.0-0.05)	(0.05-0.002)	(<0.002)					
	cm		Percent								cm/hr	G/cm³	Percent (wt)		
Chiefland fine sand[2]:															
(S80FL-023-018)-1	0-20	Ap	0.1	2.8	18.7	58.2	11.8	91.6	7.0	1.4	10.2	1.53	8.6	4.8	1.0
-2	20-84	A2	0.4	3.4	16.4	56.0	19.0	95.2	4.2	0.6	14.1	1.53	9.3	6.1	0.8
-3	84-99	B2t	0.2	3.4	13.0	42.6	19.0	78.2	5.8	16.0	6.2	1.57	14.2	12.1	8.6
Electra Variant fine sand[2]:															
(S79FL-023-009)-1	0-10	A1	0.2	3.0	16.3	57.1	19.5	96.1	2.9	1 0	30.4	1.29	14.0	9.0	4.5
-2	10-61	A21	0.2	4.0	18.9	56.0	17.0	96.1	.6	0.3	11.6	1.49	7.2	3.7	1.1
-3	61-86	A22	0.4	4.1	18.1	56.0	17.0	95.6	4.0	0.4	11.3	1.52	6.6	2.6	1.0
-4	86-96	A23	0.2	4.0	16.6	55.6	18.0	94.4	5.1	0.5	5.5	1.64	8.9	4.7	1.1
-5	96-117	B21h	0.2	3.6	16.3	53.3	16.9	90.3	5.3	4.4	2.2	1.54	17.0	11.4	3.9
-6	117-130	B22h	0.3	3.9	16.9	54.2	16.8	92.1	4.5	3.4	4.9	1.58	13.4	8.2	3.0
-7	130-135	B3	0.3	4.0	17.4	52.2	15.5	89.4	7.2	3.4	3.6	1.63	13.1	8.8	4.0
-8	135-145	B21t	0.2	3.2	13.9	47.7	15.5	80.5	5.7	13.8	10.8	1.61	18.1	13.5	6.3
-9	145-203	B22tg	0.2	3.1	15.1	47.5	14.8	80.7	5.5	13.8	0.1	1.70	18.6	16.2	8.3
Hurricane fine sand[2]:															
(S80FL-023-016)-1	0-20	Ap	0.0	1.1	17.8	65.1	8.4	92.4	5.9	1.7	58.5	1.16	12.7	9.3	3.3
-2	20-46	A21	0.0	1.4	18.7	65.8	7.8	93.7	4.4	1.9	42.7	1.39	7.8	5.1	1.3
-3	46-81	A22	0.0	1.5	16.0	68.8	8.4	94.7	3.5	1.8	27.2	1.52	5.9	3.4	1.0
-4	81-142	A23	0.0	1.4	19.0	67.2	7.9	95.5	3.2	1.3	14.8	1.69	6.8	4.2	1.3
-5	142-165	B1h	0.0	1.5	14.2	68.2	5.2	89.1	8.6	2.3	8.8	1.72	8.8	5.3	0.8
-6	165-203	B2h	0.0	1.1	17.0	66.3	5.6	90.0	8.7	1.3	6.8	1.61	19.0	10.7	2.6
Ichetucknee fine sand[2]:															
(S78FL-023-004)-1	0-13	Ap	0.0	0.3	2.9	52.8	36.1	92.1	4.9	3.0	8.2	1.38	13.0	7.3	2.6
-2	13-33	A2	0.0	0.2	2.8	62.4	26.0	91.4	6.0	2.6	9.6	1.47	10.1	5.1	1.8
-3	33-99	B21t	0.0	0.4	1.4	23.0	18.8	43.6	5.4	51.0	0.0	1.41	33.6	32.6	26.9
-4	99-140	B22t	0.0	0.0	0.4	5.4	5.4	11.2	7.2	81.6	0.0	1.17	49.4	46.8	37.3
Leon fine sand[2]:															
(S80FL-023-017)-1	0-20	Ap	0.0	0.7	14.2	67.3	8.4	90.6	5.5	3.9	12.0	1.14	24.7	15.7	6.1
-2	20-48	A2	0.0	1.0	15.9	73.8	7.8	98.5	1.2	0.3	26.0	1.55	3.5	2.6	1.2
-3	48-58	B21h	0.1	1.0	13.1	71.5	7.8	93.5	2.8	3.7	3.0	1.53	13.5	9.1	1.9
-4	58-68	B22h	0.0	1.0	15.3	69.2	7.4	92.9	3.2	3.9	0.9	1.54	15.5	11.9	2.8
-5	68-137	B3	0.0	1.0	13.5	73.7	6.2	94.4	3.0	2.6	3.3	1.56	10.1	7.4	2.5
-6	137-165	B'21h	0.0	0.7	12.2	73.6	5.4	91.9	5.6	2.5	7.9	1.41	15.0	10.3	3.3
-7	165-203	B'22h	0.0	0.7	10.5	73.0	6.1	90.3	7.8	1.9	3.3	1.52	18.3	10.8	3.3

See footnotes at end of table.

TABLE 17.--PHYSICAL PROPERTIES OF SELECTED SOILS--Continued

Soil name and sample number[1]	Depth	Horizon	Particle-size distribution (mm)								Hydraulic conductivity	Bulk density (field moist)	Water content		
			Sand						Silt	Clay			1/10 bar	1/3 bar	15 bar
			Very coarse (2.0-1.0)	Coarse (1.0-0.5)	Medium (0.5-0.25)	Fine (0.25-0.10)	Very fine (0.10-0.05)	Total (2.0-0.05)	(0.05-0.002)	(<0.002)					
	cm		Percent								cm/hr	G/cm^3	Percent (wt)		
Lucy loamy fine sand[2]															
(S89FL-023-015)-1	0-15	A1	0.2	4.6	18.5	43.8	19.0	86.1	7.4	6.5	25.9	1.38	14.2	10.4	4.3
-2	15-30	A21	0.2	5.7	21.1	41.9	16.9	85.8	7.0	7.2	16.4	1.45	10.2	7.5	3.7
-3	30-56	A22	0.2	4.7	19.3	44.5	17.4	86.1	6.2	7.7	23.3	1.49	9.4	6.5	3.4
-4	56-74	A23	0.1	5.2	21.6	41.0	16.2	84.1	6.2	9.7	18.0	1.49	10.8	8.0	4.6
-5	74-101	B21t	0.2	5.8	16.6	35.6	15.6	73.8	6.4	19.8	1.6	1.53	18.2	15.1	9.9
-6	101-178	B22t	0.1	4.5	18.6	38.5	15.5	77.2	5.0	17.8	1.7	1.60	15.7	12.9	7.7
-7	178-203	B23t	0.2	5.4	19.2	39.4	15.8	80.0	5.0	15.0	1.9	1.60	14.9	12.6	7.1
Mascotte fine sand[2]:															
(S80FL-023-014)-1	0-18	Ap	0.0	0.8	12.0	68.4	11.6	92.8	5.9	1.3	17.4	1.43	9.0	5.7	1.2
-2	18-38	A2	0.0	0.8	11.6	66.7	14.1	93.2	6.0	0.8	10.0	1.52	6.4	3.3	0.8
-3	38-48	B21h	0.0	0.8	10.1	64.4	11.9	87.2	8.6	4.2	7.0	1.36	19.9	14.9	4.6
-4	48-64	B22h	0.0	0.9	11.2	66.2	12.4	90.7	6.5	2.8	9.4	1.48	13.1	8.2	2.9
-5	64-89	A'2	0.0	1.2	11.2	69.7	12.6	94.7	4.2	1.1	15.5	1.60	8.0	3.6	0.9
-6	89-94	B'h	0.0	1.1	11.6	66.8	12.2	91.7	5.1	3.2	1.9	1.66	16.5	8.6	2.6
-7	94-140	B'21tg	0.0	1.0	10.2	57.8	10.2	79.2	5.8	15.0	0.1	1.65	17.1	13.8	6.1
-8	140-173	B'22tg	0.0	1.4	12.4	54.4	9.4	77.6	4.8	17.6	0.1	1.73	16.2	13.4	6.7
-9	173-203	Cg	0.1	5.4	30.7	47.8	1.7	85.7	1.0	13.3	1.4	1.79	12.4	9.3	5.4
Ocilla fine sand[2]:															
(S79FL-023-010)-1	0-23	Ap	0.1	1.5	8.9	50.3	31.5	92.3	4.7	3.0	7.2	1.47	13.3	7.0	2.7
-2	23-48	A21	0.0	1.7	10.2	48.8	30.3	91.0	5.8	3.2	26.3	1.49	11.7	5.6	2.0
-3	48-66	A22	0.0	1.8	8.7	50.6	31.1	92.2	5.3	2.5	10.1	1.53	10.6	4.4	1.5
-4	66-81	A23	0.0	2.2	8.8	46.8	32.8	90.6	5.4	4.0	3.8	1.64	16.5	7.6	2.7
-5	81-132	B21tg	0.0	1.3	6.4	39.8	29.1	76.6	6.5	16.9	0.3	1.67	18.8	15.8	7.6
-6	132-173	B22tg	0.0	1.2	6.6	39.6	28.5	75.9	6.5	17.6	0.3	1.77	18.3	15.6	7.6
-7	173-203	Cg	0.0	0.4	2.8	20.4	20.0	43.6	5.8	50.6	0.1	1.58	25.4	24.8	20.7
Ocilla fine sand[4]:															
(S79FL-023-012)-1	0-18	Ap	0.0	3.4	22.0	54.1	11.2	90.7	6.4	2.9	7.9	1.54	9.9	5.9	2.5
-2	18-30	A21	0.2	2.9	20.8	53.2	12.7	89.8	7.4	2.8	11.0	1.48	8.8	4.8	2.0
-3	30-53	A22	0.2	3.1	21.3	52.0	13.1	89.7	7.7	2.6	5.3	1.62	8.0	4.6	2.2
-4	53-61	B1	0.2	2.7	17.6	51.8	13.4	85.7	8.2	6.1	1.6	1.69	11.5	7.6	3.2
-5	61-109	B21tg	0.2	2.1	16.0	37.8	9.7	65.8	11.9	22.3	1.2	1.36	29.1	24.8	14.2
-6	109-145	B22tg	0.3	2.3	15.7	33.2	8.3	59.8	8.6	31.6	0.9	1.40	28.1	25.7	16.5
-7	145-175	B23tg	0.3	2.7	18.2	34.5	7.5	63.2	6.4	30.4	0.7	1.65	20.4	17.4	11.7
-8	175-203	IICg	0.4	1.2	4.0	10.4	5.2	21.2	19.0	59.8	---	---	---	---	---

See footnotes at end of table.

TABLE 17.--PHYSICAL PROPERTIES OF SELECTED SOILS--Continued

Soil name and sample number[1]	Depth	Horizon	Particle-size distribution (mm)								Hydraulic conductivity	Bulk density (field moist)	Water content		
			Sand						Silt	Clay			1/10 bar	1/3 bar	15 bar
			Very coarse (2.0-1.0)	Coarse (1.0-0.5)	Medium (0.5-0.25)	Fine (0.25-0.10)	Very fine (0.10-0.05)	Total (2.0-0.05)	(0.05-0.002)	(<0.002)					
	cm		Percent								cm/hr	G/cm^3	---Percent (wt)--		
Oleno clay[2]:															
(S79FL-001-052)-1	0-15	A1	0.2	0.2	0.2	1.2	0.6	2.4	24.2	73.4	---	---	---	---	---
-2	15-46	B21g	0.0	0.0	0.2	0.2	0.4	0.8	17.5	81.7	---	---	---	---	---
-3	46-61	B22g	0.0	0.0	0.2	0.6	7.0	2.8	18.7	73.5	---	---	---	---	---
-4	61-81	B23g	0.0	0.6	3.8	14.0	0.0	18.4	29.8	51.8	---	---	---	---	---
-5	81-107	IIA21	0.1	3.1	14.8	50.5	0.0	68.5	27.1	4.4	---	---	---	---	---
-6	107-140	IIA22	0.1	3.3	16.7	47.7	18.0	67.8	24.1	8.1	---	---	---	---	---
-7	140-180	IIB1g	0.3	2.7	12.5	45.4	0.8	61.7	23.9	14.4	---	---	---	---	---
-8	180-196	IIB2g	0.1	0.9	11.5	35.8	15.5	63.8	6.0	30.2	---	---	---	---	---
-9	196-208	IICg	0.7	1.4	1.3	3.8	12.4	19.6	11.6	68.8	---	---	---	---	---
Pantego fine sandy loam[2]:															
(S79FL-023-011)-1	0-30	A11	0.1	1.3	7.4	39.6	15.5	63.9	22.5	13.6	3.7	1.22	35.4	23.2	7.6
-2	30-43	A12	0.0	1.5	9.6	48.7	21.4	81.2	12.3	6.5	4.8	1.32	23.8	15.9	5.7
-3	43-46	A2	---	---	---	---	---	---	---	---	---	---	---	---	---
-4	46-178	B21tg	0.0	0.6	8.8	42.0	6.4	57.8	7.2	35.0	0.1	1.42	30.3	27.7	18.1
-5	178-203	B22tg	0.0	0.4	11.4	56.2	2.0	70.0	5.8	24.2	0.2	1.49	26.3	21.7	13.9
Pelham fine sand[2]:															
(S80FL-023-019)-1	0-15	Ap	0.0	0.6	8.1	65.4	14.9	89.0	7.2	3.8	7.9	1.39	22.8	16.9	3.5
-2	15-25	A21	0.0	0.5	9.3	73.2	7.8	90.8	7.0	2.2	3.5	1.55	14.2	8.4	2.5
-3	25-41	A22	0.0	0.6	6.8	68.8	14.8	91.0	6.5	2.5	4.3	1.61	13.2	6.9	2.5
-4	41-79	A23	0.0	0.6	8.2	71.5	11.2	91.5	5.5	3.0	6.1	1.56	13.9	7.7	2.3
-5	79-130	B21tg	0.0	0.4	6.6	58.4	9.2	74.6	5.3	20.1	0.5	1.66	19.1	16.9	7.8
-6	130-168	B22tg	0.0	0.4	6.0	59.0	9.4	74.8	3.0	22.2	0.3	1.64	21.8	21.0	11.8
-7	168-203	Cg	0.0	0.4	6.2	65.2	9.0	80.8	2.4	16.8	0.4	1.78	16.9	15.6	7.5
Plummer fine sand[2]:															
(S78FL-023-006)-1	0-10	A11	0.1	3.0	19.3	52.2	18.0	92.6	5.2	2.2	38.1	1.25	14.0	8.8	2.5
-2	10-23	A12	0.1	3.0	17.8	52.4	17.8	91.1	6.6	2.3	36.1	1.37	10.1	6.1	1.9
-3	23-68	A21	0.0	3.5	21.9	51.9	16.4	93.7	4.0	2.3	32.8	1.42	7.5	4.1	1.5
-4	68-84	A22	0.1	3.3	18.3	52.9	19.5	94.1	3.5	2.4	25.6	1.50	6.3	3.2	1.3
-5	84-99	A22	0.1	3.4	20.9	54.0	17.0	95.4	2.8	1.8	22.3	1.58	5.6	2.3	0.8
-6	99-142	A23	0.1	4.6	22.1	53.4	16.7	96.9	2.6	1.2	17.4	1.60	6.0	2.1	0.5
-7	142-147	B21tg	0.1	3.0	16.2	47.9	14.8	82.0	2.8	15.2	2.5	1.74	10.3	7.8	5.3
-8	147-203	B22tg	0.0	1.6	16.4	47.5	11.0	76.5	2.5	21.0	0.2	1.73	14.2	12.1	8.0

See footnotes at end of table.

TABLE 17.--PHYSICAL PROPERTIES OF SELECTED SOILS--Continued

Soil name and sample number[1]	Depth	Horizon	Particle-size distribution (mm)								Hydraulic conductivity	Bulk density (field moist)	Water content		
			Sand						Silt	Clay			1/10 bar	1/3 bar	15 bar
			Very coarse (2.0-1.0)	Coarse (1.0-0.5)	Medium (0.5-0.25)	Fine (0.25-0.10)	Very fine (0.10-0.05)	Total (2.0-0.05)	(0.05-0.002)	(<0.002)					
	cm		Percent								cm/hr	G/cm^3	Percent (wt)		
Surrency fine sandy loam[5]:															
(S78FL-023-007)-1	0-28	A11	0.0	1.0	9.1	40.7	20.7	71.5	21.6	6.9	3.4	1.06	49.2	35.7	9.8
-2	28-38	A12	0.1	1.5	11.0	50.4	28.0	91.0	6.0	3.0	12.7	1.54	11.7	5.3	2.2
-3	38-71	A21	0.0	1.5	11.7	50.0	34.4	97.6	1.9	0.5	13.1	1.62	7.9	3.0	1.9
-4	71-94	A22	0.0	1.8	11.6	46.4	36.0	95.8	2.9	1.3	7.0	1.69	9.2	3.4	1.4
-5	94-104	B21t	0.0	0.8	8.2	38.2	34.2	81.4	6.8	11.8	0.1	1.81	15.6	11.8	4.9
-6	104-170	B22tg	0.0	1.2	8.8	37.6	31.4	79.0	5.8	15.2	0.2	1.86	15.7	13.2	6.2
-7	170-203	B23tg	0.0	0.5	4.8	25.3	24.3	54.9	7.6	37.5	0.0	1.68	20.6	19.0	13.6
Troup fine sand[2]:															
(S79FL-023-008)-1	0-20	Ap	0.2	2.8	17.1	48.8	21.0	89.9	6.5	3.6	7.9	1.57	9.8	6.3	2.8
-2	20-96	A21	0.3	4.9	21.8	44.4	12.3	88.7	6.6	4.7	15.6	1.54	9.0	5.5	2.7
-3	96-132	A22	0.4	4.8	21.9	44.4	17.3	88.8	5.8	5.4	14.0	1.56	8.0	4.8	2.4
-4	132-147	B21t	0.3	4.3	17.0	38.5	16.8	76.9	6.3	16.8	3.2	1.64	15.7	11.5	6.5
-5	147-170	B22t	0.5	3.3	16.8	33.7	14.7	69.0	8.9	22.2	0.1	1.71	18.8	16.9	9.7
-6	170-203	B23t	0.3	3.7	18.8	30.9	12.4	66.1	7.9	26.0	0.1	1.66	20.9	19.2	11.9

[1] The number in parentheses is the Federal Information Processing Standards (FIPS) code identification number.

[2] The location of the sample is the same as that of the typical pedon described in the section "Soil Series and Their Morphology."

[3] Sample location: 0.2 mile north of Florida Highway 242 and 3 miles west of Florida Highway 247; SW1/4SW1/4 sec. 24, T. 4 S., R. 15 E.

[4] Sample location: 0.5 mile south of Suwannee Valley Road and 0.75 mile west of Parnell Road; NE1/4SW1/4 sec. 29, T. 2 S., R. 16 E.

[5] Sample location: 1.25 miles south of U.S. Highway 90 and 20 yards east of Florida Highway 252B; NE1/4NE1/4 sec. 10, T. 4 S., R. 16 E.

TABLE 18.--CHEMICAL PROPERTIES OF SELECTED SOILS

Soil series and sample number[1]	Depth	Horizon	Extractable bases					Extractable acidity	Sum of cations	Base saturation	Organic carbon	Electrical conductivity	pH			Pyrophosphate extractable			Dithionite-citrate extractable	
			Ca	Mg	Na	K	Sum						H_2O (1:1)	$CaCl_2$ (1:2)	KCl (1:1)	C	Fe	Al	Al	Fe
	cm		---Milliequivalents/100 grams of soil---							Pct	Pct	mmho /cm				Pct	Pct	Pct	Pct	Pct
Albany fine sand[2]:																				
(S78FL-023-002)-1	0-18	A1	0.25	0.09	0.00	0.01	0.35	4.38	4.73	7	1.51	0.05	5.1	4.4	4.1	---	---	---	---	---
-2	18-38	A21	0.09	0.05	0.00	0.01	0.15	2.05	2.20	7	0.64	0.04	5.4	4.8	4.5	---	---	---	---	---
-3	38-76	A22	0.03	0.02	0.00	0.00	0.05	1.57	1.62	3	0.32	0.03	5.1	4.6	4.4	---	---	---	---	---
-4	76-140	A23	0.00	0.00	0.00	0.00	0.00	0.34	0.34	---	0.09	0.03	5.2	4.7	4.5	---	---	---	---	---
-5	140-165	B1	0.44	0.42	0.00	0.01	0.87	2.78	3.65	24	0.11	0.07	4.9	4.4	4.1	---	---	---	---	---
-6	165-203	B2tg	0.17	0.40	0.00	0.08	0.65	8.72	9.37	7	0.14	0.03	4.9	4.1	3.9	---	---	---	0.20	2.49
Alpin fine sand[2]:																				
(S78FL-023-005)-1	0-15	A1	0.51	0.12	0.00	0.02	0.65	3.01	3.66	22	1.21	0.04	5.7	5.0	4.4	---	---	---	---	---
-2	15-38	A21	0.04	0.01	0.00	0.00	0.05	2.05	2.10	2	0.50	0.02	5.4	4.9	4.4	---	---	---	---	---
-3	38-69	A22	0.09	0.02	0.00	0.01	0.12	1.09	1.21	10	0.31	0.05	5.3	4.9	4.6	---	---	---	---	---
-4	69-97	A23	0.09	0.01	0.00	0.00	0.10	0.55	0.65	15	0.18	0.04	5.4	4.8	4.6	---	---	---	---	---
-5	97-132	A24	0.05	0.00	0.00	0.00	0.05	0.27	0.32	16	0.12	0.02	5.5	4.8	4.5	---	---	---	---	---
-6	132-203	A2&B1	0.12	0.05	0.00	0.00	0.17	0.68	0.85	20	0.06	0.03	5.6	5.0	4.5	---	---	---	---	---
Blanton fine sand[2]																				
(S78FL-023-003)-1	0-18	Ap	0.19	0.04	0.00	0.01	0.24	4.72	4.96	5	1.40	0.03	5.2	4.3	4.1	---	---	---	---	---
-2	18-94	A21	0.01	0.00	0.00	0.00	0.01	1.03	1.04	1	0.21	0.02	5.3	4.8	4.5	---	---	---	---	---
-3	94-132	A22	0.01	0.00	0.00	0.00	0.01	0.27	0.28	4	0.14	0.02	5.3	4.8	4.5	---	---	---	---	---
-4	132-157	B21t	0.25	0.25	0.00	0.01	0.51	4.17	4.68	11	0.31	0.05	4.8	4.1	4.0	---	---	---	0.09	0.31
-5	157-170	B22t	0.19	0.28	0.00	0.01	0.48	4.58	5.06	9	0.19	0.03	4.8	4.1	4.0	---	---	---	0.08	0.39
-6	170-203	B23t	0.11	0.30	0.00	0.02	0.43	4.41	4.84	9	0.10	0.03	4.8	4.1	3.9	---	---	---	0.07	0.17
Bonneau fine sand[2]																				
(S78FL-023-001)-1	0-18	A1	0.33	0.09	0.00	0.08	0.50	4.52	5.02	10	1.00	0.04	5.5	4.6	4.2	---	---	---	---	---
-2	18-38	A21	0.28	0.09	0.00	0.05	0.42	2.87	3.29	13	0.41	0.09	5.3	4.8	4.5	---	---	---	---	---
-3	38-69	A22	0.28	0.13	0.00	0.05	0.46	1.92	2.38	19	0.23	0.05	5.3	4.7	4.4	---	---	---	---	---
-4	69-76	B21t	2.85	1.69	0.00	0.15	4.69	6.43	11.12	42	0.43	0.07	5.1	4.4	4.0	---	---	---	0.17	0.82
-5	76-91	B21t	4.43	2.26	0.01	0.18	6.88	8.76	15.64	44	0.41	0.05	5.1	4.4	4.0	---	---	---	0.20	1.03
-6	91-147	B22t	5.23	2.63	0.03	0.20	8.09	14.17	22.26	36	0.19	0.04	5.1	4.2	3.8	---	---	---	0.25	1.15
-7	147-188	B23t	3.10	2.02	0.02	0.19	5.33	15.81	21.14	25	0.15	0.05	4.8	4.0	3.6	---	---	---	0.21	0.81
-8	188-203	B24t	1.45	1.40	0.00	0.15	3.00	14.17	17.17	17	0.08	0.04	4.7	3.9	3.6	---	---	---	0.17	0.59
Bonneau fine sand[3]																				
(S77FL-023-013)-1	2-18	A1	0.55	0.11	0.02	0.02	0.70	3.95	4.65	15	0.22	0.02	5.4	4.4	4.1	---	---	---	---	---
-2	18-43	A21	0.15	0.06	0.02	0.01	0.24	3.95	4.19	6	0.24	0.01	5.6	4.9	4.6	---	---	---	---	---
-3	43-61	A22	0.13	0.08	0.02	0.01	0.24	5.58	5.82	4	0.18	0.01	5.5	4.6	4.5	---	---	---	---	---
-4	61-74	B1	0.13	0.10	0.03	0.01	0.27	3.44	3.71	7	0.17	0.01	5.1	4.3	4.4	---	---	---	---	---
-5	74-94	B21t	0.22	0.19	0.03	0.02	0.46	5.11	5.57	8	0.18	0.02	5.1	4.2	4.3	---	---	---	0.13	0.52
-6	94-119	B22t	0.39	0.32	0.03	0.03	0.77	7.73	8.50	9	0.14	0.02	5.1	4.3	4.3	---	---	---	0.17	0.89
-7	119-203	B23t	0.17	0.51	0.04	0.03	0.75	12.20	12.95	6	0.10	0.01	5.1	4.1	4.1	---	---	---	0.30	2.68

See footnotes at end of table.

TABLE 18.--CHEMICAL PROPERTIES OF SELECTED SOILS--Continued

Soil series and sample number[1]	Depth	Horizon	Extractable bases					Extractable acidity	Sum of cations	Base saturation	Organic carbon	Electrical conductivity	pH			Pyrophosphate extractable			Dithionite-citrate extractable	
			Ca	Mg	Na	K	Sum						H_2O (1:1)	$CaCl_2$ (1:2)	KCl (1:1)	C	Fe	Al	Al	Fe
	cm		---Milliequivalents/100 grams of soil----							Pct	Pct	mmho /cm				Pct	Pct	Pct	Pct	Pct
Chiefland fine sand[2]:																				
(S80FL-023-018)-1	0-20	Ap	0.75	0.06	0.03	0.01	0.85	1.25	2.10	40	0.22	0.02	5.6	5.1	5.1	---	---	---	---	---
-2	20-84	A2	0.47	0.03	0.02	0.00	0.52	0.35	0.87	60	0.08	0.01	5.7	5.0	4.9	---	---	---	---	---
-3	84-99	B2t	11.24	0.11	0.06	0.03	11.44	1.80	13.24	86	0.23	0.03	6.7	6.5	6.5	---	---	---	0.07	0.22
Electra Variant fine sand[2]:																				
(S79FL-023-009)-1	0-10	A1	0.54	0.17	0.08	0.04	0.83	5.81	6.64	13	1.51	0.06	4.5	3.5	3.3	---	---	---	---	---
-2	10-61	A21	0.01	0.02	0.01	0.00	0.04	0.22	0.26	15	0.06	0.02	5.5	4.3	4.6	---	---	---	---	---
-3	61-86	A22	0.01	0.02	0.00	0.00	0.03	0.22	0.25	12	0.07	0.02	5.2	4.3	4.8	---	---	---	---	---
-4	86-96	A23	0.01	0.01	0.01	0.00	0.03	0.81	0.84	4	0.15	0.03	5.2	4.2	4.1	---	---	---	---	---
-5	96-117	B21h	0.02	0.02	0.02	0.00	0.06	8.88	8.94	1	1.16	0.04	4.6	3.9	3.8	0.47	0.00	0.08	0.07	0.03
-6	117-130	B22h	0.01	0.02	0.02	0.01	0.06	9.20	9.26	1	0.88	0.03	4.7	4.0	3.9	0.53	0.00	0.11	0.10	0.05
-7	130-135	B3	0.02	0.02	0.03	0.01	0.08	10.68	10.76	1	0.67	0.03	4.9	4.2	4.0	---	---	---	---	---
-8	135-145	B21t	0.26	0.24	0.04	0.03	0.57	14.13	14.70	4	0.41	0.02	5.0	4.1	4.0	---	---	---	---	---
-9	145-203	B22tg	1.25	0.90	0.07	0.07	2.29	12.59	14.88	15	0.22	0.02	5.1	4.1	3.9	---	---	---	---	---
Hurricane fine sand[2]:																				
(S80FL-023-016)-1	0-20	Ap	1.30	0.21	0.02	0.05	1.58	9.35	10.93	14	0.41	0.03	5.3	4.4	4.2	---	---	---	---	---
-2	20-46	A21	0.11	0.03	0.02	0.02	0.18	5.88	6.06	3	0.53	0.02	5.3	4.6	4.5	---	---	---	---	---
-3	46-81	A22	0.03	0.02	0.01	0.01	0.07	2.35	2.42	3	0.13	0.02	5.1	4.6	4.5	---	---	---	---	---
-4	81-142	A23	0.03	0.02	0.01	0.01	0.07	1.37	1.44	5	0.06	0.01	5.2	4.7	4.6	---	---	---	---	---
-5	142-165	B1h	0.04	0.02	0.01	0.01	0.08	2.88	2.96	3	0.21	0.01	5.4	4.8	4.7	0.05	0.01	0.06	0.06	0.01
-6	165-203	B2h	0.06	0.04	0.07	0.02	0.19	11.76	11.95	2	1.07	0.02	5.3	4.7	4.6	0.92	0.01	0.38	0.22	0.01
Ichetucknee fine sand[2]:																				
(S78FL-023-004)-1	0-13	Ap	0.31	0.07	0.00	0.02	0.40	6.77	7.17	6	1.63	0.07	4.6	3.8	3.7	---	---	---	---	---
-2	13-33	A2	0.71	0.16	0.00	0.01	0.88	2.80	3.68	24	0.82	0.04	5.3	4.5	4.3	---	---	---	---	---
-3	33-99	B21t	11.58	0.66	0.00	0.15	12.39	9.99	22.38	55	0.60	0.03	5.4	4.5	4.1	---	---	---	0.18	0.95
-4	99-140	B22t	13.83	0.82	0.13	0.26	15.04	26.05	41.09	37	0.77	0.07	6.5	6.0	5.8	---	---	---	0.26	1.57
Leon fine sand[2]:																				
(S80FL-023-017)-1	0-20	Ap	0.13	0.30	0.02	0.04	0.49	16.76	17.25	3	3.39	0.04	4.7	3.8	3.7	---	---	---	---	---
-2	20-48	A2	0.07	0.02	0.01	0.01	0.11	0.92	1.03	11	0.10	0.01	4.9	4.4	4.3	---	---	---	---	---
-3	48-58	B21h	0.43	0.12	0.01	0.01	0.57	12.06	12.63	5	1.26	0.02	4.8	3.7	3.6	1.10	0.01	0.13	0.07	0.03
-4	58-68	B22h	0.25	0.09	0.01	0.02	0.37	12.74	13.11	3	1.27	0.01	5.2	3.9	3.7	1.22	0.01	0.16	0.10	0.03
-5	68-137	B3	0.13	0.07	0.01	0.01	0.22	9.08	9.30	2	0.80	0.01	5.0	4.2	4.0	---	---	---	---	---
-6	137-165	B'21h	0.02	0.07	0.01	0.01	0.11	12.48	12.59	1	1.22	0.02	5.1	4.2	4.2	0.96	0.01	0.20	0.24	0.02
-7	165-203	B'22h	0.01	0.05	0.01	0.01	0.08	15.49	15.57	1	1.55	0.02	5.6	4.3	4.4	1.13	0.00	0.14	0.35	0.02

See footnotes at end of table.

TABLE 18.--CHEMICAL PROPERTIES OF SELECTED SOILS--Continued

Soil series and sample number[1]	Depth	Horizon	Extractable bases					Extractable acidity	Sum of cations	Base saturation	Organic carbon	Electrical conductivity	pH			Pyrophosphate extractable			Dithionite-citrate extractable	
			Ca	Mg	Na	K	Sum						H_2O (1:1)	$CaCl_2$ (1:2)	KCl (1:1)	C	Fe	Al	Al	Fe
	cm		---Milliequivalents/100 grams of soil----							Pct	Pct	mmho /cm				Pct	Pct	Pct	Pct	Pct
Lucy loamy fine sand[2]:																				
(S80FL-023-015)-1	0-15	A1	1.98	0.74	0.05	0.08	2.85	10.59	13.44	21	1.51	0.04	5.6	4.8	4.5	---	---	---	---	---
-2	15-30	A21	0.96	0.58	0.04	0.03	1.61	8.43	10.04	16	0.39	0.02	5.5	4.6	4.3	---	---	---	---	---
-3	30-56	A22	0.80	0.66	0.05	0.03	1.54	6.60	8.14	19	0.21	0.02	5.5	4.5	4.2	---	---	---	---	---
-4	56-74	A23	1.19	0.95	0.05	0.04	2.23	6.47	8.70	26	0.11	0.02	5.5	4.6	4.3	---	---	---	0.12	0.48
-5	74-101	B21t	0.27	1.73	0.08	0.07	2.15	10.33	12.48	17	0.11	0.03	5.4	4.5	4.1	---	---	---	0.20	0.88
-6	101-178	B22t	0.20	1.77	0.07	0.07	2.11	10.26	12.37	17	0.06	0.01	5.6	4.4	4.2	---	---	---	0.16	0.67
-7	178-203	B23t	0.15	1.81	0.08	0.05	2.09	9.08	11.17	19	0.04	0.02	5.5	4.4	4.1	---	---	---	0.12	0.57
Mascotte fine sand[2]:																				
(S80FL-023-014)-1	0-18	Ap	0.46	0.28	0.06	0.03	0.83	10.20	11.03	8	2.44	0.05	4.0	3.0	2.9	---	---	---	---	---
-2	18-38	A2	0.03	0.02	0.02	0.01	0.08	2.25	2.33	3	0.29	0.01	4.9	3.6	3.5	---	---	---	---	---
-3	38-48	B21h	0.02	0.02	0.03	0.01	0.08	16.80	16.88	0	1.86	0.02	4.7	4.1	4.1	1.24	0.03	0.33	0.23	0.03
-4	48-64	B22h	0.02	0.02	0.03	0.00	0.07	11.50	11.57	1	0.86	0.02	4.9	4.4	4.4	0.75	0.03	0.33	0.22	0.03
-5	64-89	A'2	0.01	0.01	0.01	0.00	0.03	2.22	2.25	1	0.21	0.01	4.8	4.5	4.5	---	---	---	---	---
-6	89-94	B'h	0.02	0.02	0.02	0.00	0.06	10.65	10.71	1	0.98	0.02	4.8	4.3	4.3	0.85	0.02	0.24	0.14	0.03
-7	94-140	B'21tg	0.02	0.09	0.03	0.01	0.15	6.73	6.88	2	0.22	0.02	4.9	4.0	4.0	---	---	---	0.16	0.66
-8	140-173	B'22tg	0.02	0.09	0.04	0.01	0.16	5.78	5.94	3	0.11	0.02	5.0	3.9	3.9	---	---	---	0.06	0.18
-9	173-203	Cg	0.04	0.14	0.05	0.01	0.24	5.39	5.63	4	0.06	0.01	5.0	4.0	3.9	---	---	---	---	---
Ocilla fine sand[2]:																				
(S79FL-023-010)-1	0-23	Ap	1.29	0.35	0.06	0.13	1.83	7.31	9.41	20	1.00	0.04	5.9	5.0	4.9	---	---	---	---	---
-2	23-48	A21	0.15	0.04	0.19	0.08	0.46	4.06	4.52	10	0.52	0.04	6.2	4.9	4.5	---	---	---	---	---
-3	48-66	A22	0.03	0.03	0.03	0.02	0.11	1.43	1.54	7	0.11	0.03	5.3	4.6	4.4	---	---	---	---	---
-4	66-81	A23	0.06	0.06	0.06	0.02	0.20	1.49	1.69	12	0.05	0.04	5.1	4.4	4.1	---	---	---	---	---
-5	81-132	B21tg	0.60	0.31	0.05	0.03	0.99	5.77	6.76	15	0.11	0.06	4.6	4.2	4.1	---	---	---	0.08	0.25
-6	132-173	B22tg	0.09	0.28	0.05	0.01	0.43	5.20	5.63	8	0.06	0.02	5.0	4.0	4.0	---	---	---	0.07	0.24
-7	173-203	Cg	0.31	1.11	0.08	0.03	1.53	8.65	10.18	15	0.04	0.03	4.9	4.3	3.7	---	---	---	---	---
Ocilla fine sand[4]:																				
(S79FL-023-012)-1	0-18	Ap	1.33	0.53	0.02	0.12	2.00	5.05	7.05	28	0.59	0.02	6.3	5.4	5.0	---	---	---	---	---
-2	18-30	A21	0.23	0.15	0.01	0.04	0.43	5.50	5.93	7	0.22	0.01	5.9	4.7	4.4	---	---	---	---	---
-3	30-53	A22	0.14	0.07	0.01	0.02	0.24	2.41	2.65	9	0.10	0.01	5.8	4.7	4.5	---	---	---	---	---
-4	53-61	B1	0.33	0.09	0.02	0.02	0.46	4.12	4.58	10	0.10	0.01	5.4	4.3	4.3	---	---	---	---	---
-5	61-109	B21tg	0.92	0.58	0.07	0.06	1.63	39.02	40.65	4	0.03	0.02	4.9	4.0	3.8	---	---	---	0.26	1.20
-6	109-145	B22tg	0.65	0.88	0.07	0.07	1.67	31.96	33.63	5	0.11	0.02	4.8	3.8	3.7	---	---	---	0.19	0.74
-7	145-175	B23tg	0.84	1.79	0.11	0.10	2.84	26.55	29.39	10	0.06	0.02	4.9	3.9	3.6	---	---	---	0.14	0.96
-8	175-203	IICg	2.75	13.27	0.66	0.64	17.42	60.57	77.99	22	0.77	0.02	5.1	3.8	3.2	---	---	---	---	---

See footnotes at end of table.

TABLE 18.--CHEMICAL PROPERTIES OF SELECTED SOILS--Continued

Soil series and sample number[1]	Depth	Horizon	Extractable bases					Extractable acidity	Sum of cations	Base saturation	Organic carbon	Electrical conductivity	pH			Pyrophosphate extractable			Dithionite-citrate extractable	
			Ca	Mg	Na	K	Sum						H_2O (1:1)	$CaCl_2$ (1:2)	KCl (1:1)	C	Fe	Al	Al	Fe
	cm		---Milliequivalents/100 grams of soil---							Pct	Pct	mmho /cm				Pct	Pct	Pct	Pct	Pct
Oleno clay[2]:																				
(S79FL-001-052)-1	0-15	A1	7.95	4.86	0.31	0.23	13.35	33.98	47.33	28	1.39	0.55	4.7	3.8	3.2	---	---	---	---	---
-2	15-46	B21g	9.45	4.86	0.46	0.20	14.97	36.08	51.05	29	0.68	0.06	4.4	3.7	3.0	---	---	---	---	---
-3	46-61	B22g	6.45	4.03	0.53	0.19	11.20	30.58	41.78	27	0.46	0.18	4.0	3.6	2.8	---	---	---	---	---
-4	61-81	B23g	76.45	0.25	0.35	0.06	77.11	19.19	96.30	80	0.41	0.10	4.2	3.6	2.9	---	---	---	---	---
-5	81-107	IIA21	0.43	0.10	0.02	0.00	43.12	1.40	44.52	97	0.07	0.02	5.2	4.3	4.0	---	---	---	---	---
-6	107-140	IIA22	2.15	0.32	0.07	0.01	2.55	3.60	5.65	45	0.08	0.01	5.2	4.1	3.6	---	---	---	---	---
-7	140-180	IIB1g	6.25	0.49	0.15	0.08	6.97	4.40	11.37	61	0.12	0.04	5.8	5.0	4.5	---	---	---	---	---
-8	180-196	IIB2g	5.95	0.98	0.30	0.12	7.35	6.60	13.95	53	0.13	0.08	6.2	5.5	4.9	---	---	---	---	---
-9	196-208	IICg	18.70	3.00	0.77	0.35	22.82	11.99	34.81	66	0.26	0.17	6.8	6.0	5.6	---	---	---	---	---
Pantego fine sandy loam[2]:																				
(S79FL-023-011)-1	0-30	A11	1.38	0.78	0.11	0.19	2.46	28.85	31.31	8	4.76	0.06	5.0	4.4	4.0	---	---	---	---	---
-2	30-43	A12	0.16	0.09	0.03	0.03	0.31	13.02	13.33	2	1.63	0.06	4.8	4.1	4.0	---	---	---	---	---
-3	43-46	A2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
-4	46-178	B21tg	1.36	1.27	0.23	0.19	3.05	16.24	19.29	16	0.16	0.06	4.8	4.1	3.4	---	---	---	0.18	0.73
-5	178-203	B22tg	1.42	1.77	0.40	0.13	3.72	8.83	12.55	30	0.06	0.07	4.9	4.2	3.8	---	---	---	---	---
Pelham fine sand[2]:																				
(S80FL-023-019)-1	0-15	Ap	0.14	0.13	0.07	0.02	0.36	9.29	9.65	4	1.98	0.04	4.2	3.9	3.9	---	---	---	---	---
-2	15-25	A21	0.02	0.02	0.03	0.00	0.07	4.88	4.95	1	0.77	0.02	4.5	4.6	4.6	---	---	---	---	---
-3	25-41	A22	0.01	0.01	0.02	0.00	0.04	3.48	3.52	1	0.41	0.02	4.4	5.0	5.0	---	---	---	---	---
-4	41-79	A23	0.02	0.02	0.03	0.00	0.07	3.41	3.48	2	0.43	0.01	4.1	4.9	4.9	---	---	---	---	---
-5	79-130	B21tg	0.02	0.06	0.05	0.00	0.13	5.12	5.25	2	0.20	0.01	3.9	4.3	4.2	---	---	---	0.14	0.38
-6	130-168	B22tg	0.02	0.11	0.07	0.00	0.19	5.11	5.30	4	0.13	0.04	3.9	4.2	4.1	---	---	---	0.13	0.73
-7	168-203	Cg	0.02	0.09	0.10	0.00	0.21	3.81	4.02	5	0.04	0.03	4.0	4.2	4.5	---	---	---	---	---
Plummer fine sand[2]																				
(S78FL-023-006)-1	0-10	A11	0.18	0.10	0.00	0.04	0.32	9.92	10.24	3	1.12	0.04	4.5	3.7	3.6	---	---	---	---	---
-2	10-23	A12	0.09	0.07	0.00	0.01	0.17	6.30	6.47	3	0.77	0.01	5.0	4.4	4.1	---	---	---	---	---
-3	23-68	A21	0.03	0.02	0.00	0.01	0.06	3.70	3.76	2	0.71	0.01	5.2	4.6	4.4	---	---	---	---	---
-4	68-84	A22	0.01	0.01	0.00	0.03	0.05	1.98	2.03	2	0.09	0.01	5.2	4.6	4.5	---	---	---	---	---
-5	84-99	A22	0.02	0.02	0.00	0.04	0.08	1.10	1.18	7	0.08	0.01	5.1	4.6	4.5	---	---	---	---	---
-6	99-142	A23	0.01	0.01	0.00	0.03	0.05	0.41	0.46	11	0.05	0.01	5.2	4.6	4.6	---	---	---	---	---
-7	142-147	B21tg	0.05	0.22	0.00	0.02	0.29	4.86	5.15	6	0.09	0.02	4.9	4.2	4.1	---	---	---	0.07	0.02
-8	147-203	B22tg	0.04	0.29	0.00	0.03	0.36	6.88	7.24	5	0.11	0.03	4.7	4.0	3.9	---	---	---	0.08	0.03
Surrency fine sandy loam[5]:																				
(S78FL-023-007)-1	0-28	A11	0.06	0.08	0.00	0.02	0.16	49.28	49.44	---	5.98	0.09	4.4	3.7	3.7	---	---	---	---	---
-2	28-38	A12	0.02	0.02	0.00	0.01	0.05	12.73	12.78	---	1.86	0.03	4.6	3.9	3.8	---	---	---	---	---
-3	38-71	A21	0.01	0.01	0.00	0.03	0.04	0.96	1.00	4	0.18	0.01	4.9	4.3	4.2	---	---	---	---	---
-4	71-94	A22	0.01	0.01	0.00	0.04	0.06	1.17	1.23	5	0.15	0.01	4.7	4.3	4.2	---	---	---	---	---
-5	94-104	B21t	0.13	0.03	0.16	0.02	0.34	5.61	5.95	6	0.22	0.04	5.4	4.0	4.0	---	---	---	0.06	0.04
-6	104-170	B22tg	0.05	0.04	0.00	0.03	0.12	5.44	5.56	2	0.14	0.02	4.9	3.9	3.8	---	---	---	0.05	0.03
-7	170-203	B23tg	0.09	0.26	0.07	0.09	0.51	12.73	13.24	4	0.13	0.01	4.9	3.8	3.6	---	---	---	0.09	0.06

See footnotes at end of table.

TABLE 18.--CHEMICAL PROPERTIES OF SELECTED SOILS--Continued

Soil series and sample number[1]	Depth	Horizon	Extractable bases					Extractable acidity	Sum of cations	Base saturation	Organic carbon	Electrical conductivity	pH			Pyrophosphate extractable			Dithionite-citrate extractable	
			Ca	Mg	Na	K	Sum						H_2O (1:1)	$CaCl_2$ (1:2)	KCl (1:1)	C	Fe	Al	Al	Fe
	cm		---Milliequivalents/100 grams of soil---							Pct	Pct	mmho/cm				Pct	Pct	Pct	Pct	Pct
Troup fine sand[2]:																				
(S78FL-023-008)-1	0-20	Ap	1.34	0.57	0.03	0.25	2.19	4.79	6.98	31	0.76	0.06	6.6	5.7	5.2	---	---	---	---	---
-2	20-96	A21	0.54	0.16	0.05	0.04	0.79	3.74	4.53	17	0.22	0.05	5.5	4.6	4.6	---	---	---	---	---
-3	96-132	A22	0.77	0.34	0.02	0.05	1.18	2.98	4.16	28	0.07	0.06	5.6	4.9	4.8	---	---	---	---	---
-4	132-147	B21t	1.34	0.99	0.05	0.06	2.44	6.46	8.90	27	0.12	0.04	5.8	5.0	5.2	---	---	---	0.23	1.56
-5	147-170	B22t	1.34	1.77	0.07	0.09	3.27	10.37	13.64	24	0.12	0.06	4.5	5.1	4.6	---	---	---	0.31	2.11
-6	170-203	B23t	1.31	2.10	0.07	0.09	3.57	9.63	13.20	27	0.11	0.06	5.4	4.9	5.2	---	---	---	0.31	2.24

[1] The number in parentheses is the Federal Information Processing Standards (FIPS) code identification number.

[2] The location of the sample is the same as that of the typical pedon described in the section "Soil Series and Their Morphology."

[3] Sample location: 0.2 mile north of Florida Highway 242 and 3 miles west of Florida Highway 247; SW1/4SW1/4 sec. 24, T. 4 S., R. 15 E.

[4] Sample location: 0.5 mile south of Suwannee Valley Road and 0.75 mile west of Parnell Road; NE1/4SW1/4 sec. 29, T. 2 S., R. 16 E.

[5] Sample location: 1.25 miles south of U.S. Highway 90 and 200 yards east of Florida Highway 252B; NE1/4NE1/4 sec. 10, T. 4 S., R. 16 E.

TABLE 19.--CLAY MINERALOGY OF SELECTED SOILS

Soil series and sample number[1]	Depth	Horizon	Percentage of clay minerals				
			Montmorillonite	14-Angstrom intergrade	Kaolinite	Gibbsite	Quartz
	cm		Pct	Pct	Pct	Pct	Pct
Albany fine sand[2]:							
(S78FL-023-002)-1	0-18	A1	0	57	28	0	15
-4	76-140	A23	0	57	27	0	16
-6	165-203	B2tg	0	14	76	0	10
Alpin fine sand[2]:							
(S78FL-023-005)-1	0-15	A1	0	57	28	0	15
-4	69-97	A23	0	58	29	0	13
-6	132-203	A2&B1	0	46	43	0	11
Blanton fine sand[2]:							
(S78FL-023-003)-1	0-18	Ap	0	52	29	0	19
-4	132-157	B21t	0	29	36	10	25
-6	170-203	B23t	0	20	52	11	17
Bonneau fine sand[2]:							
(S78FL-023-001)-1	0-18	A1	0	41	32	0	27
-4	69-76	B21t	32	27	27	0	14
-6	91-147	B22t	66	5	14	0	15
-8	188-203	B24t	85	0	10	0	5
Bonneau fine sand[3]:							
(S77FL-023-013)-1	2-18	A1	0	52	35	0	13
-5	74-94	B21t	0	46	41	0	13
-7	119-203	B23t	0	39	55	0	6
Chiefland fine sand[2]:							
(S80FL-023-018)-1	0-20	Ap	37	21	14	0	28
-3	84-99	B2t	45	12	27	0	16
Electra Variant fine sand[2]:							
(S79FL-023-009)-1	0-10	A1	51	19	0	0	30
-5	96-117	B21h	25	26	9	0	40
-8	135-145	B21t	0	48	28	0	24
-9	145-203	B22tg	12	42	38	0	8
Hurricane fine sand[2]:							
(S80FL-023-016)-1	0-20	Ap	0	31	9	0	60
-3	46-81	A22	0	39	10	0	51
-6	165-203	B2h	0	0	0	0	100
Ichetucknee fine sand[2]:							
(S78FL-023-004)-1	0-13	Ap	0	36	47	0	17
-3	33-99	B21t	12	9	69	0	17
-4	99-140	B22t	16	8	71	0	10
Leon fine sand[2]:							
(S80FL-023-017)-1	0-20	Ap	15	10	15	0	60
-3	48-58	B21h	14	17	10	0	59
-6	137-165	B'21h	0	0	0	0	100
Lucy loamy fine sand[2]:							
(S80FL-023-015)-1	0-15	A1	0	36	29	0	35
-5	74-101	B21t	25	28	28	0	19
-7	178-203	B23t	19	29	33	0	19
Mascotte fine sand[2]:							
(S80FL-023-014)-1	0-18	Ap	11	0	12	0	77
-3	38-48	B21h	11	14	8	0	67
-6	89-94	B'h	9	33	12	0	46
-7	94-140	B'21tg	7	42	38	0	13
-9	173-203	Cg	9	14	72	0	5
Ocilla fine sand[2]:							
(S79FL-023-010)-1	0-23	Ap	0	52	31	0	17
-5	81-132	B21tg	0	41	52	0	7
-7	173-203	Cg	0	21	77	0	2

See footnotes at end of table.

TABLE 19.--CLAY MINERALOGY OF SELECTED SOILS--Continued

Soil series and sample number[1]	Depth	Horizon	Percentage of clay minerals				
			Montmorillonite	14-Angstrom intergrade	Kaolinite	Gibbsite	Quartz
	cm		Pct	Pct	Pct	Pct	Pct
Ocilla fine sand[4]:							
(S79FL-023-012)-1	0-18	Ap	17	45	15	0	23
-5	61-109	B21tg	49	32	0	0	19
-8	175-203	IICg	100	0	0	0	0
Oleno clay[2]:							
(S79FL-001-052)-1	0-15	A1	71	9	6	0	14
-3	46-61	B22g	84	4	4	0	8
-7	140-180	IIB1g	90	0	5	0	5
-9	196-208	IICg	60	12	20	0	8
Pantego fine sandy loam[2]:							
(S79FL-023-011)-1	0-30	A11	0	43	24	0	33
-4	46-178	B21tg	21	16	55	0	8
-5	178-203	B22tg	53	9	25	0	13
Pelham fine sand[2]:							
(S80FL-023-019)-1	1-15	Ap	0	30	31	0	39
-5	79-130	B21tg	0	28	61	0	11
-7	168-203	Cg	11	13	70	0	6
Plummer fine sand[2]:							
(S80FL-023-006)-1	0-10	A11	0	44	22	0	34
-7	142-147	B21tg	0	42	50	0	8
-8	147-203	B22tg	0	41	59	0	0
Surrency fine sandy loam[5]:							
(S78FL-023-007)-1	0-28	A11	0	43	57	0	0
-5	94-104	B21t	0	35	54	0	11
-6	104-170	B22tg	0	28	61	0	10
Troup fine sand[2]:							
(S78FL-023-008)-1	0-20	Ap	0	52	31	0	17
-4	132-147	B21t	0	53	41	0	6
-5	147-170	B22t	0	56	44	0	0

[1] The number in parentheses is the Federal Information Processing Standards (FIPS) identification number.

[2] The location of the sample is the same as that of the typical pedon described in the section "Soil Series and Their Morphology."

[3] Sample location: 0.2 mile north of Florida Highway 242 and 3 miles west of Florida Highway 247; SW1/4SW1/4 sec. 24, T. 4 S., R. 15 E.

[4] Sample location: 0.5 mile south of Suwannee Valley Road and 0.75 mile west of Parnell Road; NE1/4SW1/4 sec. 29, T. 2 S., R. 16 E.

[5] Sample location: 1.25 miles south of U.S. Highway 90 and 200 yards east of Florida Highway 252B; NE1/4NE1/4 sec. 10, T. 4 S., R. 16 E.

TABLE 20.--ENGINEERING INDEX TEST DATA

Soil name, sample number, horizon, and depth in inches	Classification		Grain-size distribution: Percentage passing sieve--				Grain-size distribution: Percentage smaller than--				Liquid limit	Plasticity index[1]	Moisture density	
	AASHTO	Unified	No. 4	No. 10	No. 40	No. 200	0.05 mm	0.02 mm	0.005 mm	0.002 mm			Max. dry density	Optimum moisture
											Pct		Lb/ft^3	Pct
Albany fine sand[2]: (S78FL-023-002)														
A23----------30-55	A-2-4(0)	SM	100	100	98	21	11	2	0	0	--	NP	106.8	12.7
B2tg----------65-80	A-6(04)	SC	100	100	98	48	42	35	31	30	31	15	106.9	12.8
Alpin fine sand[2]: (S78FL-023-005)														
A23----------27-38	A-2-4(0)	SM	100	100	98	13	7	0	0	0	--	NP	106.4	13.6
A2&B1----------52-80	A-2-4(0)	SP-SM	100	100	97	11	7	4	3	3	--	NP	105.6	12.7
Blanton fine sand[2]: (S78FL-023-003)														
A21----------7-37	A-2-4(0)	SM	100	100	98	14	3	0	0	0	--	NP	107.6	16.3
B23t----------67-80	A-2-4(0)	SM	100	100	98	35	29	21	19	18	--	NP	118.5	11.4
Bonneau fine sand[2]: (S78FL-023-001)														
B22t----------36-58	A-7-6(03)	SC	100	100	99	39	36	34	34	33	41	21	103.4	17.8
B24t----------74-80	A-2-6(01)	SC	100	100	100	29	27	24	22	22	32	14	106.2	17.8
Bonneau fine sand[3]: (S77FL-023-013)														
A21----------7-17	A-2-4(0)	SM	100	100	98	18	11	4	0	0	--	NP	105.6	19.3
B23t----------47-80	A-7-6(06)	SC	100	100	99	44	40	34	29	28	41	23	108.0	11.4
Chiefland fine sand[2]: (S80FL-023-018)														
A2----------8-33	A-2-4(0)	SM	100	100	95	19	17	5	2	1	--	NP	108.5	12.0
Electra Variant fine sand[2]: (S79FL-023-009)														
A21----------4-24	A-3(0)	SP-SM	100	100	93	10	6	2	0	0	--	NP	101.8	41.0
B21h----------38-46	A-2-4	SM	100	100	93	14	8	2	0	0	--	NP	107.6	12.4
B22tg----------57-80	A-2-4	SM	100	100	94	27	24	19	17	17	--	NP	113.7	13.7
Hurricane fine sand[2]: (S80FL-023-016)														
A22----------18-32	A-3(0)	SP-SM	100	100	97	9	5	1	0	0	--	NP	108.7	12.6
B2h----------65-80	A-2-4(0)	SP-SM	100	100	97	11	7	5	2	0	--	NP	107.0	12.7
Ichetucknee fine sand[2]: (S78FL-023-004)														
B21t----------13-39	A-7(07)	CL	100	100	100	59	54	49	46	46	43	14	98.4	20.1
Leon fine sand[2]: (S80FL-023-017)														
A2----------8-19	A-3(0)	SP-SM	100	100	98	5	2	0	0	0	--	NP	101.6	13.6
B3----------27-54	A-3(0)	SP-SM	100	100	98	10	6	2	1	0	--	NP	104.9	12.8
Lucy loamy fine sand[2]: (S80FL-023-015)														
A23----------12-22	A-2-4(0)	SM	100	100	92	23	17	11	7	7	--	NP	119.0	9.9
B2t----------29-70	A-2-4(0)	SM	100	100	93	32	27	23	20	19	--	NP	114.8	13.2
Mascotte fine sand[2]: (S80FL-023-014)														
B21h----------15-19	A-2-4(0)	SM	100	100	98	17	9	3	1	0	--	NP	107.1	13.2
B'21tg----------37-55	A-2-4(0)	SM	100	100	99	24	21	20	16	15	--	NP	117.7	11.6

See footnotes at end of table.

TABLE 20.--ENGINEERING INDEX TEST DATA--Continued

Soil name, sample number, horizon, and depth in inches	Classification		Grain-size distribution								Liquid limit	Plasticity index[1]	Moisture density	
			Percentage passing sieve--				Percentage smaller than--							
	AASHTO	Unified	No. 4	No. 10	No. 40	No. 200	0.05 mm	0.02 mm	0.005 mm	0.002 mm			Max. dry density	Optimum moisture
											Pct		Lb/ft^3	Pct
Ocilla fine sand[2]: (S79FL-023-010)														
A22----------19-26	A-2-4(0)	SM	100	100	97	18	11	4	3	3	--	NP	109.8	12.3
B22tg----------52-68	A-4(0)	SC	100	100	98	39	33	26	22	22	24	8	118.7	12.2
Ocilla fine sand[4]: (S79FL-023-012)														
A22----------12-21	A-2-4(0)	SM	100	94	87	14	10	5	2	1	--	NP	114.2	10.3
B22tg----------43-57	A-4(0)	SM	100	100	92	38	34	26	21	20	--	NP	98.9	21.0
Pantego fine sandy loam[2]: (S79FL-023-011)														
B2tg----------18-70	A-6(01)	SC	100	100	99	41	38	34	31	30	31	12	101.8	17.6
Pelham fine sand[2]: (S80FL-023-019)														
A23----------16-31	A-2-4(0)	SM	100	100	99	16	10	3	2	0	--	NP	110.6	11.2
B21tg----------31-51	A-2-4(0)	SM	100	100	99	28	23	18	16	15	--	NP	118.7	12.5
Plummer fine sand[2]: (S78FL-023-007)														
A23----------39-56	A-3(0)	SP-SM	100	100	93	8	7	4	2	2	--	NP	107.8	12.8
Surrency fine sandy loam[5]: (S78FL-023-007)														
A22----------28-37	A-2-4(0)	SM	100	100	97	14	8	1	0	0	--	NP	103.9	13.5
B22tg----------41-67	A-4(0)	SM	100	100	98	37	29	20	17	17	--	NP	118.8	11.4
Troup fine sand[2]: (S79FL-023-008)														
A21----------8-38	A-2-4(0)	SM	100	100	93	20	14	7	5	5	--	NP	116.7	9.3
B22t----------58-67	A-2-4(0)	SM	100	100	93	35	30	24	23	22	--	NP	116.1	15.0

[1] NP means nonplastic.

[2] The location of the sample is the same as that of the typical pedon described in the section "Soil Series and Their Morphology."

[3] Sample location: 0.2 mile north of Florida Highway 242 and 3 miles west of Florida Highway 247; SW1/4SW1/4 sec. 24, T. 4 S., R. 15 E.

[4] Sample location: 0.5 mile south of Suwanee Valley Road and 0.75 mile west of Parnell Road; NE1/4SW1/4 sec. 29, T. 2 S., R. 16 E.

[5] Sample location: 1.25 miles south of U.S. Highway 90 and 200 yards east of Florida Highway 252B; NE1/4NE1/4 sec. 10, T. 4 S., R. 16 E.

TABLE 21.--CLASSIFICATION OF THE SOILS

Soil name	Family or higher taxonomic class
Albany	Loamy, siliceous, thermic Grossarenic Paleudults
Alpin	Thermic, coated Typic Quartzipsamments
Bigbee	Thermic, coated Typic Quartzipsamments
Blanton	Loamy, siliceous, thermic Grossarenic Paleudults
Bonneau	Loamy, siliceous, thermic Arenic Paleudults
Chiefland	Loamy, siliceous, thermic Arenic Hapludalfs
Chipley	Thermic, coated Aquic Quartzipsamments
Dorovan	Dysic, thermic Typic Medisaprists
Electra Variant	Sandy, siliceous, thermic Arenic Ultic Haplohumods
Fort Meade Variant	Sandy, siliceous, thermic Quartzipsammentic Haplumbrepts
Goldsboro	Fine-loamy, siliceous, thermic Aquic Paleudults
Hurricane	Sandy, siliceous, thermic Grossarenic Entic Haplohumods
Ichetucknee	Fine, mixed, thermic Albaquultic Hapludalfs
Lakeland	Thermic, coated Typic Quartzipsamments
Leefield	Loamy, siliceous, thermic Arenic Plinthaquic Paleudults
Leon	Sandy, siliceous, thermic Aeric Haplaquods
Lucy	Loamy, siliceous, thermic Arenic Paleudults
Mandarin	Sandy, siliceous, thermic Typic Haplohumods
Mascotte	Sandy, siliceous, thermic Ultic Haplaquods
*Ocilla	Loamy, siliceous, thermic Aquic Arenic Paleudults
Oleno	Clayey over loamy, montmorillonitic, acid, thermic Vertic Haplaquepts
Olustee	Sandy, siliceous, thermic Ultic Haplaquods
Orangeburg	Fine-loamy, siliceous, thermic Typic Paleudults
Pamlico	Sandy or sandy-skeletal, siliceous, dysic, thermic Terric Medisaprists
Pantego	Fine-loamy, siliceous, thermic Umbric Paleaquults
Pedro Variant	Fine-loamy, siliceous, thermic, Lithic Hapludalfs
Pelham	Loamy, siliceous, thermic Arenic Paleaquults
Plummer	Loamy, siliceous, thermic Grossarenic Paleaquults
Sapelo	Sandy, siliceous, thermic Ultic Haplaquods
Surrency	Loamy, siliceous, thermic Arenic Umbric Paleaquults
Troup	Loamy, siliceous, thermic Grossarenic Paleudults
Udorthents	Udorthents

* The soil is a taxadjunct to the series. See text for a description of those characteristics of the soil that are outside the range of the series.

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