USDA United States Department of Agriculture

Natural Resources Conservation Service

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

Soil Survey of Lafayette County, Florida

How to Use This Soil Survey

General Soil Map

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

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

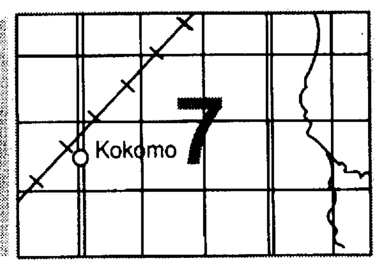
Detailed Soil Maps

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

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

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

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



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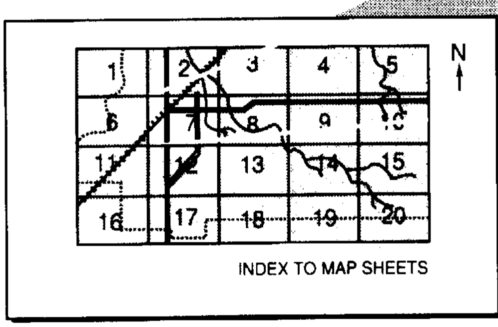

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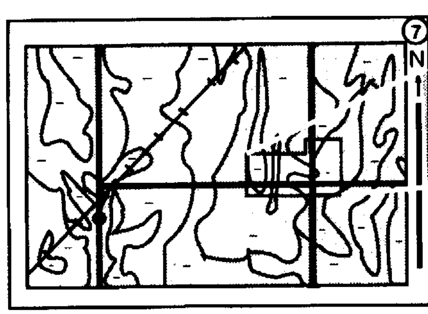

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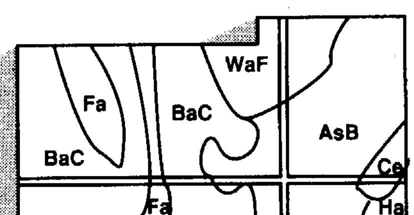

AREA OF INTEREST

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

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (formerly the Soil Conservation Service) has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 1991. Soil names and descriptions were approved in 1992. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1992. This survey was made cooperatively by the Natural Resources Conservation Service and the University of Florida's Institute of Food and Agricultural Sciences, Agricultural Experiment Stations, and Soil and Water Science Department; the Florida Department of Agricultural and Consumer Services; the Florida Department of Transportation; and the Lafayette County Board of Commissioners. The survey is part of the technical assistance furnished to the Lafayette County Soil and Water Conservation District.

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

Cover: An area of Otela-Penney complex, 0 to 5 percent slopes, in Lafayette County. The flowers are mostly phlox, and they enhance the beauty of the countryside.

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Issued 1998

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Foreword

This soil survey contains information that affects land use planning in Lafayette County. It contains predictions of soil behavior for selected land uses. The survey also highlights soil limitations, 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, ranchers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to ensure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. The information in this report is intended to identify soil properties that are used in making various land use or land treatment decisions. Statements made in this report are intended to help the land users identify and reduce the effects of soil limitations that affect various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

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 Natural Resources Conservation Service or the Cooperative Extension Service.

T. Niles Glasgow
State Conservationist
Natural Resources Conservation Service

Soil Survey of Lafayette County, Florida

By Robert L. Weatherspoon, Keith Anderson, William Anzalone, Richard Bednarek, John Chibirka, Eddie Cummings, Rodney Dahl, Charlie French, Dale Jakel, William R. Johnson, Richard W. Neilson, and Dan Shurtliff, Natural Resources Conservation Service

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

LAFAYETTE COUNTY is in the north-central part of Florida (fig. 1). It is more than 30 miles long and extends from the Madison County line to the Dixie County line. At its widest point, which is between the Suwannee River and Taylor County, the county is about 29 miles wide. Lafayette County is bounded on the west and southwest by Taylor County and on the south by Dixie County. The Suwannee River, made famous by Stephen Foster's song, separates Lafayette County from Suwannee and Gilchrist Counties to the east.

The total area of Lafayette County is about 348,928 acres, or about 545 square miles. The county seat is Mayo, which is located in the north-central part of the county.

In 1990 the population of Lafayette County was about 5,578, which represents an increase of 38 percent since 1980. During the same period, the population of Mayo increased about 3 percent to a total of 917. The housing developments and apartments within the city limits attract both townspeople and newcomers to the area.

Agriculture, forestry, timber, and dairy operations are the principal sources of income in Lafayette County, and many related enterprises support these industries.

Only the Eunola soils in Lafayette County meet all of the requirements for prime farmland soils, as defined by the U.S. Department of Agriculture. The other soils are either too wet as a result of the seasonal high water table or flooding or are too droughty during the growing season.

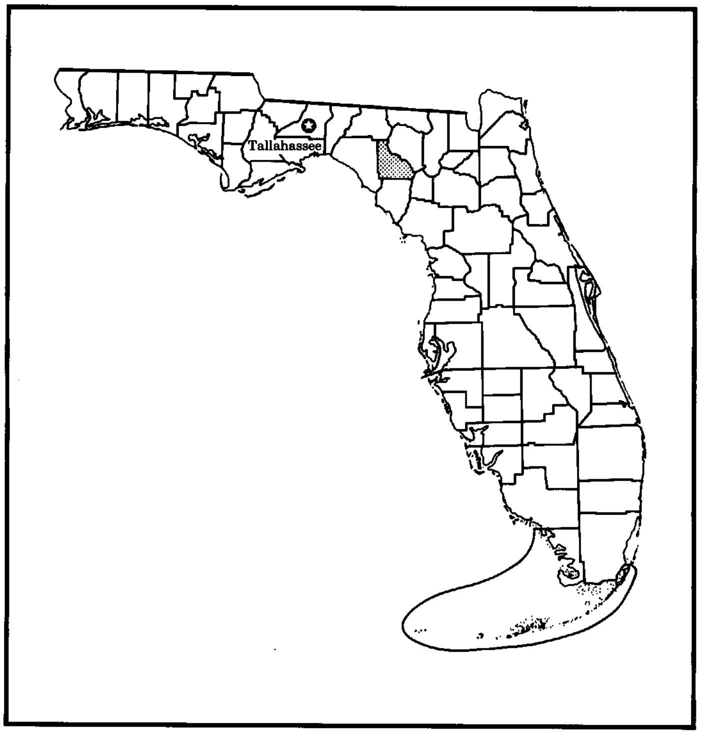

Figure 1.—Location of Lafayette County in Florida.

General Nature of the County

This section provides general information about the county. It describes the history and development; climate;

geomorphology, geology, and hydrogeology; mineral and energy resources; farming; recreation; and transportation.

History and Development

Lafayette County was created by an act of the General Assembly of Florida on December 23, 1856. The act created Lafayette and Taylor Counties out of part of Madison County, which was formed from part of Jackson County in 1827. The county was established eleven years after Florida was admitted into the union, and it was named in honor of Marquis de Lafayette.

Florida was occupied by three major group of Indians. The Calosa were in the southwestern part of the state, the Apalachees were west of the Aucilla River, and the Timicuas lived in an area that included present-day Lafayette County. The first European known to come into the survey area was the Spanish explorer, Navarez, who crossed the Suwannee River near present-day Old Town about May 17, 1528.

By 1650, the Spanish had established many missions between St. Augustine and Tallahassee. In April 1818, General Andrew Jackson successfully led two thousand Tennessee Volunteers and American Regulars and a large group of Creek Indians through the survey area to drive out the Seminole Indians on the Spanish-Florida border. Afterwards, settlers from Georgia, Alabama, and the Carolinas began migrating into the area. In 1860, the census reported 2,068 people in Lafayette County.

Most residents during this time were farmers or laborers. The crops that were grown in the area included cotton, corn, oats, rye, rice, sugarcane, and potatoes.

In the early 1900's, Lafayette County reached a peak population of almost 7,000 people, and new steel bridges spanned the Suwannee River at Brandford and Luraville. In 1921, the southern part of Lafayette County was lost when Dixie County was created.

Lafayette County currently has a population of 5,578 and a total area of 545 square miles, or 348,928 acres. Agriculture is still an important part of the economy. The county contains about 95,847 acres of cropland, which yields a gross income of $32,910, and 286,790 acres of woodland, which yields a gross income of $28,477,000. The main agricultural industries include dairy, beef, swine, and poultry operations; the production of field crops; and woodland operations. The main field crops include tobacco, watermelons, corn, peanuts, soybeans, peas, wheat, oats, and sorghum.

The major employers include Mayo Correctional, the Lafayette County School District, Lafayette County, FRP Industries, Central Florida Lands and Timber, Lafayette Forest Products, Gillman Paper Company, Croft's Thriftway, and J&J Gas Company.

Climate

Lafayette County has a moderate climate that is favorable for the production of crops, livestock, and pine forests. Summers are long, hot, and humid. Winters, although punctuated by periodic invasions of cool to occasionally cold air from the north, are generally mild because the county is located at a southern latitude and is only a short distance from the relatively warm Gulf of Mexico.

Table 1 gives data on temperature and precipitation for the survey area as recorded in the period 1957 to 1987. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

The mean annual precipitation in Lafayette County is 50.46 inches, based on data from nearby Perry, Florida. October and November are the driest months. About 60 percent of the annual precipitation falls from April through September. About once every 10 years, however, excessive rainfall during the spring causes rivers to overflow their banks. Heavy summer thundershowers can produce 2 or 3 inches of rainfall in 1 or 2 hours. Day-long rains during the summer are rare. They are generally associated with tropical storms. The average relative humidity is about 75 percent.

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

Tropical storms can strike the area any time from early June through November. Hurricane-force winds rarely develop because of the inland location of the county. The winds and rain associated with the tropical storms can cause timber and crop damage and local flooding.

Extended dry periods can occur any time during the year, but they are most common in the spring and fall. These dry periods can adversely affect the growth of plants and crops. The high temperatures in summer can also affect plants during dry periods because of the increased evaporation rate.

Tornadoes occasionally accompany heavy thunderstorms or tropical storms. They generally cause limited damage in local areas.

Geomorphology, Geology, and Hydrogeology

Jonathan D. Arthur, Florida Geological Survey, prepared this section.

Geomorphology

Lafayette County lies within both the Northern and Central geomorphic zones, according to White *(28)*. The Northern Zone is described as broad highlands that run

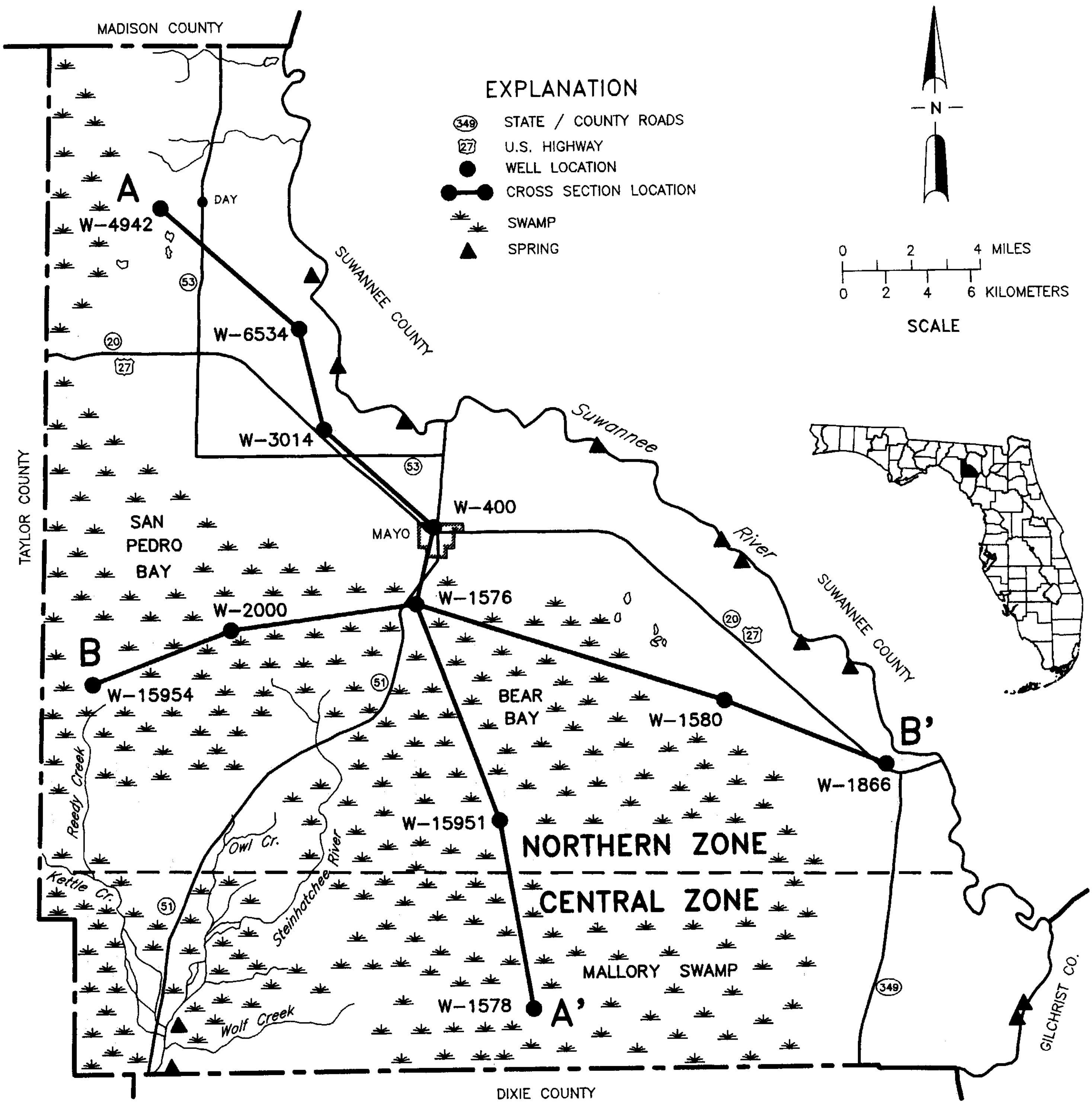

Figure 2.—Geomorphic features in Lafayette County and the locations of cross sections.

from the East Coast across the Florida Panhandle. The Central Zone generally consists of a series of valleys that separate coast-parallel ridges; however, none of the Central Zone ridges are within Lafayette County. The maximum elevations in Lafayette County are in the Northern Zone, and they are more than 120 feet above mean sea level (MSL). The lowest elevations, which are less than 25 feet MSL, are in the Suwannee River Basin in the southeastern part of the county and along the Steinhatchee River in the southwestern corner of the county.

The Gulf Coastal Lowlands is a major geomorphic province that lies within both the Northern and Central Zones. It encompasses all of Lafayette County. This geomorphic province is typically a flat, sandy plain that is commonly incised by river and stream valleys. It also contains relict beach ridge deposits and wetlands. In Lafayette County, however, the only paleo-coastal feature is the relatively flat topography due to terracing by Plio-Pleistocene seas. Healy's map of Florida's terraces and shorelines *(12)* indicates that most of the county lies within the elevation range of the Wicomico marine terrace, or about 70 to 100 feet above mean sea level.

Wetlands make up about one-half of Lafayette County (fig. 2). In addition to the flat, low-lying topography of the county, the location of these swampy areas is also controlled by hydrogeological factors. Refer to the "Hydrogeology" section for a discussion of the relationship between hydrogeology and the wetlands in Lafayette County.

The most extensive wetlands in the survey area are San Pedro Bay and Mallory Swamp. San Pedro Bay is along the western edge of the county, and Mallory Swamp is in the south-central third of the county. The surface drainage from Mallory Swamp is limited. Water drains toward the south and southwest, eventually draining into the Steinhatchee River in Dixie County via Eight Mile Creek. Mallory Swamp drains into the Suwannee River via one or two intermittent tributaries. San Pedro Bay is drained via tributaries of the Steinhatchee River, including Reedy, Wolf, Owl, and Kettle Creeks, which are in the

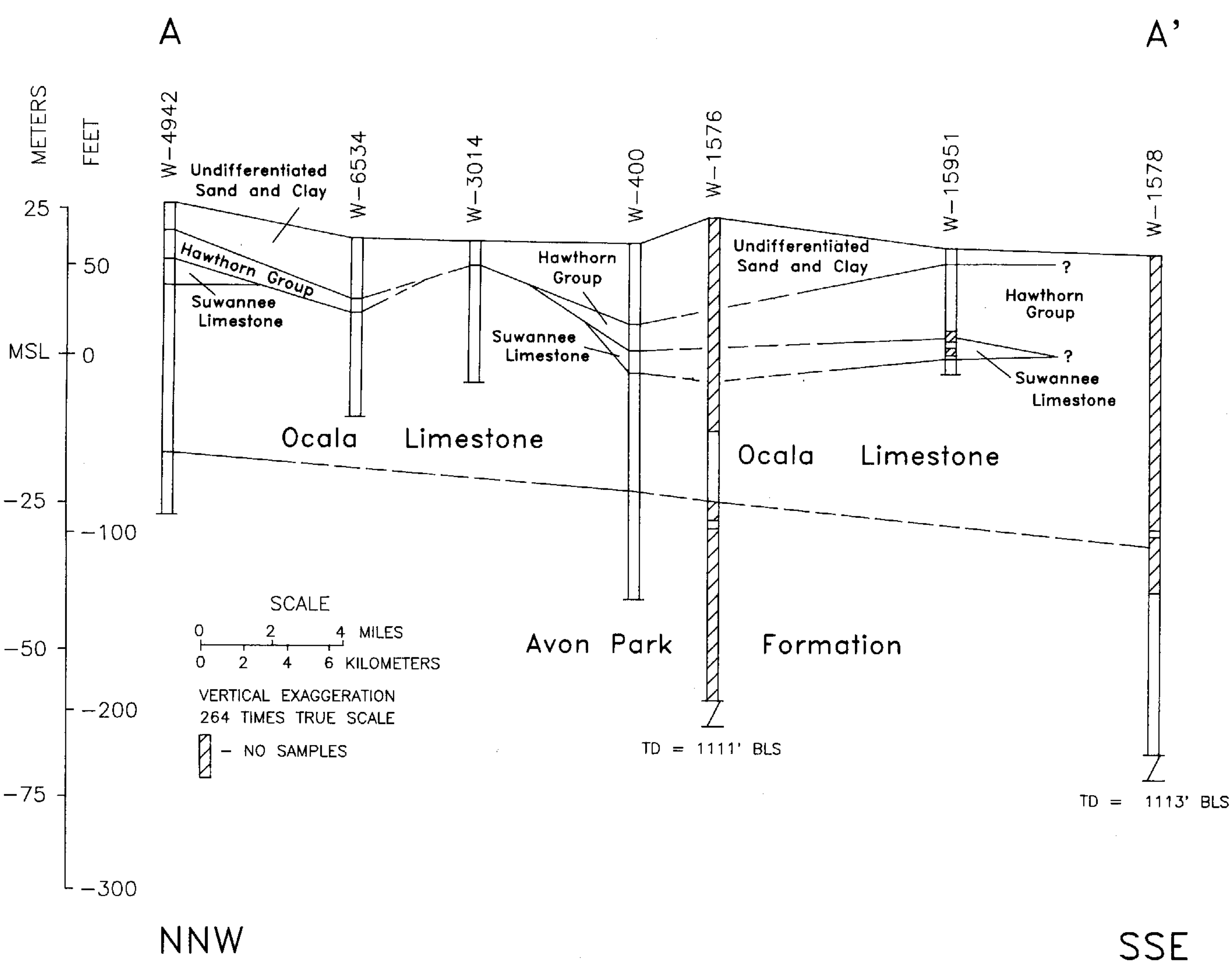

Figure 3.—Geologic cross section of A to A'.

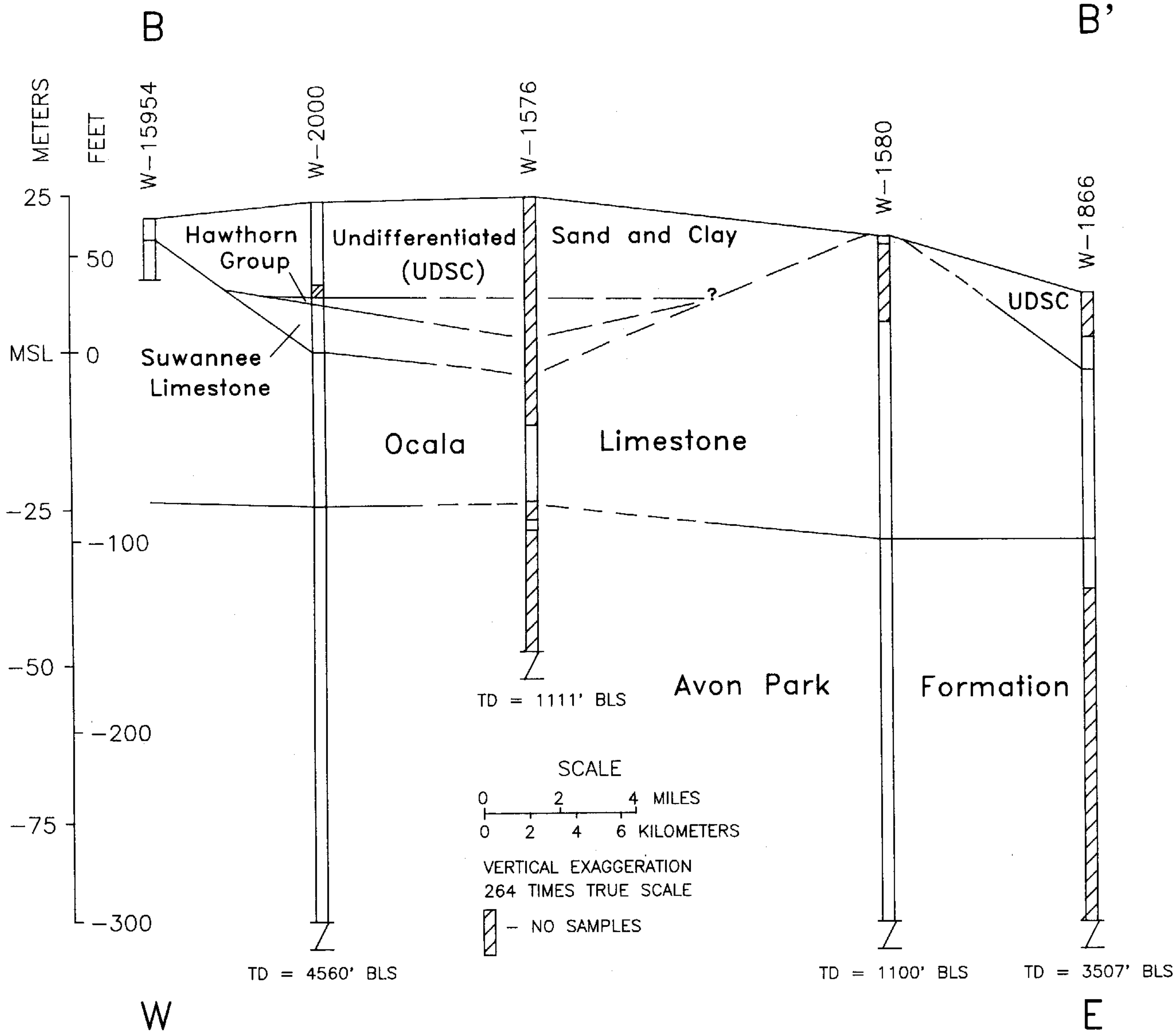

Figure 4.—Geologic cross section of B to B'.

southwestern part of Lafayette County. The head waters of the Steinhatchee River originate in the clayey sands in the central part of the county.

The Suwannee River makes up the eastern border of Lafayette County. The soils that are adjacent to the Suwannee River include the somewhat poorly drained Albany, Garcon, and Ousley soils and the very poorly drained Meadowbrook soils. The Suwannee River Valley extends three to five miles into Lafayette County and is floored by limestone. These Eocene limestones have outcrops along the river, especially during the dry season. Due to artesian conditions in the Floridan aquifer system (see the "Hydrogeology" section), numerous springs are along the Suwannee and Steinhatchee Rivers.

The springs in Lafayette County that flow into the Suwannee River include Alan Mill Pond and Blue, Convict, Fletcher, Mearson, Owens, Perry, Ruth, Troy, and Turtle Springs. Iron Spring and Steinhatchee Spring are associated with the Steinhatchee River. Of the 12 springs in Lafayette County, Troy Spring is the only one that is classified as a first magnitude spring *(20)*. This classification indicates that the spring has an average discharge of 100 cubic feet per second or more.

Geology

Lafayette County is underlain by several thousand feet of sedimentary rocks. The basement rocks beneath the region are made up of Paleozoic (Ordovician through Devonian) quartz sandstones and shales *(3)* which are found at a depth of more than 4,000 feet below land surface (bls). These rocks have been penetrated by oil test wells and are part of the Paleozoic Suwannee Basin. The oldest geologic unit penetrated by water wells is the Eocene Avon Park Formation. The Eocene through Oligocene units make up the upper part of the Floridan aquifer system in the region, which is the county's main source of drinking water. The following summary of the geology of Lafayette County will be limited to these Eocene-age and younger rocks. Figure 2 shows the location of geologic cross sections, which are shown in figures 3 and 4, depicting subsurface relationships of these geologic units. Interpretations in the cross sections are based on the analysis of wells shown in figure 2 and data from wells that are not shown. Figure 5 is a generalized geologic map that indicates the extent of near-surface (20 feet or less bls) stratigraphic units.

Eocene Series

Avon Park Formation. The Avon Park Formation *(17)* underlies all of Lafayette County. It generally consists of tan to buff dolostones and dolomitic limestones that have occasional organic-rich laminations. This formation ranges in age from approximately 47 to 43 million years old (mya), which corresponds to the Middle Eocene Epoch. The Lower to Middle Eocene Oldsmar Limestone lies beneath the Avon Park Formation in Lafayette County at a depth of more than 900 feet bls. The examination of well cuttings indicates that the uppermost part of the Avon Park Formation is generally a tan to grayish-orange, sucrosic dolostone. The most diagnostic fossils recognized in cuttings are the foraminifera *Dictyoconus* sp. and *Coskinolina floridana*. A variety of echinoids is also found in this unit. The Avon Park Formation is fairly uniform in thickness beneath Lafayette County, ranging from 500 to 700 feet thick *(17)*. It thickens to more than 800 feet in the south-bordering counties *(19)*. The top of the formation is between 110 to 160 feet bls and is unconformably overlain by the Ocala Limestone.

No samples were recovered from intervals at or very near the top of the Avon Park Formation in the three wells used in this study. These intervals may be indicative of cavities formed from carbonate dissolution at the formation boundary. Alternatively, the lack of recovery may be the result of washout of unconsolidated, possibly organic-rich sediments that are occasionally found in this stratigraphic position.

Ocala Limestone. The Ocala Limestone, which was first named by Dall and Harris *(8)*, consists of white to light gray limestone that has a diverse fossil assemblage. This formation is Late Eocene in age (approximately 40 to 38 mya) and contains characteristic fossils, such as the formaminifera *Lepidocyclina* sp. and echinoids such as *Eupatagus antillarum*. Other fossils observed in the unit include pelecypods, bryzoans, gastropods, and additional foraminifera such as *Nummulities*. The top of the Ocala Limestone is either a surface exposure or an unconformable contact with the Suwannee Limestone or the Hawthorn Group of undifferentiated sands and clays. Accordingly, the depth to the top of the formation ranges from the surface to approximately 90 feet bls. An analysis of well cuttings and core selected for this study suggests that the Ocala Limestone ranges in thickness from 70 to 160 feet.

Dolostones observed at the top of the Ocala Limestone may be part of the Steinhatchee Dolomite Member. The Steinhatchee Dolomite has been described by Puri as a tan, granular, impure dolostone that occurs in the basal position of the Crystal River Formation (upper Ocala Limestone) outcropping near Horseshoe Beach in Dixie County *(19)*. Scott *(22)*, however, has observed other dolostones that are similar in appearance and are interbedded with and at the top of the upper Ocala Limestone in the region. He notes that other unpublished field studies have found Oligocene-age fossils in some of these dolostone lithologies. In order to better understand the age, occurrence, and extent of the Steinhatchee Dolomite Member, further study is needed.

Oligocene Series

Suwannee Limestone. The occurrence of the Lower Oligocene Suwannee Limestone *(7)* beneath Lafayette County is sporadic. This unit, which ranges in age from 38 to 33 mya, consists of a thin discontinuous layer above the Ocala Limestone. It is unconformably overlain by Hawthorn Group sediments. The lithology of the Suwannee Limestone, as observed from well cuttings, ranges from a light to tannish gray limestone to a tan sucrosic dolostone. Fossils in the unit include gastropods, pelecypods, echinoids (for example, *Rhyncholampus gouldii*), abundant milliolids, and other benthic foraminifera, such as *Dictyoconus* sp. The top of the Suwannee Limestone is found at a depth of 30 to 80 feet bls. The thickness of the unit ranges from 0 to 25 feet. The formation erosionally pinches out to the northeast against the Ocala Limestone, where the Ocala occurs as a stratigraphic high and crops out in a band paralleling the

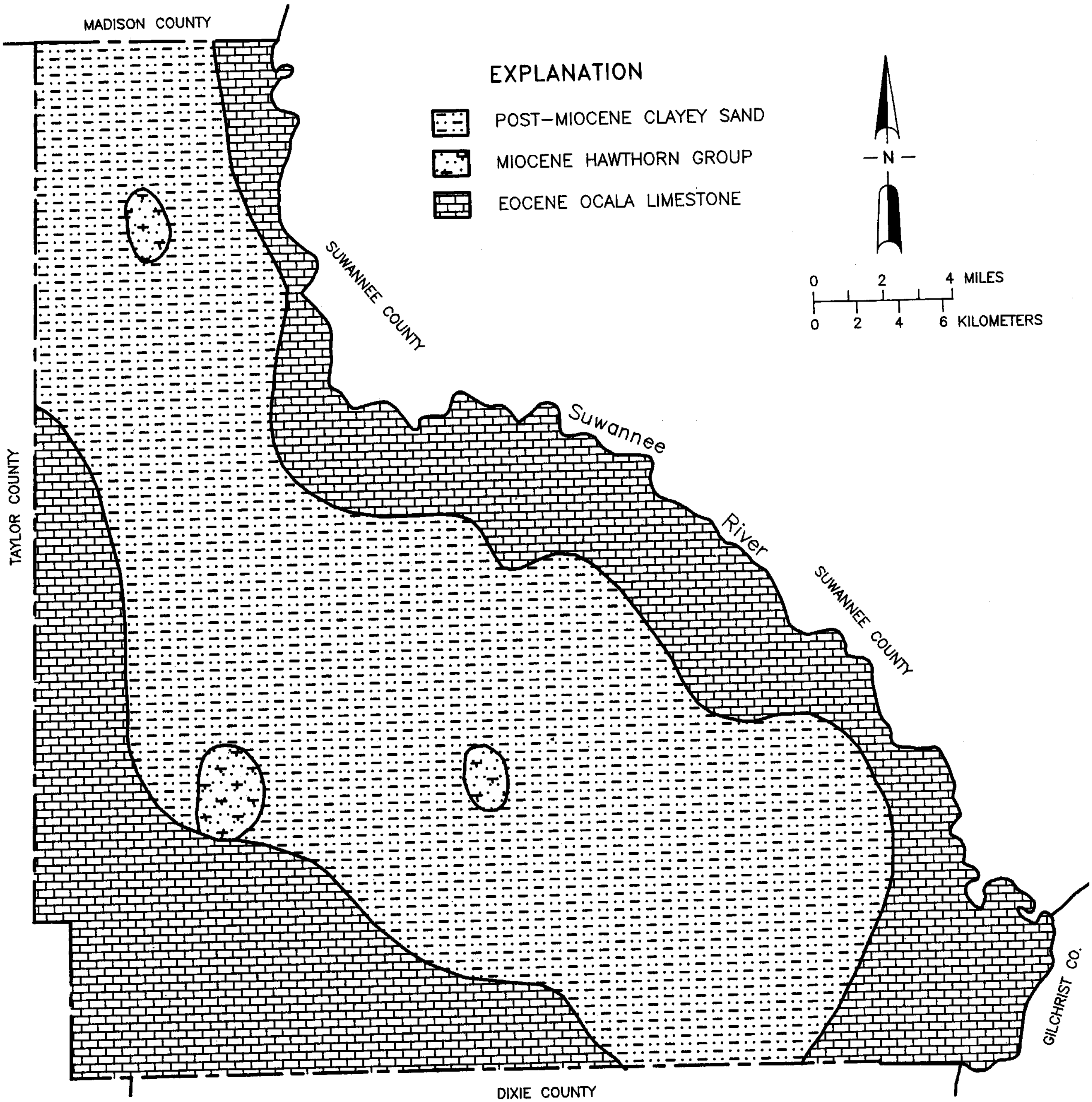

Figure 5.—A geologic map of Lafayette County. The map reflects the geologic formations encountered at a depth of 20 feet or less.

Suwannee River (figs. 3 and 5). Toward the west-central part of the county, as evidenced by W-15954 (fig. 4), the formation is also absent. Existing data suggests that the extent of the Suwannee Limestone is limited to the central part of the county.

Miocene Series

Hawthorn Group. Hawthorn Group sediments *(22)* are Miocene in age (approximately 25 to 5 mya) and generally consist of phosphatic siliciclastics (sands, silts and clays) and carbonates. In Lafayette County, the Hawthorn Group sediments are noticeably less fossiliferous than the underlying Eocene and Oligocene carbonates. Samples of the Hawthorn Group in Lafayette County include lithologies of white, sandy, phosphatic carbonate and very pale orange to light gray phosphatic clay. Some of the clayey lithologies can be considered "hard rock" phosphate. The subsurface extent of the Hawthorn sediments approximately coincides with that of the underlying Suwannee Limestone. In limited areas, the Hawthorn Group may lie unconformably above the Ocala Limestone (fig. 3). The depth to the top of the Hawthorn Group, where present, ranges from 5 to 45 feet bls. Available data indicate that all of this unit is overlain by Post-Micocene sediments. Figure 5 shows three locations where Hawthorn Group sediments lie within 20 feet of land surface in the Northern geomorphic zone. The Hawthorn Group averages 20 feet thick and ranges from 0 to 40 feet thick in the subsurface of Lafayette County.

Post-Miocene Series

Undifferentiated Sands and Clays. The distribution of post-Miocene series (younger than 5 mya) clayey sands is shown in figure 5. Deposits more than 20 feet thick are limited to the central and western parts of the county. These sediments lie above the Hawthorn Group sediments, the Suwannee Limestone, or the Ocala Limestone (figs. 3 and 4). They are generally moderate yellowish brown to brown in color and have variable amounts of organic material. The thickness ranges from 0 to 45 feet, and it averages about 25 feet.

Hydrogeology

Ground water is the water within pore spaces of rocks and sediments in the subsurface layer. When the pore spaces are interconnected (permeable), ground water is free to flow under the influence of gravity or pressure. If the pore spaces are not present or are not interconnected, such as in clay-rich strata, the flow of the ground water is restricted. The physical parameters of rocks as they relate to ground water movement and storage have led to the classification of hydrogeologic units in Florida *(23)*. In Lafayette County, the main units include the surficial aquifer system, the intermediate confining unit, and the Floridan aquifer system. An aquifer system is "a heterogeneous body of intercalated permeable and poorly permeable material that functions regionally as a water-yielding hydraulic unit" *(18)*.

The extent of the surficial aquifer system in the county has not been well defined. This aquifer system is a water-table aquifer (unconfined) within post-Miocene clayey sands of the central and western parts of the county. In the San Pedro Bay area of adjacent Taylor County, a surficial (water table) aquifer system that reaches a maximum thickness of 50 feet has been reported *(6)*.

The intermediate confining unit, where present, is comprised of clayey Miocene (Hawthorn Group) sediments and, in some cases, relatively clay-rich post-Miocene sediments. A map that shows general hydrogeologic conditions of the region *(6)* delineates a "Class II—semiconfined Floridan aquifer," which roughly corresponds to the distribution of clayey sands shown in figure 5. The "Class II" area includes the central and western parts of Lafayette County and presumably the surficial aquifer system, which may overlie the confining unit in places. A thin (less than 5 feet thick) Miocene confining unit was also reported to be beneath the surficial aquifer system in the San Pedro Bay area of Taylor County.

As previously noted, the Floridan aquifer system is the major source of drinking water in Lafayette County. It underlies the entire county and is approximately 1,250 to 1,475 feet thick *(17)*. The depth to this aquifer system ranges from the surface to about 60 feet bls. Along the Suwannee River and the southern border of the county, the Floridan aquifer system is unconfined *(6)*. The uppermost geologic formation of this system includes the Suwannee Limestone, where present, or the Ocala Limestone.

The potentiometric surface of an aquifer system reflects the surface (or elevation) to which the ground water will rise due to hydrostatic pressure. When an aquifer system is confined by overlying impermeable beds, the potentiometric surface may be situated above the land surface. Under such (artesian) conditions, if an unconfined path exists between the aquifer system and the surface, the ground water will flow freely at the surface in the form of seeps and springs. As noted in the "Geomorphology" section and shown in figure 2, numerous springs occur along the Suwannee and Steinhatchee Rivers, indicating that the ground water in those areas is under some amount of pressure from the Floridan aquifer system with respect to the river stage.

In addition to the presence of springs, the potentiometric surface is also one of the variables that influences the location and extent of wetlands in the county. Figure 5 shows that carbonates of the Floridan aquifer system comprise the majority of the bedrock in the region. Approximately half of the county lacks a significant aquifer confining unit *(6)*, and the potentiometric surface of the Floridan aquifer system is at or near land-surface elevation *(4)*. These combined factors cause standing water conditions, or wetlands, when drainage and evaporation do not counter the effects. In areas where wetlands lie above the intermediate confining unit (clayey sands) and the potentiometric surface is high, surficial waters are unable to infiltrate into the ground and wetland conditions are thus sustained.

Mineral and Energy Resources

Lafayette County has several potential geological resources; however, no commercial development of these resources is currently taking place *(24)*. Surficial deposits in the county include clayey sand, limestone, and peat. In the deep subsurface layers, test wells have been drilled in search of oil and gas.

Sand and Clay

Surficial sediment deposits in the county are mainly clayey sands *(15)* (fig. 5). No commercial deposits of sand or clay are reported or mined. Small, localized borrow pits that are scattered throughout the county have been used for roadfill. The underlying sediments (the Hawthorn Group) may contain thin, localized layers of clay *(5)*; however, none are suitable for mining.

Limestone and Dolostone

Surface exposures of limestone are along the Suwannee River *(15)*, and limestone and dolostone are in the southwestern corner of the county near the Steinhatchee River (fig. 5). Five limestone quarries are known to have been in operation in the county; however, none are currently active. The Dowling Pit, which was most recently active, is in the northeastern corner of the county, adjacent to the Suwannee River *(21)*. The remaining quarry sites are also along the Suwannee River and probably developed product from the Ocala Limestone.

Peat

Localized peat deposits are associated with wetland areas in Lafayette County. A statewide investigation of peat deposits revealed peat in swamps in the south-central part of Lafayette County (Mallory Swamp) and about 2 miles south-southwest of Mayo in Bear Bay *(9)*. However, no data is available for the occurrence of fuel-grade peat deposits *(11)*. Dorovan and Pamlico soils are organic soils. They are on the detailed soil maps in map units 10 and 11.

Oil and Gas

During the 1940's, the first oil and gas exploration wells (wildcats) were drilled in Lafayette County. To date, a total of eight wildcats have been drilled to a depth of 3,507 to 10,077 feet bls. All of these wells were dry and were subsequently plugged. As our nation's energy resources and needs are reassessed, a renewed interest in the Paleozoic sediments beneath Lafayette County may lead to future drilling. In the near future, however, no drilling for oil and gas is proposed.

Farming

Lafayette County is a general farming and tree-producing area. The main crops are corn, tobacco, soybeans, peanuts, watermelon, small grains, and a few vegetables. Most of the crops are grown in the northern part of the county.

Most of the soils that are used for crops in Lafayette County are deep, droughty sands that are subject to water erosion and wind erosion. Historically, deep plowing and clean cultivation have been used in this county. Gully-control structures, grassed waterways, windbreaks, and permanent vegetative cover are needed to help control erosion.

The enactment of legislation in 1937 to create Soil Conservation District stirred the interest of many landowners in Lafayette County. The Lafayette County Soil and Water Conservation District has promoted farming, tree planting, and other farming practices with the goal of assisting 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 about farming, see the section "Crops and Pasture" in this publication.

Recreation

Lafayette County offers a wide variety of opportunities for recreation. Many of these are dependent on the county's wide open spaces and its favorable climate.

Lafayette County has two parks in its boundary. Blue Spring Park is the most popular recreation site in the county. The spring that rises within the park and flows southward attracts thousands of swimmers, divers, canoers, and other visitors each year (fig. 6). Troy Spring County Park offers water activities on the Suwannee River. Camping, hiking, picnicking, and observing wildlife are popular activities.

The county's rivers provide opportunities 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 Suwannee County.

Recreational activities of a more organized nature are found in or near Mayo. Facilities are available for outdoor games, baseball, tennis, racquetball, and basketball in Mayo. Civic clubs and church groups sponsor many of these activities.

Figure 6.—Blue Springs attracts thousands of swimmers, divers, canoers, and other visitors each year.

Transportation

In Lafayette County, many county, state, and federal highways facilitate the transportation of goods from farm to market. The major highways are U.S. Highways 27 and 51. Interstates I-10 and I-75 run to the north and east of 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 from which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

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

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

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

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

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

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

Map Unit Composition

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

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

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

Use of Ground-Penetrating Radar

In Lafayette County, a ground-penetrating radar (GPR) system *(10, 14)* was used to document the type and variability of soils that occur in the detailed map units. Random transects were made with the GPR and by hand. Information from notes and ground-truth observations made in the field were used with radar data from this study to classify the soils and to determine the composition of map units. The map units described in the section "Detailed Soil Map Units" are based on this data.

Confidence Limits of Soil Survey Information

The statements about soil behavior in this survey can be thought of in terms of probability; they are predictions of soil behavior. The behavior of a soil depends not only on its own properties but on responses to such variables as climate and biological activity. Long-term soil conditions are predictable, but predictable reliability is less for any given year. For example, while soil scientists can state that a given soil has a high water table in most years, they cannot say with certainty that the water table will be present next year.

Confidence limits are statistical expressions of the probability that the composition of a map unit or a property of the soil will vary within prescribed limits. Confidence limits can be assigned numerical values based on a random sample. In the absence of specific data to determine confidence limits, the natural variability of soils and the methods used to make soil surveys must be considered. The composition of map units and other information are derived largely from extrapolations made from small samples. Also, the information relates only to soils within a depth of 6 feet. The information presented in the soil survey is not meant to be used as a substitute for onsite investigation. Soil survey information can be used to select from among alternative practices or to select general designs that may be needed to minimize the possibility of soil-related failures. It cannot be used to interpret specific points on the landscape.

Specific confidence limits for the composition of map units in Lafayette County were determined by random transects with the GPR across mapped areas. The data are statistically summarized in the description on each soil in the "Detailed Soil Map Units" section. Soil scientists made enough transects and took enough samples to characterize each map unit at a specific confidence level. This means, for example, that the resulting composition would read "in 80 percent of the areas mapped as Penney sand, the percentage of Penney soil will be within the range given in the map unit description. In about 20 percent of this map unit, the percentage of Penney soil is higher or lower than the given range."

The composition of miscellaneous areas and urban map units was based on the judgment of the soil scientist and by a statistical procedure.

General Soil Map Units

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

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

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

Soils on Sand Ridges

The general soil map unit in this group consists of excessively drained, nearly level to moderately sloping sandy soils that are on uplands. Most of the soils are sandy throughout the profile. The mapped areas are in the northeastern part of the county and adjoin Suwannee County and Madison County.

1. Penney

Nearly level to moderately sloping, excessively drained soils; sandy throughout

This map unit makes up about 27,914 acres, or about 8 percent, of Lafayette County. It is about 95 percent Penney soils and 5 percent soils of minor extent.

This map unit is in broad areas on uplands. Most of the areas are in the northeastern part of the county, adjacent to the Suwannee County line. The landscape is interspersed with sharp-breaking, long and narrow, steep slopes. The natural vegetation consists of turkey oak, bluejack oak, post oak, blackjack oak, live oak, laurel oak, and scattered areas of pines. The understory consists mostly of pineland threeawn, indiangrass, chalky bluestem, greenbriar, and panicum.

Typically, the surface layer of Penney soils is very dark grayish brown sand about 7 inches thick. The underlying material is sand to a depth of about 55 inches and fine sand to a depth of 80 inches or more. The upper 17 inches of underlying material is yellowish brown. The next 31 inches is very pale brown. The lower 25 inches is very pale brown fine sand, and it contains thin layers of yellowish brown loamy fine sand.

The soils of minor extent in this map unit are Blanton, Ortega, Otela, and Ridgewood soils. Blanton, Ortega, and Otela soils are on side slopes. Ridgewood soils are in the slightly lower, wetter areas.

Most areas of this map unit are used for pasture and planted pines. Most areas are poorly suited for crops, moderately suited for pasture, and moderately suited for pine trees. The droughtiness and rapid leaching of plant nutrients are the main limitations for plant growth.

This map unit is well suited for urban development.

Soils on Uplands and Limestone Plains

The two general soil map units in this group consist of excessively drained to moderately well drained, nearly level to gently sloping soils. Some are sandy throughout the profile. Some have loamy material at a depth of more than 40 inches. The mapped areas are in the northeastern and southeastern parts of the county along the Suwannee River.

2. Otela-Penney

Nearly level to gently sloping, excessively drained and moderately well drained soils; some are sandy throughout and some are sandy to a depth of 40 inches or more and are loamy below that depth

This map unit makes up about 34,893 acres, or about 10 percent, of Lafayette County. It is about 55 percent Otela soils, 43 percent Penney soils, and 2 percent soils of minor extent.

This map unit is on uplands that have sinkholes. It is in the northeastern and southeastern parts of the county. The depth to limestone is variable, but it is generally below a depth of 80 inches. The natural vegetation consists of live oak, laurel oak, post oak, water oak, hickory, slash pine, loblolly pine, and longleaf pine. The understory consists mostly of lopsided indiangrass, panicums, greenbriar, hawthorn, persimmon, fringeleaf paspalum, hairy tick clover, dwarf huckleberry, bluestems, and pineland threeawn.

Otela soils are moderately well drained. Typically, the surface layer is dark grayish brown fine sand about 6 inches thick. The subsurface layer is fine sand to a depth of 60 inches. The upper 15 inches is brown, the next 10 inches is pale brown, the next 9 inches is very pale brown, and the lower 20 inches is yellowish brown. The subsoil extends to a depth of 80 inches or more. The upper 5 inches is yellowish brown sandy loam, the next 10 inches is yellowish brown sandy loam, and the lower 5 inches is light gray sandy clay loam.

Penney soils are excessively drained. Typically, the surface layer is dark grayish brown sand about 7 inches thick. The subsurface layer is fine sand that extends to a depth of 60 inches. The upper 10 inches is yellowish brown, and the lower 43 inches is very pale brown. Below this to a depth of 80 inches is very pale brown loamy fine sand and thin layers of yellowish brown loamy fine sand.

The soils of minor extent in this map unit are Albany, Blanton, Ortega, and Ridgewood soils. These minor soils generally are in small areas that are intermixed with areas of major soils.

Most areas of this map unit are poorly suited for crops, moderately suited for pasture, and moderately suited for pine trees. The droughtiness and rapid leaching of plant nutrients are the main limitations for plant growth.

This map unit is well suited for urban development.

3. Blanton-Ortega-Penney

Nearly level to gently sloping, moderately well drained and excessively drained soils; some are sandy to a depth of 40 inches or more and are loamy below that depth, and some are sandy throughout

This map unit makes up about 10,468 acres, or about 3 percent of the county. It is about 40 percent Blanton soils, 38 percent Ortega soils, 20 percent Penney soils, and 2 percent soils of minor extent.

This map unit is on uplands and along the Suwannee River. It is in the southeastern part of the county. The landscape is on uplands and in transitional areas between uplands and flood plains. It is interspersed with a few cypress ponds, swamps, and small grassy and wet depressions. Some of the depressional areas are connected by narrow drainageways. The natural vegetation consists of live oak, turkey oak, laurel oak, post oak, slash pine, loblolly pine, and longleaf pine. The understory consists mostly of lopsided indiangrass, panicums, greenbriar, hawthorn, persimmon, fringeleaf paspalum, hairy tick clover, dwarf huckleberry, bluestems, and pineland threeawn.

Blanton soils are moderately well drained. Typically, the surface layer is dark gray fine sand about 6 inches thick. The subsurface layer is fine sand to a depth of 46 inches. The upper 23 inches is light yellowish brown, and the lower 15 inches is very pale brown. The subsoil is sandy clay loam to a depth of 80 inches or more. The upper 16 inches is brownish yellow, and the lower 20 inches is gray.

Ortega soils are moderately well drained. Typically, the surface layer is very dark grayish brown fine sand about 6 inches thick. The underlying material is fine sand, and it extends to a depth of 80 inches. The upper part is brown and pale brown, and the part below a depth of 52 inches is light gray.

Penney soils are excessively drained. Typically, the surface layer is dark grayish brown sand about 7 inches thick. The subsurface layer is yellowish brown and very pale brown sand to a depth of about 55 inches. Below this depth is about 25 inches of very pale brown fine sand and thin lamellae of yellowish brown loamy fine sand.

The soils of minor extent in this map unit are Albany, Hurricane, and Ridgewood soils in the uplands and Surrency, Plummer, and Clara soils in the cypress ponds, swamps, and small grassy and wet depressions. These minor soils generally are in small areas that are intermixed with areas of major soils.

Most areas of this map unit are used for crops, pasture, and planted pines. A few areas are used for urban development.

Most areas of this map unit are poorly suited for crops, moderately suited for pasture, and moderately well suited for pine trees. The droughtiness and rapid leaching of plant nutrients are the main limitations for plant growth.

This map unit is moderately suited to well suited for urban development.

Soils in Depressions and on Flatwoods and Transitional Areas Between the Uplands and Flatwoods

The map units in this group consist of somewhat poorly drained, poorly drained, and very poorly drained, nearly level to gently sloping soils. Some of the soils are sandy throughout the profile, some have a sandy subsoil that is coated with organic matter, and some have a loamy subsoil. These map units are throughout the county.

4. Ridgewood-Albany-Hurricane

Nearly level and gently sloping, somewhat poorly drained soils; some are sandy throughout, some are sandy to a depth of 40 inches or more and have a loamy subsoil, and some have an organic coated subsoil

This map unit makes up about 17,446 acres, or about 5 percent of the county. It is about 54 percent Ridgewood soils, 25 percent Albany soils, 15 percent Hurricane soils, and 6 percent soils of minor extent.

This map unit is in transitional areas between the flatwoods and the uplands. It is in the southeastern and northern parts of the county. The landscape is interspersed with cypress ponds, swamps, and small grassy and wet depressions. Some of the depressional areas are connected by narrow drainageways. The natural vegetation consists of slash pine, loblolly pine, and longleaf pine. The understory consists mostly of lopsided indiangrass, hairy panicum, chalky bluestem, creepy bluestem, pineland threeawn, grassleaf goldaster, and a few saw palmettos.

Ridgewood soils are somewhat poorly drained. Typically, the surface layer is very dark gray fine sand about 6 inches thick. The underlying material is fine sand, and it extends to a depth of 80 inches or more. The upper 12 inches is brown; the next 21 inches is very pale brown; and the lower 41 inches is light gray.

Albany soils are somewhat poorly drained. Typically, the surface layer is very dark gray fine sand about 6 inches thick. The subsurface layer is fine sand to a depth of 64 inches. The upper 6 inches is yellowish brown, the next 9 inches is brown, the next 4 inches is light brownish gray, and the lower 39 inches is light gray. The upper part of the subsoil is light gray fine sandy loam, and it extends to a depth of 72 inches. The lower part is light gray sandy clay loam to a depth of 80 inches or more.

Hurricane soils are somewhat poorly drained. Typically, the surface layer is very dark gray fine sand about 5 inches thick. The subsurface layer is fine sand, and it extends to a depth of 51 inches. The upper 11 inches is grayish brown, the next 9 inches is brown, and the next 26 inches is pale brown. The subsoil is fine sand, and it extends to a depth of 80 inches or more. The upper 4 inches is dark brown, the next 11 inches is dark reddish brown, and the lower 14 inches is black.

The soils of minor extent in this map unit are Chaires, Leon, and Sapelo soils. These minor soils generally are in small areas that are intermixed with areas of major soils.

Most areas of this map unit are poorly suited for crops, moderately suited for pasture, and well suited for pine trees. Wetness is the main limitation.

This map unit is moderately suited for urban development.

5. Sapelo-Surrency-Clara

Nearly level, poorly drained and very poorly drained soils; some are sandy and have a subsoil coated with organic matter and a loamy subsoil below a depth of 40 inches, some are sandy to a depth of 20 inches and are loamy below that depth, and some are sandy throughout

This map unit makes up about 17,447 acres, or about 5 percent of the county. It is about 53 percent Sapelo soils, 15 percent Surrency soils, 12 percent Clara soils, and 20 percent soils of minor extent.

This map unit is on the flatwoods in the northern part of the county. The landscape is interspersed with a few slight knolls and large to small depressions. Some of the depressional areas are connected by narrow drainageways. In most areas, the natural vegetation consists of slash pine, loblolly pine, and longleaf pine. The understory consists mostly of saw palmetto, gallberry, waxmyrtle, dwarf huckleberry, blackberry, bluestems, and pineland threeawn. In the wetter areas, cypress, blackgum, sweetbay, red maple, and pond pine are predominant. In the understory, cordgrass, bullrush, button bush, elderberry, water hyacinth, arrowhead, and dollarwort are common.

Sapelo soils are poorly drained. Typically, the surface layer is very dark gray fine sand about 6 inches thick. The subsurface layer is fine sand to a depth of 28 inches. The upper 7 inches is gray, and the lower 15 inches is light gray. The upper part of the subsoil is fine sand, and it extends to a depth of 60 inches. The upper 6 inches is black, the next 11 inches is dark reddish brown, and the lower 15 inches is light gray. The lower part of the subsoil is fine sandy loam to a depth of 80 inches or more. The upper 13 inches is light brownish gray, and the lower 7 inches is gray.

Surrency soils are very poorly drained. Typically, the surface layer is black mucky fine sand about 10 inches thick. The subsurface layer is fine sand to a depth of 28 inches. The upper 6 inches is light brownish gray, and the lower 12 inches is light gray. The subsoil is light grayish brown sandy loam to a depth of 45 inches and is grayish brown sandy clay loam to a depth of 80 inches or more.

Clara soils are very poorly drained. Typically, the surface layer is black mucky fine sand about 6 inches thick. The subsurface layer is light brownish gray fine sand, and it extends to a depth of 18 inches. The subsoil is fine sand to a depth of 80 inches or more. The upper 5 inches is dark brown, the next 25 inches is brown, and the lower 32 inches is light brownish gray.

The soils of minor extent in this map unit are Leon, Plummer, and Wesconnett soils. These minor soils generally are in small areas that are intermixed with areas of major soils.

Most areas of this map unit are poorly suited for crops and urban development, well suited for pasture, and moderately well suited for pine trees. Wetness is the main limitation. Areas that are ponded for long periods are unsuited for these uses.

6. Pamlico-Dorovan-Wesconnett

Nearly level, very poorly drained soils; some have organic material 16 to 51 inches thick and have a sandy substratum, some have organic material 51 inches or more thick, and some are sandy and have an organic coated subsoil

This map unit makes up about 66,296 acres, or about 19 percent of the county. It is about 32 percent Pamlico soils, 26 percent Dorovan soils, 23 percent Wesconnett soils, and 19 percent soils of minor extent. Most of the minor soils are on the flatwoods.

This map unit is in depressions on the flatwoods. It is in the eastern, southern, and northern parts of the county. The landscape consists mostly of large depressions interspersed with low flatwood ridges. Some of the depressional areas are connected by narrow drainageways. The natural vegetation consists of cypress, pond pine, Carolina ash, blackgum, sweetbay, and red maple. The understory consists mostly of cordgrass, bullrush, button bush, elderberry, water hyacinth, arrowhead, and dollarwort. Pine trees and an understory of saw palmetto, gallberry, waxmyrtle, dwarf huckleberry, blackberry, bluestems, and pineland threeawn are on the flatwood ridges.

Pamlico soils are very poorly drained. Typically, the surface layer is black muck to a depth of about 31 inches. The underlying material is light brownish gray fine sand to a depth of 80 inches.

Dorovan soils are very poorly drained. Typically, the surface layer is black muck to a depth of about 45 inches and is dark reddish brown muck to a depth of 57 inches. The underlying material is gray fine sand to a depth of 80 inches or more.

Wesconnett soils are very poorly drained. Typically, the surface layer is black mucky fine sand about 14 inches thick. The upper part of the subsoil is fine sand, and it extends to a depth of 28 inches. The first 7 inches is very dark gray, and the lower 7 inches is dark brown. Below this depth is pale brown fine sand to a depth of 45 inches. The lower part of the subsoil is very dark gray fine sand to a depth of 61 inches. The underlying material is light gray fine sand to a depth of 80 inches or more.

The soils of minor extent in this map unit are Chaires, Clara, Harbeson, Leon, Lynn Haven, Pantego, and Tooles soils. These minor soils generally are in small areas that are intermixed with areas of major soils.

Most areas of this map unit are unsuited for crops, pasture, planted pine trees, and urban development. Prolonged wetness is the main limitation.

7. Leon-Wesconnett-Lynn Haven

Nearly level, poorly drained and very poorly drained soils that are sandy and have a subsoil coated with organic matter

This map unit makes up about 69,786 acres, or about 20 percent of the county. It is about 51 percent Leon soils, 25 percent Wesconnett soils, 20 percent Lynn Haven soils, and 4 percent soils of minor extent.

This map unit is on the flatwoods in the southern and northwestern parts of the county. The landscape consists of broad flatwoods interspersed with a few slight knolls and depressions. Some of the depressional areas are connected by narrow drainageways. In the flatwoods, the natural vegetation consists of slash pine, loblolly pine, and longleaf pine. The understory consists mostly of saw palmetto, gallberry, waxmyrtle, dwarf huckleberry, blackberry, bluestems, and pineland threeawn. In the wetter areas, cypress, blackgum, sweetbay, red maple, Carolina ash, and pond pine trees are predominant. The understory consists mostly of cordgrass, bullrush, button bush, elderberry, water hyacinth, arrowhead, and dollarweed.

Leon soils are poorly drained. Typically, the surface layer is black fine sand about 4 inches thick. The subsurface layer is light brownish gray fine sand to a depth of 10 inches. The upper part of the subsoil is fine sand, and it extends to a depth of 24 inches. The upper 7 inches is dark reddish brown, and the next 7 inches is yellowish brown. Below this depth is light gray and light brownish gray fine sand to a depth of 63 inches. The lower part of the subsoil, at a depth of 63 to 80 inches, is very dark brown fine sand.

Wesconnett soils are very poorly drained. Typically, the surface layer is black mucky fine sand about 14 inches thick. The upper part of the subsoil is fine sand, and it extends to a depth of 28 inches. The first 7 inches is very dark gray, and the lower 7 inches is dark brown. Below this is pale brown fine sand to a depth of 45 inches. The lower part of the subsoil is very dark gray fine sand to a depth of 61 inches. The underlying material is light gray fine sand to a depth of 80 inches or more.

Lynn Haven soils are very poorly drained. Typically, the surface layer is black mucky fine sand about 13 inches thick. The subsurface layer is light brownish gray fine sand to a depth of 19 inches. The upper part of the subsoil is fine sand to a depth of 34 inches. The upper 8 inches is black, and the next 7 inches is dark yellowish brown. Below this is a layer of yellowish brown fine sand to a depth of 52 inches. The lower part of the subsoil, at a depth of 52 to 80 inches, is dark reddish brown fine sand.

The soils of minor extent in this map unit are Harbeson, Meadowbrook, and Pamlico soils. These minor soils generally are in small depressional areas that are intermixed with areas of major soils.

Most areas of this map unit are poorly suited for crops, well suited for pasture, and moderately suited for pine trees. Wetness is the main limitation. The depressional areas are unsuited or are poorly suited for these uses.

Most areas of this map unit are poorly suited for urban development. The depressional areas are unsuited for urban uses.

8. Chaires-Rawhide-Meadowbrook

Nearly level, poorly drained and very poorly drained soils; some are sandy and have an organic coated subsoil and a loamy subsoil below a depth of 40 inches, some are loamy within a depth of 20 inches, some are sandy to a depth of 40 inches or more and have a loamy subsoil, and some have limestone below a depth of 40 inches

This map unit makes up about 69,786 acres, or about 20 percent of the county. It is about 59 percent Chaires soils, 20 percent Rawhide soils, 13 percent Meadowbrook soils, and 8 percent soils of minor extent.

This map unit is on the flatwoods in the southwestern part of the county. The landscape consists of flatwoods interspersed with a few slight knolls and many depressions. Some of the depressional areas are connected by narrow drainageways. In the flatwoods, the natural vegetation consists of slash pine, loblolly pine, and longleaf pine. The understory consists mostly of saw palmetto, gallberry, waxmyrtle, dwarf huckleberry, blackberry, bluestems, and pineland threeawn. In the depressions, cypress, blackgum, sweetbay, red maple, and pond pine are the predominant trees. In the understory, cordgrass, bullrush, button bush, elderberry, water hyacinth, arrowhead, and dollarwort are common.

Chaires soils are poorly drained and very poorly drained. Typically, the surface layer is black fine sand about 8 inches thick. The subsurface layer is fine sand to a depth of 24 inches. The upper 6 inches is grayish brown, and the lower 9 inches is light brownish gray. The upper part of the subsoil is loamy fine sand to fine sand, and it extends to a depth of 32 inches. The upper 4 inches is black, and the next 4 inches is dark brown. Below this is 14 inches of brown fine sand. The lower part of the subsoil is grayish brown sandy clay loam to a depth of 72 inches or more.

Rawhide soils are very poorly drained. Typically, the surface layer is black mucky fine sand about 6 inches thick. The subsoil is sandy clay loam to a depth of 80 inches or more. The upper 12 inches is black, the next 8 inches is very dark gray, and below this, to a depth of 80 inches or more, is gray.

Meadowbrook soils are poorly drained. Typically, the surface layer is very dark gray fine sand about 8 inches thick. The subsurface layer is fine sand to a depth of 64 inches. The upper 6 inches is light gray, the next 17 inches is very pale brown, the next 19 inches is light gray, and the lower 14 inches is brown. The subsoil is gray fine sandy loam to a depth of 80 inches or more.

The soils of minor extent in this map unit are Harbeson, Leon, and Wesconnett soils. These minor soils generally are in small areas that are intermixed with areas of major soils.

Most areas of this map unit are poorly suited for crops, well suited for pasture, and moderately well suited for pine trees. Wetness is the main limitation. The depressional areas are poorly suited or are unsuited for these uses.

This map unit is poorly suited for urban development. The depressional areas are unsuited.

Soils on the Flood Plains

The map units in this group consist of somewhat poorly drained, poorly drained, and very poorly drained, nearly level and gently sloping soils. Some of the soils are sandy throughout the profile, some are sandy to a depth of 20 to 80 inches and have a loamy subsoil, and some have stratified layers of sandy, loamy, and clayey material. The soils are mainly on flood plains along the Suwannee and Steinhatchee Rivers.

9. Clara-Fluvaquents-Tooles

Nearly level, very poorly and poorly drained soils on flood plains; some are sandy throughout, some are stratified with sandy, loamy, and clayey layers, and some are sandy to a depth of 20 to 40 inches and are loamy below that depth

This map unit makes up about 17,446 acres, or about 5 percent of the county. It is about 40 percent Clara soils, 33 percent Fluvaquents soils, 15 percent Tooles soils, and 12 percent soils of minor extent.

This map unit is on the long, narrow flood plain along the Suwannee River in the eastern part of the county and also along the Steinhatchee River in the southern part of the county. The landscape is interspersed with depressions. Some of the depressional areas are connected by narrow drainageways. The natural vegetation consists of baldcypress, blackgum, sweetbay, and red maple. The understory consists mostly of cordgrass, bullrush, button bush, elderberry, water hyacinth, arrowhead, and dollarwort.

Clara soils are very poorly drained. Typically, the surface layer is black mucky fine sand about 6 inches thick. The subsurface is light brownish gray fine sand, and it extends to a depth of 18 inches. The subsoil is fine sand to a depth of 80 inches or more. The upper 5 inches is dark brown, the next 25 inches is brown, and the lower 32 inches is light brownish gray.

Fluvaquents are very poorly drained. Typically, the surface layer is mucky fine sand to a depth of about 3 inches. The underlying layers are stratified to a depth of 80 inches or more. Very dark gray sandy clay loam commonly extends to a depth of 21 inches; the next layer, to a depth of 29 inches, is dark gray fine sandy loam; and the next layer, to a depth about 40 inches, is gray loamy fine sand. Below this depth is gray fine sandy loam that has white shell fragments.

Tooles soils are poorly drained. Typically, the surface layer is very dark brown fine sand about 6 inches thick. The subsurface layer is light brownish gray fine sand to a depth of 14 inches. The upper part of the subsoil is fine sand to a depth of 35 inches. The upper 11 inches is yellowish brown, and the lower 10 inches is light yellowish brown. The lower part of the subsoil is light brownish gray sandy clay loam to a depth of 50 inches, and below this depth is limestone bedrock.

The soils of minor extent in this map unit are Chaires, Harbeson, Leon, Lynn Haven, and Wesconnett soils. These minor soils generally are in small areas that are intermixed with areas of major soils.

Most areas of this map unit are unsuited for crops, pasture, and pine trees. The wetness and flooding are the main limitations. Some areas that are not flooded for long periods can support pine trees.

Most areas of this map unit are unsuited for urban development because of the wetness and flooding.

10. Albany-Meadowbrook-Ousley

Nearly level to gently sloping, somewhat poorly drained to very poorly drained soils on flood plains; some are sandy to a depth of 40 inches or more and are loamy below that depth and some are sandy throughout

This map unit makes up about 10,468 acres, or about 3 percent of the county. It is about 30 percent Albany soils, 25 percent Meadowbrook soils, 17 percent Ousley soils, and 28 percent soils of minor extent.

This map unit is on the long, narrow ridges of the flood plain along the Suwannee River in the eastern part of the county. The landscape is interspersed with depressions. Some of the depressional areas are connected by narrow drainageways. The natural vegetation consists of loblolly pine, longleaf pine, live oak, laurel oak, and water oak. The understory consists mostly of lopsided indiangrass, hairy panicum, chalky bluestem, creepy bluestem, pineland threeawn, grassleaf goldaster, and switchgrass.

Albany soils are somewhat poorly drained. Typically, the surface layer is very dark gray fine sand about 6 inches thick. The subsurface layer is fine sand to a depth of 53 inches. The upper 10 inches is yellowish brown, the next 9 inches is brown, the next 4 inches is light brownish gray, and the lower 24 inches is light gray. The subsoil is sandy clay loam, and it extends to a depth of 80 inches. The upper 2 inches is light gray, and the lower 25 inches is mottled yellowish brown, pale brown, and light gray.

Meadowbrook soils are very poorly drained. Typically, the surface layer is black mucky fine sand about 6 inches thick. The subsurface layer is gray fine sand to a depth of 45 inches. The subsoil is gray and light gray sandy clay loam to a depth of 80 inches or more.

Ousley soils are somewhat poorly drained. Typically, the surface layer is dark gray fine sand about 4 inches thick. The underlying material is fine sand, and it extends to a depth of 80 inches or more. The upper 15 inches is pale brown, the next 21 inches is brown, the next 17 inches is light brownish gray, and the lower 23 inches is light gray.

The soils of minor extent in this map unit are Blanton, Leon, Ortega, Penney, and Surrency soils. These minor soils generally are in small areas that are intermixed with areas of major soils.

Most areas of this map unit are poorly suited for crops, moderately suited for pasture, and moderately suited to highly suited for pine trees. The flooding and wetness are the main limitations.

This map unit is poorly suited for urban development.

11. Garcon-Meadowbrook-Albany

Nearly level to gently sloping, somewhat poorly drained to very poorly drained soils on flood plains; some are sandy to a depth of 20 to 40 inches and are loamy below that depth and some are sandy to a depth of 40 inches or more and are loamy below that depth

This map unit makes up about 6,978 acres, or about 2 percent of the county. It is about 43 percent Garcon soils, 28 percent Meadowbrook soils, 23 percent Albany soils, and 6 percent soils of minor extent.

This map unit is on the long, narrow ridges of the flood plain along the Suwannee River in the northeastern part of the county. The landscape is interspersed with depressions. Some of the depressional areas are connected by narrow drainageways. The natural vegetation consists of loblolly pine, longleaf pine, live oak, laurel oak, and water oak. The understory consists mostly of lopsided indiangrass, hairy panicum, chalky bluestem, creepy bluestem, pineland threeawn, grassleaf goldaster, and switchgrass.

Garcon soils are somewhat poorly drained. Typically, the surface layer is dark gray fine sand about 7 inches thick. The subsurface layer is fine sand, and it extends to a depth of 26 inches. The upper 12 inches is brown, and the lower 7 inches is very pale brown. The subsoil is sandy clay loam and sandy loam to a depth of 51 inches. The upper 14 inches is brownish yellow sandy clay loam that has light brownish gray and strong brown mottles, and the lower 11 inches is light brownish gray sandy loam. Below this to a depth to 60 inches is white loamy fine sand that has brownish yellow mottles. The next 20 inches consists of white fine sand to a depth of 80 inches or more.

Meadowbrook soils are very poorly drained. Typically, the surface layer is black mucky fine sand about 6 inches thick. The subsurface layer is gray fine sand to a depth of 45 inches. The subsoil is gray and light gray sandy clay loam to a depth of 80 inches or more.

Albany soils are somewhat poorly drained. Typically, the surface layer is very dark gray fine sand about 6 inches thick. The subsurface layer is fine sand to a depth of 53 inches. The upper 10 inches is yellowish brown, the next 9 inches is brown, the next 4 inches is light brownish gray, and the lower 24 inches is light gray. The subsoil is sandy clay loam, and it extends to a depth of 80 inches. The upper 2 inches is light gray, and the lower 25 inches is mottled yellowish brown, pale brown, and light gray.

The soils of minor extent in this map unit are Blanton, Leon, Ortega, Penney, and Surrency soils. These minor soils generally are in small areas that are intermixed with areas of major soils.

Most areas of this map unit are poorly suited for crops, moderately suited for pasture, and moderately high to highly suited for pine trees. The flooding and wetness are the main limitations.

This map unit is poorly suited for urban development.

Detailed Soil Map Units

The map units on the detailed soil maps at the back of this survey represent the soils in the survey area. The map unit descriptions in this section, along with the soil maps, can be used to determine the suitability and potential of a soil for specific uses. They also can be used to plan the management needed for those uses. More information on each map unit, or soil, is given under the heading "Use and Management of the Soils."

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

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

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

Soils of one series can differ in texture of the surface layer or of the underlying material. They also can differ in slope, stoniness, salinity, wetness, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Penney sand, 0 to 5 percent slopes, is a phase of the Penney series.

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

A *soil complex* consists of two or more soils in such an intricate pattern or in such small areas that they cannot be shown separately on the soil maps. The pattern and proportion of the soils are somewhat similar in all areas. Oaky-Rawhide, depressional, complex is an example.

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

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

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

2—Penney sand, 0 to 5 percent slopes

This soil is nearly level to gently sloping and is on uplands. The mapped areas are irregular in shape and range from about 50 to more than 150 acres in size. The slope is nearly smooth to convex.

Typically, the surface layer of the Penney soil is very dark grayish brown sand about 7 inches thick. The subsurface layer is yellowish brown and very pale brown sand to a depth of about 55 inches. Below this is about 25 inches of very pale brown fine sand and thin lamellae of strong brown loamy fine sand.

In 80 percent of areas mapped as Penney sand, Penney and similar soils make up 80 to 100 percent of the map unit. The similar soils are coated in the control section.

Soils that have dissimilar characteristics make up about 0 to 20 percent of the map unit. In 0 to 20 percent of the mapped areas, the dissimilar soils make up more than 20 percent. The dissimilar soils included with these soils in mapping are small areas of Blanton and Ortega soils and soils that have sand over rock. Individual areas of inclusions are smaller than 5 acres in size. Blanton and Ortega soils are moderately well drained and are on the lower parts of the landscape.

The seasonal high water table is at a depth of more than 72 inches during wet periods in most years. The available water capacity is very low. Permeability is rapid throughout the soil.

These soils are in the Longleaf Pine-Turkey Oak Hills ecological plant community. In most areas, the natural vegetation includes slash pine, loblolly pine, longleaf pine, sand pine, live oak, post oak, turkey oak, and bluejack oak. The understory consists of lopsided indiangrass, hairy panicum, greenbriar, hawthorn, persimmon, fringeleaf paspalum, hairy tick clover, dwarf huckleberry, chalky bluestem, creepy bluestem, and pineland threeawn. Most areas of this soil are used for the production of planted pine, crops, or pasture.

This soil has very severe limitations for cultivated crops because of droughtiness during dry periods. Plant nutrients leach rapidly. Corn, peanuts, soybeans, tobacco, and watermelons are crops that can be grown with intensive management and the use of good conservation practices. Using a crop rotation system that includes cover crops, returning crop residue to the soil, and properly applying fertilizer and lime are practices that are necessary for good yields. Irrigation is desirable during droughty periods. Soil blowing is a severe hazard if the topsoil is left unprotected.

This soil is moderately suited to tame pasture. Deep-rooting grasses, such as improved bahiagrass and bermudagrass, are suited. Yields are generally reduced by periodic droughts. Careful management is required to maintain good grazing. This includes the establishment of a proper plant population, applications of fertilizer and lime, and controlled grazing. Irrigation improves the quality of grazing and of hay crops. If available during long dry periods, the use of irrigation water may be economically justifiable. This soil is not suited to shallow-rooting pasture plants because it cannot retain sufficient moisture in the rooting zone for good growth.

The potential productivity of this soil for pine trees is moderate. Sand pine, longleaf pine, and slash pine are suitable for planting. The thick, sandy texture restricts the use of wheeled equipment. This limitation can be overcome by harvesting when the soil is moist. Seedling mortality, which is caused by droughtiness, can be partially reduced by increasing the tree planting rate and the planting depth. Plant competition can be controlled by site preparation practices, such as chopping or controlled burning. A harvesting system that leaves most of the biomass on the surface is recommended.

This soil has slight limitations for dwellings without basements, local roads and streets, and septic tank absorption fields (fig. 7). In areas that have a concentration of homes and septic tank absorption fields, ground-water contamination can be a hazard because of poor filtration.

This soil has severe limitations for recreational uses. The loose, sandy surface layer is a severe limitation for trafficability. Suitable topsoil fill material or some other type of surface stabilization is necessary to overcome this limitation. Soil blowing is a hazard. Establishing and maintaining a good vegetative cover or planting windbreaks can control soil blowing.

This Penney soil is in capability subclass IVs, and the woodland ordination symbol is 8S.

4—Blanton-Ortega complex, 0 to 5 percent slopes

These soils are nearly level to gently sloping and are moderately well drained. They are on uplands. The mapped areas are irregular in shape and range from about 20 to more than 150 acres in size. The slope is nearly smooth to convex.

Typically, the surface layer of the Blanton soil is dark gray fine sand about 6 inches thick. The subsurface layer is fine sand to a depth of 44 inches. The upper 23 inches is light yellowish brown, and the lower 15 inches is very pale brown. The subsoil is sandy clay loam to a depth of 80 inches or more. The upper 16 inches is brownish yellow, and the lower 20 inches is gray.

Typically, the surface layer of the Ortega soil is very dark grayish brown fine sand about 6 inches thick. The underlying material is fine sand, and it extends to a depth of 80 inches. It is brown and pale brown in the upper part and light gray below a depth of 52 inches.

In 80 percent of areas mapped as Blanton-Ortega complex, 0 to 5 percent slopes, Blanton, Ortega, and similar soils make up 80 to 100 percent of the map unit. Generally, the mapped areas are about 55 percent Blanton and similar soils and about 26 percent Ortega and similar soils. The components of this map unit are so intricately intermingled that it was not practical to map them separately. The proportions and patterns of Blanton, Ortega, and similar soils are relatively consistent in most delineations of the map unit.

Soils that have dissimilar characteristics make up about 0 to 20 percent of the map unit. In 0 to 20 percent of the mapped areas, the dissimilar soils make up more than 20 percent. The dissimilar soils included in mapping are small areas of Albany, Ridgewood, and Penney soils. Individual areas of inclusions are smaller than 5 acres in size. Albany and Ridgewood soils are somewhat poorly drained and are on the lower parts of the landscape. Penney soils are excessively drained and are on the higher parts of the landscape.

A seasonal high water table is at a depth of 48 to 72 inches in the Blanton soil. A seasonal high water table is at a depth of 48 to 60 inches in the Ortega soil for 1 to 3 months during wet periods in most years. It recedes to a depth of more than 60 inches during the dry periods. The available water capacity is low. Permeability is moderately

Figure 7.—An area of Penney sand, 0 to 5 percent slopes. This soil is well suited to most urban uses.

slow to moderate in the Blanton soil and rapid throughout the Ortega soil.

These soils are in the mixed Longleaf Pine-Turkey Oak Hills ecological plant community. In most areas, the natural vegetation includes slash pine, loblolly pine, longleaf pine, live oak, bluejack oak, laurel oak, post oak, southern red oak, and turkey oak. The understory consists of lopsided indiangrass, hairy panicum, greenbriar, hawthorn, persimmon, fringeleaf paspalum, hairy tick clover, dwarf huckleberry, chalky bluestem, creepy bluestem, and pineland threeawn. Most areas of this map unit are used for the production of crops, pasture, or planted pine.

These soils have severe limitations for cultivated crops because of droughtiness during dry periods. Plant nutrients leach rapidly. Corn, peanuts, soybeans, tobacco, and watermelons are crops that can be grown with intensive management and the use of good conservation practices. Using a crop rotation system that includes cover crops, returning crop residue to the soil, and properly applying fertilizer and lime are practices that are necessary for good yields. Irrigation is desirable during droughty periods. Soil blowing is a severe hazard if the topsoil is left unprotected.

This map unit is moderately suited to tame pasture. Deep-rooting grasses, such as improved bahiagrass and bermudagrass, are suited. Yields are generally reduced by periodic droughts. Careful management is required to maintain good grazing. This includes the establishment of a proper plant population, applications of fertilizer and lime, and controlled grazing. Irrigation improves the quality of grazing and of hay crops. If available during long dry periods, the use of irrigation water may be economically justifiable. These soils are not suited to shallow-rooting pasture plants because the soils cannot retain sufficient moisture in the rooting zone for good growth.

The potential productivity for pine trees is high for the Blanton soil and moderately high for the Ortega soil. Slash pine, loblolly pine, and longleaf pine are suitable for planting. The thick, sandy texture restricts the use of wheeled equipment. This limitation can be overcome by harvesting when the soils are moist. Seedling mortality, which is caused by droughtiness, can be partially reduced by increasing the tree planting rate and the planting depth. Plant competition can be controlled by site preparation practices, such as chopping or controlled burning. A harvesting system that leaves most of the biomass on the surface is recommended.

This map unit has slight limitations for dwellings without basements and local roads and streets. It has moderate limitations for septic tank absorption fields. During wet periods, the water table may slow the downward movement of effluent and can become contaminated.

This map unit has severe limitations for recreational uses. The loose, sandy surface layer limits trafficability. Suitable topsoil fill material or some other type of surface stabilization is necessary to overcome this limitation. Soil blowing is a hazard. Establishing and maintaining a good vegetative cover or planting windbreaks can control soil blowing.

The Blanton soil is in capability subclass IIIs, and the woodland ordination symbol is 11S. The Ortega soil is in capability subclass IIIs, and the woodland ordination symbol is 10S.

5—Otela-Penney complex, 0 to 5 percent slopes

These soils are nearly level to gently sloping. The Otela soil is moderately well drained, and the Penney soil is excessively drained. These soils are on uplands. The mapped areas are irregular in shape and range from about 50 to more than 150 acres in size. The slope is nearly smooth to convex.

Typically, the surface layer of the Otela soil is dark grayish brown fine sand about 6 inches thick. The subsurface layer is fine sand to a depth of 60 inches. The upper 15 inches is brown, the next 10 inches is pale brown, the next 9 inches is very pale brown, and the lower 20 inches is yellowish brown. The subsoil extends to a depth of 80 inches or more. The upper 15 inches is yellowish brown sandy loam, and the lower 5 inches is light gray sandy clay loam.

Typically, the surface layer of the Penney soil is dark grayish brown fine sand about 7 inches thick. The subsurface layer is fine sand, and it extends to a depth of 60 inches. The upper 10 inches is yellowish brown, and the lower 43 inches is very pale brown. Below this to a depth of 80 inches is very pale brown fine sand and thin lamellae of strong brown loamy fine sand.

In 95 percent of the areas mapped as Otela-Penney complex, 0 to 5 percent slopes, Otela, Penney, and similar soils make up 80 to 100 percent of the map unit. Generally, the mapped areas are about 55 percent Otela and similar soils and about 43 percent Penney and similar soils. The components of this map unit are so intricately intermingled that it was not practical to map them separately. The proportions and patterns of Otela, Penney, and similar soils are relatively consistent in most delineations of the map unit.

Soils that have dissimilar characteristics make up about 0 to 20 percent of the map unit. In 0 to 20 percent of the mapped areas, the dissimilar soils make up more than 20 percent. The dissimilar soils included in mapping are small areas of Blanton and Ortega soils and areas of soils that have sand over rock. Individual areas of inclusions are smaller than 5 acres in size. Blanton and Ortega soils are moderately well drained and are in the lower parts of the landscape.

A seasonal high water table is at a depth of 48 to 72 inches for 1 to 3 months for the Otela soil during wet periods in most years. The Penney soil has a seasonal high water table at a depth of more than 72 inches. The available water capacity is low in the Otela soil and very low in the Penney soil. Permeability is moderate in the Otela soil and rapid throughout the Penney soil.

These soils are in the Longleaf Pine-Turkey Oak Hills ecological plant community. In most areas, the natural vegetation includes slash pine, longleaf pine, loblolly pine, live oak, laurel oak, post oak, turkey oak, water oak, black cherry, southern redcedar, bluejack oak, and sand pine. The understory consists of lopsided indiangrass, hairy panicum, greenbriar, hawthorn, persimmon, fringeleaf paspalum, hairy tick clover, dwarf huckleberry, chalky bluestem, creepy bluestem, and pineland threeawn. Most areas of this map unit are used for the productionn of planted pine, crops, or pasture.

These soils have severe limitations for cultivated crops because of droughtiness during dry periods. Plant nutrients leach rapidly. Corn, peanuts, soybeans, tobacco, and watermelons are crops that can be grown with intensive management and the use of good conservation practices. Using a crop rotation system that includes cover crops, returning crop residue to the soil, and properly applying fertilizer and lime are practices that are necessary for good yields. Irrigation is desirable during droughty periods. Soil blowing is a severe hazard if the topsoil is left unprotected.

This map unit is moderately suited to tame pasture (fig. 8). Deep-rooting grasses, such as improved bahiagrass and bermudagrass, are suited. Yields are generally reduced by periodic droughts. Careful management is required to maintain good grazing. This includes the establishment of a proper plant population,

Figure 8.—An area of Otela-Penney complex, 0 to 5 percent slopes. Areas of this map unit are used for pasture, pecan groves, or pine plantations.

applications of fertilizer and lime, and controlled grazing. Irrigation improves the quality of grazing and of hay crops. If available during long dry periods, the use of irrigation water may be economically justifiable. These soils are not suited to shallow-rooting pasture plants because the soils cannot retain sufficient moisture in the rooting zone for good growth.

The potential productivity for pine trees is moderately high for the Otela soil and moderate for the Penney soil. Slash pine, longleaf pine, and loblolly pine are suitable for planting. The thick, sandy texture restricts the use of wheeled equipment. This limitation can be overcome by harvesting when the soils are moist. Seedling mortality, which is caused by droughtiness, can be partially reduced by increasing the tree planting rate and the planting depth. Plant competition can be controlled by site preparation practices, such as chopping or controlled burning. A harvesting system that leaves most of the biomass on the surface is recommended.

This map unit has slight limitations for dwellings without basements and local roads and streets. It has moderate limitations for septic tank absorption fields in areas of the Otela soil because of the wetness and slow permeability. It has slight limitations for septic tank absorption fields in areas of the Penney soil. In areas that have a concentration of homes and septic tank absorption fields, ground-water contamination can be a hazard because of poor filtration.

This map unit has severe limitations for recreational uses. The loose, sandy surface layer limits trafficability. Suitable topsoil fill material or some other type of surface stabilization is necessary to overcome this limitation. Soil blowing is a hazard. Establishing and maintaining a good vegetative cover or planting windbreaks can control soil blowing.

The Otela soil is in capability subclass IIIs, and the woodland ordination symbol is 10S. The Penney soil is in capability subclass IVs, and the woodland ordination symbol is 8S.

6—Oaky-Rawhide, depressional, complex

The poorly drained Oaky soil is on flatwoods. The very poorly drained Rawhide soil is in small depressions that are about 2 to 4 acres in size and are interspersed in the flatwoods. These soils occur in a regular, repeating pattern on the landscape. The slope is smooth or slightly concave and ranges from 0 to 2 percent. Individual areas are irregular in shape and are more than 100 acres in size.

Typically, the surface layer of the Oaky soil is very dark gray fine sand about 6 inches thick. The subsurface layer is light gray fine sand to a depth of 13 inches. The subsoil is gray sandy clay loam to a depth of 80 inches.

Typically, the surface layer of the Rawhide, depressional, soil is black mucky fine sand about 6 inches thick. The subsoil is sandy clay loam to a depth of 80 inches or more. The upper 12 inches is black, the next 47 inches is very dark gray, and below this is gray to a depth of 80 inches or more.

In 80 percent of the areas mapped as Oaky-Rawhide, depressional, complex, Oaky, Rawhide, depressional, and similar soils make up 80 to 100 percent of the map unit. The similar soils include soils like Oaky and Rawhide soils that are underlain by soft limestone. Generally, the mapped areas are about 65 percent Oaky soil and similar soils in broad areas in the flatwoods and about 25 percent Rawhide soil and similar soils. The components of this map unit occur as areas so intricately intermingled that it was not practical to map them separately at the scale used in mapping. The proportions and patterns of Oaky, Rawhide, and similar soils are relatively consistent in most mapped areas.

In 0 to 20 percent of the mapped areas, the dissimilar soils make up more than 20 percent of the unit. The dissimilar soils included in mapping are small areas of Chaires and Tooles soils and other soils that are underlain by limestone bedrock. Individual areas of inclusions are smaller than 5 acres in size and are in similar landscape positions.

A seasonal high water table is at a depth of 6 to 18 inches in areas of the Oaky soil on flatwoods for 1 to 3 months during wet periods in most years. The Rawhide, depressional, soil has a seasonal high water table that is above the surface for 6 to 9 months during wet periods and for short periods after heavy rainfall during dry periods. The seasonal high water table recedes to a depth of 24 to 40 inches or more in both soils during droughty periods. The available water capacity is moderate. Permeability is slow in the Oaky soil and very slow or slow in the Rawhide soil.

These soils are in the North Florida Flatwoods ecological plant community. In most areas in the flatwoods, the natural vegetation includes slash pine, loblolly pine, longleaf pine, live oak, laurel oak, red maple, magnolia, scattered sweetgum, and water oak. Pondcypress, baldcypress, laurel oak, pond pine, sweetbay, and water oak grow in the lower areas. The understory consists of gallberry, grape, greenbrier, lopsided indiangrass, chalky bluestem, scattered saw palmettos, hairy panicum, pineland threeawn, and little bluestem in the flatwoods. It consists of maidencane, St. Johnswort, and various other water-tolerant grasses in the lower areas. Most areas of this map unit are used for the production of planted pine.

These soils have severe limitations for cultivated crops because of the wetness and the ponding in depressions. They have low natural fertility. However, they are suited to most vegetable crops if they are intensively managed, including the use of a water-control system that removes excess water rapidly and provides for subsurface irrigation. Soil-improving crops and crop residue can protect the soils from erosion and maintain the content of organic matter. Seedbed preparation should include planting on beds. Fertilizer should be applied according to the needs of the crop. Most of the depressional areas are unsuited for cultivated crops.

This map unit is well suited to tame pasture if water is properly controlled. If properly managed, a good pasture of grass or a grass-legume mixture can be established. Water-control measures are needed to remove the excess surface water during long, rainy periods. Irrigation is needed for the best yields of white clover or other adapted, shallow-rooted pasture plants during dry periods. Establishing an optimum plant population, applying fertilizer and lime, and controlling grazing help to maintain a good plant cover and increase the production of forage. Most of the depressional areas are unsuited for tame pasture. Careful management is required to maintain good grazing. This includes the establishment of a proper plant population, applications of fertilizer and lime, and controlled grazing.

The potential productivity for pine trees is very high for the Oaky soil on the flatwoods. In the depressions, the productivity is very low. Loblolly pine and slash pine are suitable for planting in the flatwoods. The equipment limitation, seedling mortality, and plant competition are management concerns. Seasonal wetness is the main limitation. The use of equipment that has large tires or tracks helps to overcome the equipment limitation and minimizes compaction and root damage during thinning activities. Preparing the site and planting and harvesting the trees during drier periods also help to overcome the equipment limitation. Good site preparation practices, such as harrowing and bedding, help to establish seedlings, control competing vegetation, and facilitate planting. Leaving all of the plant debris on the site helps to maintain the content of organic matter in the soils. The trees respond well to applications of fertilizer.

This map unit has severe limitations for dwellings without basements, local roads and streets, and septic tank absorption fields. The seasonal high water table, poor filtration, and slow percolation are the main limitations. Deep drainage reduces the wetness. Suitable fill material can be used to elevate building sites. Septic tank absorption fields can be mounded to maintain the system above the seasonal high water table and improve the percolation. Drainage and the use of suitable fill to elevate road beds minimizes wetness in areas of road construction.

This map unit has severe limitations for recreational development, such as playgrounds, picnic areas, and paths and trails. The seasonal high water table, ponding in the depressions, and the sandy surface texture are the main limitations. Drainage is needed before using areas of this map unit for these purposes. Suitable topsoil fill material or resurfacing is needed to improve the trafficability.

The Oaky soil is in capability subclass IVw, and the woodland ordination symbol is 13W. The Rawhide, depressional, soil is in capability subclass VIIw, and the woodland ordination symbol is 2W.

7—Chaires-Chaires, depressional, complex

These poorly drained and very poorly drained, nearly level soils are in broad areas on the flatwoods. The Chaires, depressional, soil is in small depressions that are about 2 to 4 acres in size and are interspersed in the flatwoods. The soils occur in a regular, repeating pattern on the landscape. The slope is smooth or slightly concave and ranges from 0 to 2 percent. Individual areas are irregular in shape and are more than 100 acres in size.

Typically, the surface layer of the Chaires soil that is in a broad area on the flatwoods is black fine sand about 8 inches thick. The subsurface layer is fine sand to a depth of 24 inches. The upper 6 inches is grayish brown, and the lower 9 inches is light brownish gray. The upper part of the subsoil is loamy fine sand to fine sand, and it extends to a depth of 32 inches. The upper 4 inches is black, and the next 4 inches is dark brown. The next 14 inches is brown fine sand. The lower part of the subsoil is grayish brown sandy clay loam to a depth of 72 inches or more.

Typically, the surface layer of the Chaires, depressional, soil is black mucky fine sand about 3 inches thick. The subsurface layer extends to a depth of about 24 inches. It is fine sand. The upper 10 inches is grayish brown, and the lower 11 inches is light brownish gray. The upper part of the subsoil is fine sand, and it extends to a depth of 50 inches. The upper 8 inches is black, the next 8 inches is dark brown, and the lower 10 inches is brown. The lower part of the subsoil is sandy clay loam to a depth of 80 inches or more. The upper 15 inches is grayish brown, and the lower 15 inches is light brownish gray.

In 80 percent of areas mapped as Chaires-Chaires, depressional, complex, Chaires and similar soils make up 80 to 100 percent of the map unit. The similar soils include soils that have a loamy subsoil within a depth of 40 inches and soils that have the upper part of the subsoil at a depth of more than 30 inches. Generally, the mapped areas are about 55 percent Chaires soil and similar soils in broad areas in the flatwoods and about 35 percent Chaires, depressional, soil and similar soils. The components of this map unit occur as areas so intricately intermingled that it was not practical to map them separately at the scale used in mapping. The proportions and patterns of Chaires and similar soils are relatively consistent in most mapped areas.

In 0 to 20 percent of the mapped areas, the dissimilar soils make up more than 20 percent of the unit. The dissimilar soils included in mapping are small areas of Leon, Oaky, and Tooles soils and other soils that are underlain by soft limestone. Individual areas of inclusions are smaller than 5 acres in size. These soils are mostly on flatwoods. In some areas, Leon soils are in depressions.

A seasonal high water table is at a depth of 6 to 18 inches in areas of the Chaires soil on flatwoods for 1 to 3 months during wet periods in most years. The Chaires, depressional, soil has a seasonal high water table above the surface for 6 to 9 months during wet periods and for short periods after heavy rainfall. The seasonal high water table recedes to a depth of 24 to 40 inches or more in both soils during droughty periods. The available water capacity is low. Permeability is moderately slow.

These soils are in the North Florida Flatwoods ecological plant community. In most areas in the flatwoods, the natural vegetation includes slash pine, longleaf pine, loblolly pine, live oak, laurel oak, and water oak. Pondcypress, pond pine, scattered sweetgum, red maple, sweetbay, baldcypress, and blackgum grow in the lower areas. The understory consists of gallberry, grape, greenbrier, lopsided indiangrass, chalky bluestem, scattered saw palmettos, hairy panicum, pineland threeawn, and little bluestem in the flatwoods. It consists of maidencane, St. Johnswort, and various other water-tolerant grasses in the lower areas. Most areas of this map unit are used for the production of planted pine or pasture.

These soils have severe limitations for cultivated crops because of the wetness, ponding in the depressions, and low natural fertility. However, they are suited to most vegetable crops if they are intensively managed, including the use of a water-control system that removes excess water rapidly and provides for subsurface irrigation. Soil-improving crops and crop residue can protect the soils from erosion and maintain the content of organic matter.

Figure 9.—An area of Chaires-Chaires, depressional, complex. The depressional area is poorly suited to planted pine because of the ponding. It supports the natural vegetation, mostly pondcypress. The Chaires soil on flatwoods has been cleared and prepared for the next planting.

Seedbed preparation should include planting on beds. Fertilizer should be applied according to the needs of the crop. Most of the depressional areas are unsuited for cultivated crops.

This map unit is well suited to tame pasture if water is properly controlled. If properly managed, a good pasture of grass or a grass-legume mixture can be established. Water-control measures are needed to remove the excess surface water during long, rainy periods. Irrigation is needed for the best yields of white clover or other adapted, shallow-rooted pasture plants during dry periods. Establishing an optimum plant population, applying fertilizer and lime, and controlling grazing help to maintain a good plant cover and increase the production of forage. Most of the depressional areas are unsuited for tame pasture. Careful management is required to maintain good grazing. This includes the establishment of a proper plant population, applications of fertilizer and lime, and controlled grazing.

The potential productivity for pine trees is high for the Chaires soil on the flatwoods and very low for the Chaires, depressional, soil (fig. 9). Slash pine is suitable for planting on the flatwoods. The equipment limitation, seedling mortality, and plant competition are management concerns. Seasonal wetness is the main limitation. The use of equipment that has large tires or tracks helps to overcome the equipment limitation and minimizes compaction and root damage during thinning activities. Preparing the site and planting and harvesting the trees during drier periods also help to overcome equipment limitation. Good site preparation practices, such as harrowing and bedding, help to establish seedlings, control competing vegetation, and facilitate planting. Leaving all of the plant debris on the site helps to maintain the content of organic matter in the soils. The trees respond well to applications of fertilizer.

This map unit has severe limitations for dwellings without basements, local roads and streets, and septic tank absorption fields. The seasonal high water table, poor filtration, and slow percolation are the main limitations. Deep drainage reduces the wetness. Suitable fill material can be used to elevate building sites. Septic tank absorption fields can be mounded to maintain the system above the seasonal high water table and improve the percolation. Drainage and the use of suitable fill to elevate road beds minimizes wetness in areas of road construction.

This map unit has severe limitations for recreational development, such as playgrounds, picnic areas, and paths and trails. The seasonal high water table that is near the surface during wet periods, the ponding in depressions, and the sandy surface texture are severe limitations. Drainage is needed before using areas of this map unit for these purposes. Suitable topsoil fill material or resurfacing is needed to improve the trafficability.

The Chaires soil is in capability subclass IVw, and the woodland ordination symbol is 10W. The Chaires, depressional, soil is in capability subclass VIIw, and the woodland ordination symbol is 2W.

9—Sapelo-Chaires, depressional, complex

These poorly drained and very poorly drained, nearly level soils are in broad areas on the flatwoods. The Chaires, depressional, soil is in small depressions that are about 3 to 5 acres in size and are interspersed in the flatwoods. The soils occur in a regular, repeating pattern on the landscape. The slope is smooth or slightly concave and ranges from 0 to 2 percent. Individual areas are irregular in shape and are more than 100 acres in size.

Typically, the surface layer of the Sapelo soil is very dark gray fine sand about 6 inches thick. The subsurface layer is fine sand to a depth of 28 inches. The upper 7 inches is gray, and the lower 15 inches is light gray. The upper part of the subsoil is fine sand, and it extends to a depth of 45 inches. The first 6 inches is black, and the next 11 inches is dark reddish brown. Below this is about 15 inches of light gray fine sand. The lower part of the subsoil is sandy clay loam and fine sandy loam to a depth of 80 inches or more. The upper 13 inches is light brownish gray, and the lower 7 inches is light olive.

Typically, the surface layer of the Chaires, depressional, soil is black mucky fine sand about 6 inches thick. The subsurface layer is fine sand, and it extends to a depth of about 25 inches. The upper 10 inches is grayish brown, and the lower 9 inches is light brownish gray. The upper part of the subsoil is fine sand, and it extends to a depth of 65 inches. The upper 9 inches is black, the next 9 inches is dark brown, and the lower 22 inches is brown. The lower part of the subsoil is grayish brown sandy clay loam to a depth of 75 inches and is light brownish gray sandy loam to a depth of 80 inches or more.

In 80 percent of areas mapped as Sapelo-Chaires, depressional, complex, Sapelo soil and similar soils make up 80 to 100 percent of the map unit. These similar soils include soils that have a loamy subsoil within a depth of 40 inches of the surface and soils that have the upper part of the subsoil at a depth of more than 30 inches. Generally, the mapped areas are about 65 percent Sapelo soil and similar soils in broad areas in the flatwoods and about 25 percent Chaires, depressional, soil and similar soils. The components of this map unit occur as areas so intricately intermingled that it was not practical to map them separately at the scale used in mapping. The proportions and patterns of Sapelo and Chaires soils and similar soils are relatively consistent in most mapped areas.

In 0 to 20 percent of the mapped areas, the dissimilar soils make up more than 20 percent of the unit. The dissimilar soils included in mapping are small areas of Albany, Hurricane, and Leon soils and other soils that are similar to the Sapelo soil but are somewhat poorly drained and are at slightly higher elevations. Individual areas of inclusions are smaller than 5 acres in size.

A seasonal high water table is at a depth of 6 to 18 inches in areas of the Sapelo soil on flatwoods for 1 to 3 months during wet periods in most years. A seasonal high water table is above the surface of the Chaires, depressional, soil for 6 to 9 months during wet periods and for short periods after heavy rainfall in dry periods during most years. It recedes to a depth of 24 to 40 inches or more in both soils during droughty periods. The available water capacity is low. Permeability is moderately slow to moderate.

These soils are in the North Florida Flatwoods ecological plant community. In most areas in the flatwoods, the natural vegetation includes slash pine, longleaf pine, loblolly pine, live oak, laurel oak, and water oak. Pondcypress, baldcypress, pond pine, red maple, blackgum, and sweetbay grow in the lower areas. The understory consists of gallberry, grape, greenbrier, lopsided indiangrass, chalky bluestem, scattered saw palmettos, hairy panicum, pineland threeawn, and little bluestem in the flatwoods. It consists of maidencane, St. Johnswort, and various other water-tolerant grasses in the lower areas. Most areas of this map unit are used for the production of planted pine or pasture.

These soils have severe limitations for cultivated crops because of the wetness, ponding in the depressions, and low natural fertility. However, they are suited to most vegetable crops if they are intensively managed, including the use of a water-control system that removes excess water rapidly and provides for subsurface irrigation. Soil-improving crops and crop residue can protect the soils from erosion and maintain the content of organic matter. Seedbed preparation should include planting on beds. Fertilizer should be applied according to the needs of the crop. Most of the depressional areas are unsuited for cultivated crops.

This map unit is well suited to tame pasture if water is properly controlled. If properly managed, a good pasture of grass or a grass-legume mixture can be established. Water-control measures are needed to remove the excess surface water during long, rainy periods. Irrigation is needed for the best yields of white clover or other adapted, shallow-rooted pasture plants during dry periods. Establishing an optimum plant population, applying fertilizer and lime, and controlling grazing help to maintain a good plant cover and increase the production of forage. Most of the depressional areas are unsuited for tame pasture. Careful management is required to maintain good grazing. This includes the establishment of a proper plant population, applications of fertilizer and lime, and controlled grazing.

The potential productivity for pine trees is moderately high for the Sapelo soil on the flatwoods and very low for the Chaires, depressional, soil. Slash pine is suitable for planting on the flatwoods. The equipment limitation, seedling mortality, and plant competition are management concerns. Seasonal wetness is the main limitation. The use of equipment that has large tires or tracks helps to overcome the equipment limitation and minimizes compaction and root damage during thinning activities. Preparing the site and planting and harvesting the trees during drier periods also help to overcome the equipment limitation. Good site preparation practices, such as harrowing and bedding, help to establish seedlings, control competing vegetation, and facilitate planting. Leaving all of the plant debris on the site helps to maintain the content of organic matter in the soils. The trees respond well to applications of fertilizer.

This map unit has severe limitations for dwellings without basements, local roads and streets, and septic tank absorption fields. The seasonal high water table, poor filtration, and slow percolation in areas of the Chaires, depressional, soil are the main limitations. Deep drainage reduces the wetness. Suitable fill material can be used to elevate building sites. Septic tank absorption fields can be mounded to maintain the system above the seasonal high water table and improve the percolation. Drainage and the use of suitable fill to elevate road beds minimizes wetness in areas of road construction.

This map unit has severe limitations for recreational development, such as playgrounds, picnic areas, and paths or trails. The seasonal high water table that is near the surface during wet periods, the ponding in depressions, and the sandy surface texture are severe limitations. Drainage is needed before using areas of this map unit for these purposes. Suitable topsoil fill material or resurfacing is needed to improve the trafficability.

The Sapelo soil is in capability subclass IVw, and the woodland ordination symbol is 10W. The Chaires, depressional, soil is in capability subclass VIIw, and the woodland ordination symbol is 2W.

10—Pamlico and Dorovan soils, frequently flooded

These very poorly drained, nearly level soils are on flood plains. Some are isolated by meandering stream channels. These soils do not occur in a regular, repeating pattern on the landscape. The slope is smooth or slightly concave and ranges from 0 to 1 percent. Individual areas are irregular in shape and are more than 100 acres in size.

Typically, the surface layer of the Pamlico soil is black muck to a depth of about 31 inches. The underlying material is light brownish gray fine sand to a depth of 80 inches or more.

Typically, the Dorovan soil is black muck to a depth of about 41 inches and dark reddish brown muck to a depth of 62 inches. The underlying material is gray fine sand to a depth of 80 inches or more.

In 80 percent of areas mapped as Pamlico-Dorovan soils, frequently flooded, Pamlico and Dorovan soils and similar soils make up 80 to 100 percent of the map unit. The similar soils include soils that are similar to the Pamlico soil but are underlain with loamy material. Generally, the mapped areas are about 55 percent Pamlico soil and similar soils and about 43 percent Dorovan and similar soils. The components of this map unit occur as areas so intricately intermingled that it was not practical to map them separately at the scale used in mapping. The proportions and patterns of Pamlico and Dorovan soils and similar soils are relatively consistent in most mapped areas.

In 0 to 20 percent of the mapped areas, the dissimilar soils make up more than 20 percent of the unit. The dissimilar soils included in mapping are small areas of Lynn Haven and Surrency soils that are also in depressions. Individual areas of inclusions are smaller than 5 acres in size.

A seasonal high water table is near or above the surface of these soils for 6 to 9 months during most wet periods. It recedes to a depth of more than 20 inches during dry seasons. The available water capacity is very high. Permeability is moderately rapid or moderate in the Pamlico soil and moderate in the Dorovan soil.

These soils are in the Swamps Hardwoods ecological plant community. In most areas, the natural vegetation is pondcypress, baldcypress, pond pine, blackgum, sweetbay, Carolina ash, and red maple. The understory is mainly cordgrass, bullrush, button bush, elderberry, water hyacinth, arrowhead, and dollarwort.

These soils have severe limitations for cultivated crops, tame pasture, and planted pine trees because of the flooding and the prolonged periods of wetness unless a major water-control system is used.

These soils have severe limitations for all urban uses and for recreational development, such as playgrounds, picnic areas, and paths and trails. The flooding, ponding, and excess humus are the main limitations. They are very difficult to overcome. Careful consideration should be given before using areas of this map unit for these purposes.

The Pamlico and Dorovan soils are in capability subclass VIIw, and the woodland ordination symbol is 2W.

11—Pamlico and Dorovan soils, depressional

These very poorly drained, nearly level soils are in depressions. The soils do not occur in a regular, repeating pattern on the landscape. The slope is smooth or slightly concave and ranges from 0 to 1 percent. Individual areas are irregular in shape and range from about 10 to more than 100 acres in size.

Typically, the surface layer of the Pamlico soil is black muck to a depth of about 22 inches. The underlying material is light brownish gray fine sand to a depth of 80 inches.

Typically, the Dorovan soil is black muck to a depth of about 45 inches and dark reddish brown muck to a depth of 57 inches. The underlying material is gray fine sand to a depth of 80 inches or more.

In 80 percent of areas mapped as Pamlico and Dorovan soils, depressional, Pamlico and Dorovan soils and similar soils make up 80 to 100 percent of the map unit. The similar soils include soils that are similar to the Pamlico soil but are underlain with loamy material. Generally, the mapped areas are about 55 percent Pamlico soil and similar soils and about 43 percent Dorovan and similar soils. Each of the soils does not necessarily occur in every mapped area. The proportions and patterns of Pamlico and Dorovan soils and similar soils varies from area to area. Areas of individual soils are large enough to be mapped separately. Because of the present and predicted land uses, however, they were mapped as one unit.

In 0 to 20 percent of the mapped areas, the dissimilar soils make up more than 20 percent of the unit. The dissimilar soils included in mapping are small areas of Lynn Haven and Surrency soils that are also in depressions. These soils are mineral and have a loamy surface layer with a high content of organic matter. Individual areas of inclusions are smaller than 5 acres in size.

A seasonal high water table is above the surface of these soils for 6 to 9 months during most wet periods. It recedes to a depth of 12 inches during dry periods. The available water capacity is high in the Pamlico soil and very high in the Dorovan soil. Permeability is moderately rapid or moderate in the Pamlico soil and moderate in the Dorovan soil.

These soils are in the Swamps Hardwoods ecological plant community. In most areas, the natural vegetation is pondcypress, baldcypress, pond pine, red maple, blackgum, Carolina ash, and water oak. The understory is mainly greenbriar, fetterbush lyonia, lizards tail, cordgrass, bullrush, button bush, elderberry, water hyacinth, arrowhead, and dollarwort.

These soils have severe limitations for cultivated crops, tame pasture, and planted pine trees because of the ponding and the prolonged wetness unless a major water-control system is used.

These soils have severe limitations for all urban uses and recreational development, such as playgrounds, picnic areas, and paths or trails. The ponding and excess humus are the main limitations. They are very difficult to overcome. Careful consideration should be given before using areas of this map unit for these purposes.

The Pamlico and Dorovan soils are in capability subclass VIIw, and the woodland ordination symbol is 2W.

13—Meadowbrook-Chaires complex

These poorly drained, nearly level soils are in broad areas on flatwoods. These soils occur in a regular, repeating pattern on the landscape. The slope is smooth or slightly concave and ranges from 0 to 2 percent. Individual areas are irregular in shape and range from 20 to more than 100 acres in size.

Typically, the surface layer of the Meadowbrook soil is very dark gray fine sand about 8 inches thick. The subsurface layer is fine sand to a depth of 64 inches. The upper 6 inches is light gray, the next 17 inches is very pale brown, the next 19 inches is light gray, and the lower 14 inches is brown. The subsoil is gray fine sandy loam to a depth of 80 inches or more.

Typically, the surface layer of the Chaires soil is very dark gray fine sand about 5 inches thick. The subsurface layer extends to a depth of about 24 inches. It is fine sand. The upper 10 inches is grayish brown, and the lower 9 inches is light brownish gray. The upper part of the subsoil is fine sand, and it extends to a depth of 60 inches. The upper 9 inches is black, the next 9 inches is dark brown, and the lower 18 inches is brown. The lower part of the subsoil is grayish brown sandy clay loam to a depth of 75 inches and light brownish gray sandy loam to a depth of 80 inches or more.

In 80 percent of areas mapped as Meadowbrook-Chaires complex, Meadowbrook and Chaires soils and similar soils make up 80 to 100 percent of the map unit. The similar soils include soils that have a loamy subsoil within a depth of 40 inches and soils that have limestone rock within a depth of 80 inches. Generally, the mapped areas are about 65 percent Meadowbrook soil and similar soils and about 25 percent Chaires soil and similar soils. The components of this map unit occur as areas so intricately intermingled that it was not practical to map them separately at the scale used in mapping. The proportions and patterns of Meadowbrook and Chaires soils and similar soils are relatively consistent in most mapped areas.

In 0 to 20 percent of the mapped areas, the dissimilar soils make up more than 20 percent of the unit. The dissimilar soils included in mapping are small areas of Leon and Oaky soils at slightly higher elevations and Tooles soils and other soils that are underlain by soft limestone and are at similar elevations. Individual areas of inclusions are smaller than 5 acres in size.

A seasonal high water table is at a depth of 0 to 12 inches in the Meadowbrook soil for 2 to 6 months. A seasonal high water table is at a depth of 6 to 18 inches in the Chaires soil for 1 to 3 months during wet periods in most years. The available water capacity is low. Permeability is moderately slow to moderate in the Meadowbrook soil and slow in the Chaires soil.

These soils are in the North Florida Flatwoods ecological plant community. In most areas, the natural vegetation includes slash pine, loblolly pine, longleaf pine, live oak, laurel oak, scattered sweetgum, blackgum, and water oak. The understory consists of gallberry, grape, greenbrier, lopsided indiangrass, chalky bluestem, scattered saw palmetto, hairy panicum, pineland threeawn, and little bluestem. Most areas of this map unit are used for the production of planted pine or pasture.

These soils have severe limitations for cultivated crops because of the wetness and low natural fertility. However, they are suited to most vegetable crops if they are intensively managed, including the use of a water-control system that removes excess water rapidly and provides for subsurface irrigation. Soil-improving crops and crop residue can protect the soils from erosion and maintain the content of organic matter. Seedbed preparation should include planting on beds. Fertilizer should be applied according to the needs of the crop.

This map unit is well suited to tame pasture if water is properly controlled. If properly managed, a good pasture of grass or a grass-legume mixture can be established. Water-control measures are needed to remove the excess surface water during long, rainy periods. Irrigation is needed for the best yields of white clover or other adapted, shallow-rooted pasture plants during dry periods. Establishing an optimum plant population, applying fertilizer and lime, and controlling grazing help to maintain a good plant cover and increase the production of forage. Careful management is required to maintain good grazing. This includes the establishment of a proper plant population, applications of fertilizer and lime, and controlled grazing.

The potential productivity for pine trees is high for the Meadowbrook soil and moderately high for the Chaires soil. Slash pine and loblolly pine are suitable for planting. The equipment limitation, seedling mortality, and plant competition are management concerns. Seasonal wetness is the main limitation. The use of equipment that has large tires or tracks helps to overcome the equipment limitation and minimizes compaction and root damage during thinning activities. Preparing the site and planting and harvesting the trees during drier periods also help to overcome equipment limitation. Good site preparation practices, such as harrowing and bedding, help to establish seedlings, control competing vegetation, and facilitate planting. Leaving all of the plant debris on the site helps to maintain the content of organic matter in the soils. The trees respond well to applications of fertilizer.

This map unit has severe limitations for dwellings without basements, local roads and streets, and septic tank absorption fields. The seasonal high water table, poor filtration, and slow percolation are the main limitations. Deep drainage reduces the wetness. Suitable fill material can be used to elevate building sites. Septic tank absorption fields can be mounded to maintain the system above the seasonal high water table and improve the percolation. Drainage and the use of suitable fill to elevate road beds minimizes wetness in areas of road construction.

This map unit has severe limitations for recreational development, such as playgrounds, picnic areas, and paths and trails. The seasonal high water table that is near the surface during wet periods and the sandy surface texture are severe limitations. Drainage is needed before using areas of this map unit for these purposes. Suitable topsoil fill material or resurfacing is needed to improve the trafficability.

The Meadowbrook soil is in capability subclass IVw, and the woodland ordination symbol is 11W. The Chaires soil is in capability subclass IVw, and the woodland ordination symbol is 10W.

14—Leon fine sand

This soil is nearly level and poorly drained. It is on broad areas in the flatwoods. The mapped areas are irregular in shape and range from about 25 to more than 3,000 acres in size. The slope is nearly smooth to concave and ranges from 0 to 2 percent.

Typically, the surface layer of the Leon soil is black fine sand about 4 inches thick. The subsurface layer is light brownish gray fine sand to a depth of 10 inches. The upper 7 inches of the subsoil is dark reddish brown fine sand, and the lower 7 inches is yellowish brown fine sand. Below this is 20 inches of light gray fine sand, and the next 19 inches is light brownish gray fine sand. Another subsoil is between a depth of 63 and 80 inches. It is very dark brown fine sand.

In 80 percent of areas mapped as Leon fine sand, Leon and similar soils make up 80 to 100 percent of the map unit. The similar soils include Lynn Haven and Wesconnett fine sand. Soils that have dissimilar characteristics make up about 0 to 20 percent of the map unit. In 0 to 20 percent of the mapped areas, the dissimilar soils make up more than 20 percent. The dissimilar soils included in mapping are small areas of Sapelo soils and soils that have an organic surface layer. Other soils included in mapping are similar to the Leon soil but they have a deeper subsoil. Individual areas of inclusions are smaller than 5 acres in size. Sapelo and soils that are similar to the Leon soil are in landscape positions similar to those of the Leon soil.

A seasonal high water table is at a depth of 6 to 18 inches in the Leon soil for 1 to 3 months during wet periods in most years. It recedes to a depth of more than 18 inches during dry periods. The available water capacity is low. Permeability is moderate to moderately rapid.

This soil is in the North Florida Flatwoods ecological plant community. In most areas, the natural vegetation includes slash pine, longleaf pine, loblolly pine, post oak, and water oak. The understory consists of saw palmetto, running oak, galloper, waxmyrtle, huckleberry, pineland threeawn, bluestem, briar, and brackenfern. Most areas of this soil are used for the production of planted pine or pasture.

This soil has severe limitations for cultivated crops because of the wetness and low natural fertility. If a good water-control system and soil-improving measures are used, this soil is suited to many crops. A water-control system is needed to remove the excess surface water during wet periods and to provide water for subsurface irrigation during droughty periods. Row crops should be rotated with close-growing, soil-improving cover crops. Soil-improving cover crops and crop residue should be used to maintain the content of organic matter and to control erosion. Seedbed preparation should include planting on beds. Fertilizer and lime should be applied according to the needs of the crops.

This soil is well suited to tame pasture. Improved bermudagrass, improved bahiagrass, and clover are well adapted to areas of this soil, and they grow well if properly managed. A water-control system is needed to remove the excess surface water during heavy rains. To obtain high yields, regular applications of fertilizer are needed. Grazing should be controlled to maintain the vigor of plants.

The potential productivity of this soil for pine trees is moderately high. Slash pine and longleaf pine are suitable for planting. The timely use of site preparation practices, such as harrowing and bedding, help to establish seedlings, reduce the seedling mortality rate, and increase early growth. Chopping and bedding also reduce the debris, control competing vegetation, and facilitate planting operations. Using field machinery that is equipped with large tires or tracks helps to overcome the equipment limitation, reduces soil compaction, and reduces the damage to roots during thinning operations. A logging system that leaves residual biomass distributed over the site helps to maintain the content of organic matter and the soil fertility. Applications of fertilizer can provide an excellent growth response.

This soil has severe limitations for dwellings without basements, local roads and streets, and septic tank absorption fields. The seasonal high water table and poor filtration are the main limitations. Deep drainage reduces the wetness. If areas of this soil are used as a septic tank absorption field, mounding of the field is needed. If the density of housing is moderate to high, community sewage systems may be needed to prevent the contamination of ground water from seepage.

This soil has severe limitations for recreational uses. The seasonal high water table that is near the surface during wet periods and the loose, sandy surface layer limit the trafficability. A suitable topsoil fill material or some other type of surface stabilization is necessary to overcome the sandy texture. Soil blowing is a hazard. Establishing and maintaining a good vegetative cover or planting windbreaks can control soil blowing.

This Leon soil is in capability subclass IVw, and the woodland ordination symbol is 10W.

15—Wesconnett and Lynn Haven soils, depressional

These very poorly drained, nearly level soils are in depressions. The soils do not occur in a regular, repeating pattern on the landscape. The slope is smooth or slightly concave and ranges from 0 to 1 percent. Individual areas are irregular in shape and range from about 10 to more than 100 acres in size.

Typically, the surface layer of the Wesconnett soil is black mucky fine sand about 14 inches thick. The upper part of the subsoil is fine sand, and it extends to a depth of 28 inches. The first 7 inches is very dark gray, and the lower 7 inches is dark brown. Below this depth is pale brown fine sand to a depth of 45 inches. The lower part of the subsoil is very dark gray fine sand to a depth of 61 inches. The underlying material is light gray fine sand to a depth of 80 inches or more.

Typically, the surface layer of the Lynn Haven soil is black mucky fine sand about 13 inches thick. The subsurface layer is light brownish gray fine sand to a depth of 19 inches. The upper part of the subsoil is black fine sand to a depth of 27 inches and dark yellowish brown to a depth of 34 inches. Below this to a depth of 52 inches is a layer of yellowish brown fine sand. The lower part of the subsoil to a depth of 80 inches or more is dark reddish brown fine sand.

In 80 percent of areas mapped as Wesconnett and Lynn Haven soils, depressional, Wesconnett and Lynn Haven soils and similar soils make up 80 to 100 percent of the map unit. The similar soils include soils that are similar to the Wesconnett soil but are underlain with loamy material. Generally, the mapped areas are about 55 percent Wesconnett soil and similar soils and about 43 percent Lynn Haven and similar soils. Each of the soils does not necessarily occur in every mapped area. The proportions and patterns of Wesconnett and Lynn Haven soils and similar soils varies from area to area. Areas of individual soils are large enough to be mapped separately. Because of the present and predicted land uses, however, they were mapped as one unit.

In 0 to 20 percent of the mapped areas, the dissimilar soils make up more than 20 percent of the unit. The dissimilar soils included in mapping are small areas of Pamlico and Dorovan soils. Individual areas of inclusions are smaller than 5 acres in size. Pamlico and Dorovan soils are in similar landscape positions.

A seasonal high water table is above the surface of these soils for 6 to 9 months during wet periods in most years. It recedes to a depth of more than 12 inches during dry periods. The available water capacity is moderate in the Wesconnett soil and high in the Lynn Haven soil. Permeability is moderate to moderately rapid.

These soils are in the Swamps Hardwoods ecological plant community. In most areas, the natural vegetation consists of pondcypress, baldcypress, sweetbay, blackgum, Carolina ash, pond pine, red maple, and water oak. The understory is mainly cordgrass, bullrush, button bush, elderberry, water hyacinth, arrowhead, and dollarwort.

These soils have severe limitations for cultivated crops, tame pasture, and planted pine trees because of the prolonged wetness unless a major water-control system is used.

This map unit has severe limitations for all urban uses and recreational development, such as playgrounds, picnic areas, and paths and trails. The ponding and the sandy texture are the main limitations. They are very difficult to overcome. Careful consideration should be given before using areas of this map unit for these purposes.

The Wesconnett and Lynn Haven soils are in capability subclass VIIw, and the woodland ordination symbol is 2W.

16—Tooles fine sand

This nearly level, poorly drained soil is on low flatwoods. The mapped areas are irregular in shape and range from about 10 to more than 150 acres in size. The slope is nearly smooth and ranges from 0 to 1 percent.

Typically, the surface layer of the Tooles soil is very dark brown fine sand about 6 inches thick. The subsurface layer is light brownish gray fine sand to a depth of 14 inches. The upper part of the subsoil is fine sand to a depth of 35 inches. The first 11 inches is yellowish brown, and the next 10 inches is light yellowish brown. The lower part of the subsoil is light brownish gray sandy clay loam to a depth of 50 inches, and below this depth is limestone bedrock.

In 95 percent of areas mapped as Tooles fine sand, Tooles and similar soils make up 80 to 100 percent of the map unit. The similar soils include Oaky and Meadowbrook soils.

Soils that have dissimilar characteristics make up about 0 to 20 percent of the map unit. In 0 to 20 percent of the mapped areas, the dissimilar soils make up more than 20 percent. Dissimilar soils included in mapping are small areas of Chaires and Clara soils. Individual areas of inclusions are smaller than 5 acres in size.

A seasonal high water table is at a depth of 6 to 18 inches for 1 to 3 months during wet periods in most years. It recedes to a depth of more than 24 inches during dry periods. The available water capacity is moderate. Permeability is slow.

This soil is in the North Florida Flatwoods ecological plant community. In most areas, the natural vegetation includes slash pine, loblolly pine, cabbage palm, laurel oak, sweetgum, sweetbay, American elm, and live oak. The understory is mainly waxmyrtle, gallberry, scattered saw palmetto, pineland threeawn, various species of blustems, panicums, and paspalum.

This soil has severe limitations for cultivated crops because of the wetness and low fertility. With a water-control system and soil-improving measures, this soil is suited to many crops. A water-control system is needed to remove the excess surface water during wet periods and to provide water for subsurface irrigation during droughty periods. Row crops should be rotated with close-growing, soil-improving cover crops. Soil-improving cover crops and crop residue should be used to maintain the content of organic matter and to control erosion. Seedbed preparation should include planting on beds. Fertilizer and lime should be applied according to the needs of the crops.

This soil is well suited for tame pasture. Improved bermudagrass, improved bahiagrass, and clover are well adapted to this soil. They grow well if properly managed. A water-control system is needed to remove the excess surface water during heavy rains. To obtain high yields, regular applications of fertilizer are needed. Grazing should be controlled to maintain the vigor of plants.

The potential productivity of this soil for pine trees is high. Slash pine, longleaf pine, and loblolly pine are suitable for planting. The timely use of site preparation practices, such as harrowing and bedding, help to establish seedlings, reduce the seedling mortality rate, and increase early growth. Chopping and bedding also reduce the debris, control competing vegetation, and facilitate planting operations. Using field machinery that is equipped with large tires or tracks helps to overcome the equipment limitation, reduces soil compaction, and reduces the damage to roots during thinning operations. A logging system that leaves residual biomass distributed over the site helps to maintain the content of organic matter and the soil fertility. Applications of fertilizer can provide an excellent growth response.

This soil has severe limitations for dwellings without basements, local roads and streets, and septic tank absorption fields. The seasonal high water table, poor filtration, slow percolation, and the sandy texture are the main limitations. Deep drainage reduces the wetness. If areas of this soil are used as a septic tank absorption field, mounding of the field is needed. If the density of housing is moderate to high, community sewage systems may be needed to prevent the contamination of ground water from seepage.

This soil has severe limitations for recreational uses. The seasonal high water table that is near the surface during wet periods and the loose, sandy surface layer are severe limitations for recreational uses. The wetness and the loose, sandy surface layer limit the trafficability. A suitable topsoil fill material or some other type of surface stabilization is necessary to overcome the sandy texture. Soil blowing is a hazard. Establishing and maintaining a good vegetative cover or planting windbreaks can control soil blowing.

This Tooles soil is in capability subclass IIIw, and the woodland ordination symbol is 11W.

18—Surrency, Plummer, and Clara soils, depressional

These very poorly drained, nearly level soils are in depressions in the flatwoods. These soils do not occur in a regular, repeating pattern on the landscape. The slope is smooth or slightly concave and ranges from 0 to 1 percent. Individual areas are irregular in shape and range from about 10 to more than 100 acres in size.

Typically, the surface layer of the Surrency soil is black mucky fine sand about 10 inches thick. The subsurface layer is fine sand to a depth of 28 inches. The upper 6 inches is light brownish gray, and the lower 12 inches is light gray. The subsoil is light grayish brown sandy loam to a depth of 45 inches and grayish brown sandy clay loam to a depth of 80 inches or more.

Typically, the surface layer of the Plummer soil is black fine sand about 8 inches thick. The subsurface layer is fine sand to a depth of 50 inches. The upper 10 inches is light brownish gray, and the lower 32 inches is light gray. The subsoil is light grayish brown sandy loam to a depth of 55 inches and grayish brown sandy clay loam to a depth of 80 inches.

Typically, the surface layer of the Clara soil is black mucky fine sand about 9 inches thick. The subsurface layer is grayish brown fine sand to a depth of 29 inches. The subsoil is brown and yellowish brown fine sand to a depth of 45 inches. The underlying material is light gray fine sand.

In 80 percent of areas mapped as Surrency, Plummer, and Clara soils, depressional, Surrency, Plummer, and Clara soils and similar soils make up 80 to 100 percent of the map unit. The similar soils include soils that are similar to Meadowbrook soils but have a high base saturation. Generally, the mapped areas are about 34 percent Surrency soil and similar soils, about 24 percent Plummer and similar soils, and about 23 percent Clara and similar soils. Each of the soils does not necessarily occur in every mapped area. The proportions and patterns of Surrency, Plummer, and Clara soils and similar soils varies from area to area. Areas of individual soils are large enough to be mapped separately. Because of the present and predicted land uses, however, they were mapped as one unit.

In 0 to 20 percent of the mapped areas, the dissimilar soils make up more than 20 percent of the unit. The dissimilar soils included in mapping are small areas of Dorovan, Pamlico, and soils that are similar to the Clara soil but have a black surface layer 10 to 20 inches thick. These soils are in similar landscape positions. Individual areas of inclusions are smaller than 5 acres in size.

A seasonal high water table is above the surface of these soils for 6 to 9 months during wet periods in most

Figure 10.—An area of Surrency, Plummer, and Clara soils, depressional. Areas of this map unit are not suited to most agricultural and urban uses because of the ponding and the wetness.

years. It recedes to a depth of more than 20 inches during dry periods. The available water capacity is moderate. Permeability is moderate to moderately rapid in the Surrency soil, moderately slow to moderate in the Plummer soil, and rapid in the Clara soil.

These soils are in the Swamps Hardwoods ecological plant community. In most areas, the natural vegetation consists of pondcypress, baldcypress, blackgum, sweetbay, red maple, water oak, and pond pine. The understory is mainly cordgrass, bullrush, button bush, elderberry, water hyacinth, arrowhead, and dollarwort.

These soils have severe limitations for cultivated crops, tame pasture, and planted pine trees because of the prolonged wetness (fig. 10) unless a major water-control system is used.

These soils have severe limitations for all urban uses and recreational development, such as playgrounds, picnic areas, and paths and trails. The ponding, the sandy texture, and the poor filtration in some areas are the main limitations. They are very difficult to overcome. Careful consideration should be given before using areas of this map unit for these purposes.

The Surrency and Plummer soils are in capability subclass VIw, and the woodland ordination symbol is 2W. The Clara soil is in capability subclass VIIw, and the woodland ordination symbol is 2W.

20—Plummer fine sand

This nearly level, poorly drained soil is on low flatwoods and in depressions. The slope is nearly smooth to concave and ranges from 0 to 2 percent. The mapped areas are irregular in shape and range from about 10 to more than 50 acres in size.

Typically, the surface layer of the Plummer soil is black fine sand to a depth of 7 inches. The subsurface layer is fine sand to a depth of 55 inches. The upper 7 inches is grayish brown, the next 8 inches is gray, and the lower 33 inches is light gray. The subsoil is gray fine sandy loam to a depth of 80 inches.

In 80 percent of areas mapped as Plummer fine sand, Plummer soil and similar soils make up 80 to 100 percent of the map unit. The similar soils include Osier and Pelham fine sand. Osier soils do not have a loamy subsoil. Pelham soils have a sandy epipedon about 20 to 40 inches thick.

Soils that have dissimilar characteristics make up about 0 to 20 percent of the map unit. In 0 to 20 percent of the mapped areas, the dissimilar soils make up more than 20 percent. The dissimilar soils included in mapping are small areas of Ridgewood and Surrency soils. Ridgewood soils are in slightly higher positions in the landscape than the Plummer soil. They do not have a loamy subsoil. Surrency soils have an umbric epipedon and are on the lower parts of the landscape. Individual areas of inclusions are smaller than 5 acres in size.

A seasonal high water table is at a depth of 6 to 18 inches during wet periods of most years. The available water capacity is low. Permeability is moderate or moderately slow.

This soil is in the North Florida Flatwoods ecological plant community. In most areas, the natural vegetation includes slash pine, loblolly pine, longleaf pine, live oak, laurel oak, and water oak. The understory consists of saw palmetto, running oak, gallberry, waxmyrtle, huckleberry, pineland threeawn, bluestem, briars, and bracken fern. Most areas of this soil are used for the production of planted pine or pasture.

This soil has severe limitations for cultivated crops because of the wetness and low natural fertility. With a good water-control system and soil-improving measures, this soil is suited to many crops. A water-control system is needed to remove the excess surface water during wet periods and to provide water for subsurface irrigation during droughty periods. Row crops should be rotated with close-growing, soil-improving cover crops. Soil-improving cover crops and crop residue should be used to maintain the content of organic matter and to control erosion. Seedbed preparation should include planting on beds. Fertilizer and lime should be applied according to the needs of the crops.

This soil is well suited to tame pasture. Improved bermudagrass, improved bahiagrass, and clover are well adapted to this soil. They grow well if properly managed. A water-control system is needed to remove the excess surface water during heavy rains. To obtain high yields, regular applications of fertilizer are needed. Grazing should be controlled to maintain the vigor of plants.

The potential productivity of this soil for pine trees is high. Slash pine, loblolly pine, and longleaf pine are suitable for planting. The timely use of site preparation practices, such as harrowing and bedding, help to establish seedlings, reduce the seedling mortality rate, and increase early growth. Chopping and bedding also reduce the debris, control competing vegetation, and facilitate planting operations. Using field machinery that is equipped with large tires or tracks helps to overcome the equipment limitation, reduces soil compaction, and reduces the damage to roots during thinning operations. A logging system that leaves residual biomass distributed over the site helps to maintain the content of organic matter and the soil fertility. Applications of fertilizer can provide an excellent growth response.

This soil has severe limitations for dwellings without basements, local roads and streets, and septic tank absorption fields. The seasonal high water table, poor filtration, and the sandy texture are the main limitations. Deep drainage reduces the wetness. If areas of this soil are used as a septic tank absorption field, mounding of the field is needed. If the density of housing is moderate to high, community sewage systems may be needed to prevent the contamination of ground water from seepage.

This soil has severe limitations for recreational uses. The water table that is near the surface during wet periods and the loose, sandy surface layer are severe limitations for trafficability. Suitable topsoil fill material or some other type of surface stabilization is necessary to overcome the sandy texture. Soil blowing is a hazard. Establishing and maintaining a good vegetative cover or planting windbreaks can control soil blowing.

This Plummer soil is in capability subclass IVw, and the woodland ordination symbol is 11W.

24—Rawhide and Harbeson soils, depressional

These very poorly drained, nearly level soils are in depressions in the flatwoods. The soils do not occur in a regular, repeating pattern on the landscape. The slope is smooth or slightly concave and ranges from 0 to 1 percent. Individual areas are irregular in shape and range from about 10 to more than 100 acres in size.

Typically, the surface layer of the Rawhide soil is black mucky fine sand about 6 inches thick. The subsoil is sandy clay loam to a depth of 80 inches or more. The upper 12 inches is black, the next 8 inches is very dark gray, and below this, to a depth of 80 inches or more, is gray.

Typically, the surface layer of the Harbeson soil is black mucky fine sand about 18 inches thick. The subsurface layer is fine sand to a depth of 55 inches. The upper 18 inches is light brownish gray, and the lower 19 inches is light gray. The subsoil is gray sandy clay loam to a depth of 80 inches or more.

In 80 percent of areas mapped as Rawhide and Harbeson soils, depressional, Rawhide and Harbeson soils and similar soils make up 80 to 100 percent of the map unit. The similar soils include soils that are similar to the Rawhide soil but are underlain by clayey material. Generally, the mapped areas are about 55 percent Rawhide soil and similar soils and about 43 percent Harbeson and similar soils. Each of the soils does not occur necessarily in every mapped area. The proportions and patterns of Rawhide and Harbeson soils and similar soils varies from area to area. Areas of individual soils are large enough to be mapped separately. Because of the present and predicted land uses, however, they were mapped as one unit.

In 0 to 20 percent of the mapped areas, the dissimilar soils make up more than 20 percent of the unit. The dissimilar soils included in mapping are small areas of Pamlico and Dorovan soils. Individual areas of inclusions are smaller than 5 acres in size and are in similar landscape positions.

A seasonal high water table is above the surface of these soils for 6 to 9 months during wet periods in most years. It recedes to a depth of more than 12 inches during dry seasons. The available water capacity is moderate. Permeability is slow or very slow in the Rawhide soil and moderately slow or moderate in the Harbeson soil.

These soils are in the Swamps Hardwoods ecological plant community. In most areas, the natural vegetation consists of pondcypress, baldcypress, pond pine, laurel oak, water oak, sweetgum, Atlantic whitecedar, blackgum, sweetbay, and red maple. The understory is mainly cordgrass, bullrush, button bush, elderberry, water hyacinth, arrowhead, and dollarwort.

These soils have severe limitations for cultivated crops, tame pasture, and planted pine trees because of the prolonged wetness unless a major water-control system is used.

These soils have severe limitations for all urban uses and recreational development, such as playgrounds, picnic areas, and paths and trails. The ponding is the main limitation, and it is very difficult to overcome. Careful consideration should be given before using areas of this map unit for these purposes.

The Rawhide and Harbeson soils are in capability subclass VIIw, and the woodland ordination symbol is 2W.

26—Ridgewood-Hurricane complex, 0 to 5 percent slopes

These soils are nearly level to gently sloping and are somewhat poorly drained. They are on low uplands. The mapped areas are irregular in shape and range from about 20 to more than 150 acres in size. The slope is nearly smooth to convex.

Typically, the surface layer of the Ridgewood soil is very dark gray fine sand about 6 inches thick. The underlying material is fine sand, and it extends to a depth of 80 inches or more. The upper 12 inches is brown, the next 21 inches is very pale brown, and the lower 41 inches is light gray.

Typically, the surface layer of the Hurricane soil is very dark gray fine sand about 5 inches thick. The subsurface layer is fine sand, and it extends to a depth of 51 inches. The upper 11 inches is grayish brown, the next 9 inches is brown, and the next 26 inches is pale brown. The subsoil is fine sand, and it extends to a depth of 80 inches or more. The upper 4 inches is dark brown, the next 11 inches is dark reddish brown, and the lower 14 inches is black.

In 80 percent of areas mapped as Ridgewood-Hurricane complex, 0 to 5 percent slopes, Ridgewood and Hurricane soils and similar soils make up 80 to 100 percent of the map unit. Generally, the mapped areas are about 65 percent Ridgewood and similar soils and about 26 percent Hurricane and similar soils. The components of this map unit are so intricately intermingled that it was not practical to map them separately. The proportions and patterns of Ridgewood and Hurricane soils and similar soils are relatively consistent in most delineations of the map unit.

Soils that have dissimilar characteristics make up about 0 to 20 percent of the map unit. In 0 to 20 percent of the mapped areas, the dissimilar soils make up more than 20 percent of the unit. The dissimilar soils included in mapping are small areas of Albany, Blanton, Leon, Mandarin, and Ortega soils. Individual areas of inclusions are smaller than 5 acres in size. Albany and Blanton soils have a loamy subsoil, and Blanton soils are moderately well drained. Mandarin and Leon soils have a subsoil between a depth of 20 to 30 inches, and Leon soils are poorly drained. Ortega soils are moderately well drained and are on the higher parts of the landscape.

A seasonal high water table is at a depth of 24 to 42 inches for 1 to 3 months during wet periods in most years. It recedes to a depth of more than 42 inches during dry periods. The available water capacity is low. Permeability is rapid throughout the Ridgewood soil and moderately rapid in the Hurricane soil.

These soils are in the mixed Hardwood-Pine ecological plant community. In most areas, the natural vegetation includes slash pine, longleaf pine, live oak, laurel oak, turkey oak, water oak, blackjack oak, and post oak. The understory vegetation consists of lopsided indiangrass, hairy panicum, chalky bluestem, creepy bluestem, pineland threeawn, grassleaf goldaster, and saw palmetto. Most areas of this map unit are used for the production of planted pine, crops, or pasture.

These soils have severe limitations for cultivated crops because of the wetness during wet periods. The high water table during wet seasons can limit the growth of roots. Plant nutrients leach rapidly. Corn, peanuts, soybeans, tobacco, and watermelons are crops that can be grown with intensive management and the use of good conservation practices. Using a crop rotation system that includes cover crops, returning crop residue to the soil, and properly applying fertilizer and lime are practices that are necessary for good yields. Irrigation is desirable during droughty periods. Soil blowing is a severe hazard if the topsoil is left unprotected.

This map unit is moderately suited to tame pasture. Deep-rooting grasses, such as improved bahiagrass and bermudagrass, are suited. Yields are generally reduced by periodic droughts. Careful management is required to maintain good grazing. This includes the establishment of a proper plant population, applications of fertilizer and lime, and controlled grazing. Irrigation improves the quality of grazing and of hay crops. If available during long dry periods, the use of irrigation water may be economically justifiable. These soils are not suited to shallow-rooting pasture plants because the soils cannot retain sufficient moisture in the rooting zone for good growth.

The potential productivity for pine trees is moderately high for the Ridgewood soil and high for the Hurricane soil. Slash pine and longleaf pine are suitable for planting. The thick, sandy texture restricts the use of wheeled equipment. This limitation can be overcome by harvesting when the soils are moist. Seedling mortality, which is caused by droughtiness, can be partially reduced by increasing the tree planting rate and the planting depth. Plant competition can be controlled by site preparation practices, such as chopping or controlled burning. A harvesting system that leaves most of the biomass on the surface is recommended.

This map unit has moderate limitations for dwellings without basements and local roads and streets. It has severe limitations for septic tank absorption fields. Wetness, poor filtration, and the sandy texture are the main limitations. Deep drainage reduces the wetness. If areas of this map unit are used as a septic tank absorption field, mounding of the field is needed. If the density of housing is moderate to high, community sewage systems are needed to prevent the contamination of ground water from seepage.

This map unit has severe limitations for recreational uses. The loose, sandy surface layer limits trafficability. Suitable topsoil fill material or some other type of surface stabilization is necessary to overcome this limitation. Soil blowing is a hazard. Establishing and maintaining a good vegetative cover or planting windbreaks can control soil blowing.

The Ridgewood soil is in capability subclass IIIw, and the woodland ordination symbol is 10W. The Hurricane soil is in capability subclass IIIw, and the woodland ordination symbol is 11W.

27—Albany-Ridgewood complex, 0 to 5 percent slopes

These soils are nearly level to gently sloping and are somewhat poorly drained. They are on low ridges on flatwoods and on low uplands. The mapped areas are irregular in shape and range from about 20 to more than 150 acres in size. The slope is nearly smooth to convex.

Typically, the surface layer of the Albany soil is dark gray fine sand about 6 inches thick. The subsurface layer is fine sand to a depth of 64 inches. The upper 6 inches is yellowish brown, the next 9 inches is brown, the next 4 inches is light brownish gray, and the lower 39 inches is light gray. The upper part of the subsoil is light gray fine sandy loam, and it extends to a depth of 72 inches. The lower part of the subsoil is light gray sandy clay loam to a depth of 80 inches or more.

Typically, the surface layer of the Ridgewood soil is dark gray fine sand about 6 inches thick. The underlying material is fine sand, and it extends to a depth of 80 inches or more. The upper 19 inches is light yellowish brown, the next 15 inches is very pale brown, and the lower 40 inches is white.

In 80 percent of areas mapped as Albany-Ridgewood complex, 0 to 5 percent slopes, Albany and Ridgewood soils and similar soils make up 80 to 100 percent of the map unit. Generally, the mapped areas are about 67 percent Albany and similar soils and about 30 percent Ridgewood and similar soils. The components of this map unit are so intricately intermingled that it was not practical to map them separately. The proportions and patterns of Albany and Ridgewood soils and similar soils are relatively consistent in most delineations of the map unit.

Soils that have dissimilar characteristics make up about 0 to 20 percent of the map unit. In 0 to 20 percent of the mapped areas, the dissimilar soils make up more than 20 percent. The dissimilar soils included in mapping are small areas of Blanton, Leon, Mandarin, and Ortega soils. Individual areas of inclusions are smaller than 5 acres in size. Mandarin and Leon soils have an organic-coated subsoil between a depth of 20 to 30 inches. Leon soils are poorly drained, and they are on the lower parts of the landscape. Blanton, Mandarin, and Ortega soils are moderately well drained. They are on the higher parts of the landscape.

A seasonal high water table is at a depth of 12 to 30 inches in the Albany soil and at a depth of 24 to 42 inches in the Ridgewood soil for 1 to 3 months during wet periods in most years. It recedes to a depth of more than 30 inches during dry periods. The available water capacity is low. Permeability is moderately slow to moderate in the Albany soil and rapid throughout the Ridgewood soil.

These soils are in the mixed Hardwood-Pine ecological plant community. In most areas, the natural vegetation includes slash pine, loblolly pine, longleaf pine, live oak, laurel oak, post oak, turkey oak, and water oak. The understory consists of lopsided indiangrass, hairy panicum, chalky bluestem, creepy bluestem, pineland threeawn, grassleaf goldaster, switchgrass, gallberry, lespedeza, and southern bayberry. Most areas of this map unit are used for the production of planted pine or pasture.

These soils have severe limitations for cultivated crops because of the wetness during wet periods. The high water table during wet seasons can limit the growth of roots. Plant nutrients leach rapidly. Corn, peanuts, soybeans, and watermelons are crops that can be grown with intensive management and the use of good conservation practices. Using a crop rotation system that includes cover crops, returning crop residue to the soil, and properly applying fertilizer and lime are practices that are necessary for good yields. Irrigation is desirable during droughty periods. Soil blowing is a severe hazard if the topsoil is left unprotected.

This map unit is moderately suited to tame pasture. Deep-rooting grasses, such as improved bahiagrass and bermudagrass, are suited. Yields are generally reduced by periodic droughts. Careful management is required to maintain good grazing. This includes the establishment of a proper plant population, applications of fertilizer and lime, and controlled grazing. Irrigation improves the quality of grazing and of hay crops. If available during long dry periods, the use of irrigation water may be economically justifiable. These soils are not suited to shallow-rooting pasture plants because the soils cannot retain sufficient moisture in the rooting zone for good growth.

The potential productivity for pine trees is very high for the Albany soil and moderately high for the Ridgewood soil. Slash pine, loblolly pine, and longleaf pine are suitable for planting. The thick, sandy texture restricts the use of wheeled equipment. This limitation can be overcome by harvesting when the soils are moist. Seedling mortality, which is caused by droughtiness, can be partially reduced by increasing the tree planting rate and the planting depth. Plant competition can be controlled by site preparation practices, such as chopping or controlled burning. A harvesting system that leaves most of the biomass on the surface is recommended.

This map unit has moderate limitations for local roads and streets. It has severe limitations for septic tank absorption fields, dwellings without basements, and small commercial buildings. Wetness, poor filtration, and the sandy texture are the main limitations. Deep drainage reduces the wetness. If areas of this map unit are used as a septic tank absorption field, mounding of the field may be needed. If the density of housing is moderate to high, community sewage systems are needed to prevent the contamination of ground water from seepage.

This map unit has severe limitations for recreational uses. The loose, sandy surface layer limits trafficability. Suitable topsoil fill material or some other type of surface stabilization is necessary to overcome this limitation. Soil blowing is a hazard. Establishing and maintaining a good vegetative cover or planting windbreaks can control soil blowing.

The Albany soil is in capability subclass IIIe, and the woodland ordination symbol is 11W. The Ridgewood soil is in capability subclass IIIw, and the woodland ordination symbol is 10W.

28—Clara and Meadowbrook soils, frequently flooded

These very poorly drained, nearly level soils are on flood plains. The soils do not occur in a regular, repeating pattern on the landscape. The slope is smooth or slightly concave and ranges from 0 to 1 percent. Individual areas are irregular in shape and range from about 20 to more than 100 acres in size.

Typically, the surface layer of the Clara soil is black mucky fine sand about 6 inches thick. The subsurface layer is light brownish gray fine sand, and it extends to a depth of 18 inches. The subsoil is fine sand to a depth of 48 inches. The upper 5 inches is dark brown, and the lower 25 inches is brown. The underlying material is light brownish gray fine sand to a depth of 80 inches or more.

Typically, the surface layer of the Meadowbrook soil is black mucky fine sand about 6 inches thick. The subsurface layer is gray fine sand to a depth of 45 inches. The subsoil is gray and light gray sandy clay loam to a depth of 80 inches or more.

In 80 percent of areas mapped as Clara and Meadowbrook soils, frequently flooded, Clara and Meadowbrook soils and similar soils make up 80 to 100 percent of the map unit. The similar soils include soils that are similar to the Clara and Meadowbrook soils but have an organic-coated subsoil. Generally, the mapped areas are about 65 percent Clara soil and similar soils and about 25 percent Meadowbrook and similar soils. Each of the soils does not necessarily occur in every mapped area. The proportions and patterns of Clara and Meadowbrook soils and similar soils varies from area to area. Areas of individual soils are large enough to be mapped separately. Because of the present and predicted land uses, however, they were mapped as one unit.

In 0 to 20 percent of the mapped areas, the dissimilar soils make up more than 20 percent of the unit. The dissimilar soils included in mapping are small areas of Pamlico and Dorovan soils. These soils are in the lowest areas of the map unit. Individual areas of inclusions are smaller than 5 acres in size.

A seasonal high water table is at a depth of 0 to 6 inches in the Clara soil during wet periods in most years. A seasonal high water table is at or above the surface of the Meadowbrook soil during wet periods for 3 months or more during most years. The water table recedes to a depth of more than 12 inches in both soils during dry periods. The duration of flooding is generally brief in areas of the Clara soil and very long in areas of the Meadowbrook soil. The available water capacity is low for both soils. Permeability is rapid in the Clara soil and moderately slow to moderate in the Meadowbrook soil.

These soils are in the Swamps Hardwoods ecological plant community. In most areas, the natural vegetation includes baldcypress, pondcypress, pond pine, red maple, blackgum, cabbage palm, water oak, and a few scattered slash pine. The understory is mainly maidencane, St. Johnswort, hairy bluestem, cordgrass, bullrush, button bush, elderberry, water hyacinth, arrowhead, and dollarwort.

These soils have severe limitations for cultivated crops, tame pasture, and planted pine trees because of the flooding and prolonged wetness unless a major water-control system is used. The potential productivity for pine trees is high in some bedded areas of the Clara soil. Careful consideration should be given before planting pine trees.

These soils have severe limitations for all urban uses and recreational development, such as playgrounds, picnic areas, and paths or trails. The flooding, ponding in some areas, and sandy texture are the main limitations. They are very difficult to overcome. Careful consideration should be given before using this map unit for these uses.

The Clara soil is in capability subclass VIw, and the woodland ordination symbol is 11W. The Meadowbrook soil is in capability subclass VIIw, and the woodland ordination symbol is 7w.

29—Fluvaquents, frequently flooded

These very poorly drained, nearly level soils are on flood plains. The slope is smooth or slightly concave and ranges from 0 to 1 percent. Individual areas are irregular in shape and range from about 20 to more than 100 acres in size.

Typically, the surface layer of Fluvaquents is black mucky fine sand about 3 inches thick. The underlying layers are stratified to a depth of 80 inches. To a depth of 21 inches is commonly very dark gray sandy clay loam. The next layer, to a depth of about 29 inches, is dark gray fine sandy loam that has yellowish brown mottles. The next layer, to a depth of about 40 inches, is gray loamy fine sand. Below this depth is gray fine sandy loam that has white shell fragments.

In 80 percent of areas mapped as Fluvaquents, frequently flooded, Fluvaquents and similar soils make up 80 to 100 percent of the map unit. The similar soils include soils that are similar to Fluvaquents but have an organic-coated subsoil.

In 0 to 20 percent of the mapped areas, the dissimilar soils make up more than 20 percent of the unit. The dissimilar soils included in mapping are small areas of Pamlico and Dorovan soils. Individual areas of inclusions are smaller than 5 acres in size and are in the lowest landscape positions.

A seasonal high water table is within a depth of 6 inches for several months during wet periods in most years. It recedes to a depth of more than 12 inches during dry periods. The available water capacity is moderate. Permeability is variable.

These soils are in the Swamps Hardwoods ecological plant community. In most areas, the natural vegetation consists of baldcypress, loblolly bay, laurel oak, water oak, cabbage palm, blackgum, sweetbay, sweetgum, and red maple. The understory is mainly maidencane, St. Johnswort, hairy bluestem, cordgrass, bullrush, button bush, elderberry, water hyacinth, arrowhead, and dollarwort.

These soils have severe limitations for cultivated crops, tame pasture, and planted pine trees because of the flooding and the prolonged wetness unless a major water-control system is used.

These soils have severe limitations for all urban uses and recreational development, such as playgrounds, picnic areas, and paths and trails. The flooding, wetness, and slow percolation are the major limitations. They are very difficult to overcome. Careful consideration should be given before using areas of this map unit for these purposes.

Fluvaquents are in capability subclass VIIw, and the woodland ordination symbol is 7W.

31—Chaires, low-Meadowbrook complex

These poorly drained, nearly level soils are in low, broad areas on the flatwoods. The Meadowbrook soil is in the lower areas. The soils occur in a regular, repeating pattern on the landscape. The slope is smooth or slightly concave and ranges from 0 to 2 percent. Individual areas are irregular in shape and are more than 100 acres in size.

Typically, the surface layer of the Chaires soil is black fine sand about 6 inches thick. The subsurface layer is light brownish gray fine sand to a depth of 23 inches. The upper part of the subsoil is organic-coated fine sand, and it extends to a depth of 32 inches. The upper 4 inches is black, and the lower 5 inches is dark brown. Below this depth is a layer of brown fine sand to a depth of 46 inches. The lower part of the subsoil is grayish brown sandy clay loam to a depth of 65 inches and gray sandy clay loam to a depth of 80 inches.

Typically, the surface layer of the Meadowbrook soil is black fine sand about 7 inches thick. The subsurface layer is fine sand, and it extends to a depth of 45 inches. The upper 10 inches is gray, and the lower 28 inches is light gray. The subsoil is gray fine sandy loam to a depth of 70 inches, and the lower part of the subsoil is light gray sandy clay loam to a depth of 80 inches or more.

In 80 percent of areas mapped as Chaires, low-Meadowbrook complex, Chaires and Meadowbrook soils and similar soils make up 80 to 100 percent of the map unit. The similar soils include soils that have limestone bedrock within a depth of 60 inches and soils that have the upper part of the subsoil at a depth of more than 30 inches. Generally, the mapped areas are about 55 percent Chaires soil and similar soils and about 35 percent Meadowbrook soil and similar soils. The components of this map unit occur as areas so intricately intermingled that it was not practical to map them separately at the scale used in mapping. The proportions and patterns of the Chaires soil and similar soils are relatively consistent in most mapped areas.

In 0 to 20 percent of the mapped areas, the dissimilar soils make up more than 20 percent of the unit. The dissimilar soils included in mapping are small areas of Leon and Oaky soils at the slightly higher elevations and Tooles and other soils that are underlain by soft limestone at similar elevations. Individual areas of inclusions are smaller than 5 acres in size.

A seasonal high water table is at a depth of 0 to 6 inches for 2 to 6 months during wet periods in most years. It recedes to a depth of more than 24 inches or more in both soils during dry periods. The available water capacity is low. Permeability is moderately slow in the Chaires soil and moderate or moderately slow in the Meadowbrook soil.

These soils are in the North Florida Flatwoods ecological plant community. In most areas in the flatwoods, the natural vegetation includes slash pine, loblolly pine, longleaf pine, live oak, laurel oak, scattered sweetgum, red maple, and water oak. The understory consists of gallberry, grape, greenbrier, lopsided indiangrass, broomsedge, bluestem, scattered saw palmetto, hairy panicum, pineland threeawn, waxmyrtle, gallberry, panicum, fetterbush lyonia, brackenfern, and little bluestem. Most areas of this map unit are used for planted pine production or pasture.

These soils have severe limitations for cultivated crops because of the wetness and low natural fertility. However, they are suited to most vegetable crops if they are intensively managed, including the use of a water-control system that removes excess water rapidly and provides for subsurface irrigation. Soil-improving crops and crop residue can protect the soils from erosion and maintain the content of organic matter. Seedbed preparation should include planting on beds. Fertilizer should be applied according to the needs of the crop.

This map unit is well suited to tame pasture if water is properly controlled. If properly managed, a good pasture of grass or a grass-legume mixture can be established. Water-control measures are needed to remove the excess surface water during long, rainy periods. Irrigation is needed for the best yields of white clover or other adapted, shallow-rooted pasture plants during dry periods. Establishing an optimum plant population, applying fertilizer and lime, and controlling grazing help to maintain a good plant cover and increase the production of forage. Careful management is required to maintain good grazing. This includes the establishment of a proper plant population, applications of fertilizer and lime, and controlled grazing.

The potential productivity for pine trees is moderately high for the Chaires soil and high for the Meadowbrook soil. Slash pine and loblolly pine are suitable for planting. The equipment limitation, the seedling mortality, and plant competition are management concerns. Seasonal wetness is the main limitation. The use of equipment that has large tires or tracks helps to overcome the equipment limitation and minimizes compaction and root damage during thinning activities. Preparing the site and planting and harvesting the trees during the drier periods also help to overcome the equipment limitation. Good site preparation practices, such as harrowing and bedding, help to establish seedlings, control competing vegetation, and facilitate planting. Leaving all of the plant debris on the site helps to maintain the content of organic matter in the soils. The trees respond well to applications of fertilizer.

This map unit has severe limitations for dwellings without basements, local roads and streets, and septic tank absorption fields. The seasonal high water table, poor filtration, and slow percolation in parts of the map unit are the main limitations. Deep drainage reduces the wetness. Suitable fill material can be used to elevate building sites. Septic tank absorption fields can be mounded to maintain the system above the seasonal high water table and improve the percolation. Drainage and the use of suitable fill to elevate road beds minimizes wetness in areas of road construction.

This map unit has severe limitations for recreational development, such as playgrounds, picnic areas, and paths and trails. The seasonal high water table that is near the surface during wet periods and the sandy surface layer limit trafficability. Soil blowing is a hazard. Drainage is needed before using areas of this map unit for these purposes. Suitable topsoil fill material or resurfacing is needed to improve the trafficability.

The Chaires soil is in capability subclass IVw, and the woodland ordination symbol is 10W. The Meadowbrook soil is in capability subclass IVw, and the woodland ordination symbol is 11W.

32—Chaires and Meadowbrook soils, depressional

These very poorly drained, nearly level soils are in depressions. The soils do not occur in a regular, repeating pattern on the landscape. The slope is smooth or slightly concave and ranges from 0 to 1 percent. Individual areas are irregular in shape and range from about 10 to more than 100 acres in size.

Typically, the surface layer of the Chaires soil is black mucky fine sand about 6 inches thick. The subsurface layer is fine sand to a depth of 24 inches. The upper 6 inches is grayish brown, and the lower 12 inches is light brownish gray. The upper part of the subsoil is fine sand, and it extends to a depth of 52 inches. The upper 8 inches is very dark brown, the next 8 inches is dark brown, and the lower 12 inches is dark yellowish brown. The lower part of the subsoil is sandy clay loam to a depth of 80 inches or more. The upper 13 inches is grayish brown, and the lower 15 inches is light brownish gray.

Typically, the surface layer of the Meadowbrook soil is black mucky fine sand about 4 inches thick. The subsurface layer is fine sand to a depth of 42 inches. The upper 6 inches is grayish brown, the next 12 inches is light brownish gray, and the lower 20 inches is light gray. The subsoil is light grayish brown sandy loam to a depth of 65 inches and light gray sandy clay loam to a depth of 80 inches.

In 80 percent of areas mapped as Chaires and Meadowbrook soils, depressional, Chaires and similar soils make up 80 to 100 percent of the map unit. The similar soils include soils that are similar to the Chaires soil but are underlain by sandy material and have a low base saturation. Generally, the mapped areas are about 65 percent Chaires soil and similar soils and about 33 percent Meadowbrook and similar soils. Each of the soils does not necessarily occur in every mapped area. The proportions and patterns of Chaires and Meadowbrook soils and similar soils varies from area to area. Areas of individual soils are large enough to be mapped separately. Because of the present and predicted land uses, however, they were mapped as one unit.

In 0 to 20 percent of the mapped areas, the dissimilar soils make up more than 20 percent of the unit. The dissimilar soils included in mapping are small areas of Clara, Harbeson, and Rawhide soils that are in similar landscape positions. Individual areas of inclusions are smaller than 5 acres in size.

A seasonal high water table is above the surface of these soils for 6 to 9 months during wet periods in most years. It recedes to a depth of more than 20 inches during dry periods. The available water capacity is low. Permeability is moderate or moderately slow.

These soils are in the Swamps Hardwoods ecological plant community. In most areas, the natural vegetation consists of pondcypress, baldcypress, blackgum, pond pine, sweetbay and red maple. The understory is mainly maidencane, blue maidencane, sand cordgrass, St. Johnswort, hairy bluestem, bullrush, button bush, elderberry, water hyacinth, arrowhead, and dollarwort.

These soils have severe limitations for cultivated crops, tame pasture, and planted pine trees because of the prolonged wetness unless a major water-control system is used.

These soils have severe limitations for all urban uses and recreational development, such as playgrounds, picnic areas, and paths and trails. The ponding and the sandy texture are the main limitations. They are very difficult to overcome. Careful consideration should be given before using areas of this map unit for these purposes.

The Chaires and Meadowbrook soils are in capability subclass VIIw, and the woodland ordination symbol is 2W.

33—Tooles-Meadowbrook, limestone substratum-Rawhide complex, frequently flooded

These poorly drained and very poorly drained, nearly level soils are on flood plains. The Rawhide soil is in small depressions that are about 2 to 4 acres in size and are interspersed on the flood plain. The soils occur in a regular, repeating pattern on the landscape. The slope is smooth or slightly concave and ranges from 0 to 2 percent. Individual areas are irregular in shape and are more than 100 acres in size.

Typically, the surface layer of the Tooles soil is very dark gray fine sand about 5 inches thick. The subsurface layer is fine sand to a depth of 25 inches. The upper 5 inches is dark brown, the next 10 inches is pale brown, and the lower 5 inches is very pale brown. The subsoil is light gray sandy clay loam to a depth of 42 inches. Below this depth is limestone bedrock.

Typically, the surface layer of the Meadowbrook, limestone substratum, soil is very dark gray fine sand about 6 inches thick. The subsurface layer is fine sand, and it extends to a depth of 42 inches. The upper 15 inches is dark grayish brown, and the lower 21 inches is pale brown. The subsoil is light grayish brown sandy clay loam to a depth of 55 inches. Below this depth is limestone bedrock.

Typically, the surface layer of the Rawhide soil is black mucky fine sand about 10 inches thick. The subsoil is sandy clay loam to a depth of 80 inches or more. The upper 15 inches is black, the next 10 inches is very dark gray, the next 10 inches is gray, and the lower 35 inches is light gray.

In 80 percent of areas mapped as Tooles-Meadowbrook, limestone substratum-Rawhide complex, frequently flooded, Tooles, Meadowbrook, limestone substratum, and Rawhide soils and similar soils make up 80 to 100 percent of the map unit. The similar soils include soils that are similar to the Tooles soil but have an organic subsoil within a depth of 30 inches and soils that do not have rock. Generally, the mapped areas are about 61 percent Tooles soil and similar soils, about 21 percent Meadowbrook, limestone substratum, soil and similar soils, and about 13 percent Rawhide soil and similar soils. The components of this map unit occur as areas so intricately intermingled that it was not practical to map them separately at the scale used in mapping. The proportions and patterns of these soils and similar soils are relatively consistent in most mapped areas.

In 0 to 20 percent of the mapped areas, the dissimilar soils make up more than 20 percent of the unit. The dissimilar soils included in mapping are small areas of Leon, Oaky, and other soils that have a muck surface layer more than 16 inches thick. Individual areas of inclusions are smaller than 5 acres in size. These soils are in similar landscape positions.

A seasonal high water table is at a depth of 0 to 6 inches in the Tooles and Meadowbrook soils for 2 to 6 months during wet periods in most years. The Rawhide soil has a seasonal high water table above the surface for 6 to 9 months during wet periods and for short periods after heavy rainfalls during dry periods. The water table recedes to a depth of more than 24 inches during dry periods. The available water capacity is low in the Tooles and Meadowbrook soils and moderate in the Rawhide soil. Permeability is slow or very slow in the Rawhide soil, slow in the Tooles soil, and moderate or moderately slow in the Meadowbrook soil.

These soils are in the North Florida Flatwoods ecological plant community. In most areas on the flood plains, the natural vegetation includes slash pine, loblolly pine, longleaf pine, live oak, laurel oak, scattered sweetgum, blackgum, and water oak. Pondcypress, baldcypress, pond pine, scattered sweetgum, red maple, laurel oak, and water oak grow in the lower areas. The understory consists of gallberry, grape, greenbrier, lopsided indiangrass, chalky bluestem, scattered saw palmetto, hairy panicum, pineland threeawn, and little bluestem in flood-prone areas on the flatwoods. It consists of maidencane, St Johnswort, and various other water-tolerant grasses in the lower areas. Most areas of this map unit are used for the production of planted pine.

These soils have severe limitations for cultivated crops because of flooding, wetness, ponding in the lower areas, and low natural fertility. A major water-control system is needed before using areas of the map unit for crops.

This map unit is unsuited to tame pasture under natural conditions. If properly managed, a good pasture of grass or a grass-legume mixture can be established. Water-control measures are needed to remove the excess surface water during long, rainy periods. Irrigation is needed for the best yields of white clover or other adapted, shallow-rooted pasture plants during dry periods. Establishing an optimum plant population, applying fertilizer and lime, and controlling grazing help to maintain a good plant cover and increase the production of forage. Most of the lower areas are unsuited for tame pasture because of the difficulty in providing drainage. Careful management is required to maintain good grazing. This includes the establishment of a proper plant population, applications of fertilizer and lime, and controlled grazing.

The potential productivity for pine trees is high for the Tooles and Meadowbrook, limestone substratum, soils on the flood plain in the flatwoods. Slash pine is suitable for planting. In low areas, the potential productivity is very low. The equipment limitation, the seedling mortality, and plant competition are management concerns. Seasonal wetness is the main limitation. A water-control system is needed to remove the excess surface water. The use of equipment that has large tires or tracks helps to overcome the equipment limitation and minimizes compaction and root damage during thinning activities. Preparing the site and planting and harvesting the trees during drier periods also help to overcome equipment limitation. Good site preparation practices, such as harrowing and bedding, help to establish seedlings, control competing vegetation, and facilitate planting. Leaving all of the plant debris on the site helps to maintain the content of organic matter in the soils. The trees respond well to applications of fertilizer.

This map unit has severe limitations for dwellings without basements, local roads and streets, and septic tank absorption fields. Flooding, wetness, poor filtration in areas, and slow percolation are the main limitations. Intensive flood-control measures and deep drainage reduce the wetness. Suitable fill material can be used to elevate building sites. Septic tank absorption fields can be mounded to maintain the system above the seasonal high water table and improve the percolation. Drainage and the use of suitable fill to elevate road beds minimizes wetness in areas of road construction.

This map unit has severe limitations for recreational development, such as playgrounds, picnic areas, and paths or trails. The flooding, wetness, the seasonal high water table that is near the surface during wet periods and is above the surface in the lower areas, and the sandy surface texture are severe limitations. Intensive flood-control measures and drainage are needed before using areas of this map unit for these purposes. Suitable topsoil fill material or resurfacing is needed to improve the trafficability.

The Tooles soil is in capability subclass Vw, and the woodland ordination symbol is 11W. The Meadowbrook, limestone substratum, soil is in capability subclass VIw, and the woodland ordination symbol is 11W. The Rawhide soil is in capability subclass VIIw, and the woodland ordination symbol is 2W.

34—Ortega fine sand, 0 to 5 percent slopes

This nearly level to gently sloping, moderately well drained soil is on uplands. The mapped areas are irregular in shape and range from about 50 to more than 150 acres in size. The slope is nearly smooth to convex.

Typically, the surface layer of this soil is very dark grayish brown fine sand about 6 inches thick. The underlying material is fine sand, and it extends to a depth of 80 inches. The upper 25 inches of the underlying material is brown. The next 21 inches is pale brown. The lower 28 inches is light gray.

In 80 percent of areas mapped as Ortega fine sand, Ortega soil and similar soils make up 80 to 100 percent of the map unit. The similar soils include Penney and Ridgewood soils.

Soils that have dissimilar characteristics make up about 0 to 20 percent of the map unit. In 0 to 20 percent of the mapped areas, the dissimilar soils make up more than 20 percent of the unit. The dissimilar soils included in mapping are small areas of Albany and Blanton soils and soils that have sand over rock. Individual areas of inclusions are smaller than 5 acres in size. Albany soils are somewhat poorly drained and are in lower positions on the landscape than the Ortega soil. Albany and Blanton soils have a loamy subsoil below a depth of 40 inches. Blanton soils are in landscape positions similar to those of the Ortega soil.

A seasonal high water table is at a depth of 48 to 60 inches in the Ortega soil for 1 to 3 months during wet periods in most years. It recedes to a depth of more than 60 inches during the dry periods. The available water capacity is low. Permeability is rapid throughout the soil.

This soil is in the Longleaf Pine-Turkey Oak Hills ecological plant community. In most areas, the natural vegetation includes slash pine, longleaf pine, loblolly pine, live oak, bluejack oak, post oak, and turkey oak. The understory consists mostly of lopsided indiangrass, hairy panicum, greenbriar, hawthorn, persimmon, fringe leaf paspalum, hairy tick clover, dwarf huckleberry, chalky bluestem, creepy bluestem, and pineland threeawn. Most areas of this soil are used for the production of pasture, crops, or planted pine.

This soil has severe limitations for cultivated crops because of droughtiness during dry periods. Plant nutrients leach rapidly. Corn, peanuts, soybeans, tobacco, and watermelons are crops that can be grown with intensive management and the use of good conservation practices. Using a crop rotation system that includes cover crops, returning crop residue to the soil, and properly applying fertilizer and lime are practices that are necessary for good yields. Irrigation is desirable during droughty periods. Soil blowing is a severe hazard if the topsoil is left unprotected (fig. 11).

This soil is moderately well suited to tame pasture. Deep-rooting grasses, such as improved bahiagrass and bermudagrass, are suited. Yields are generally reduced by periodic droughts. Careful management is required to maintain good grazing. This includes the establishment of a proper plant population, applications of fertilizer and lime, and controlled grazing. Irrigation improves the quality of grazing and of hay crops. If available during long dry periods, the use of irrigation water may be economically justifiable. This soil is not suited to shallow-rooting pasture plants because it cannot retain sufficient moisture in the rooting zone for good growth.

The potential productivity of this soil for pine trees is moderately high. Slash pine, longleaf pine, and loblolly pine are suitable for planting. The thick, sandy texture restricts the use of wheeled equipment. This limitation can be overcome by harvesting when the soil is moist. Seedling mortality, which is caused by droughtiness, can be partially reduced by increasing the tree planting rate and the planting depth. Plant competition can be controlled by site preparation practices, such as chopping or controlled burning. A harvesting system that leaves most of the biomass on the surface is recommended.

This soil has slight limitations for dwellings without

Figure 11.—An area of Ortega fine sand, 0 to 5 percent slopes. Strips of rye were planted to reduce the damage to crops caused by blowing sand.

basements and for local roads and streets. It has moderate limitations for septic tank absorption fields. In areas that have a concentration of homes and septic tank absorption fields, ground-water contamination can be a hazard because of poor filtration and the water table during wet periods. Some slight filling may be necessary in areas.

This map unit has severe limitations for recreational uses. The loose, sandy surface layer limits trafficability. Suitable topsoil fill material or some other type of surface stabilization is necessary to overcome this limitation. Soil blowing is a hazard. Establishing and maintaining a good vegetative cover or planting windbreaks can control soil blowing.

This Ortega soil is in capability subclass IIIs, and the woodland ordination symbol is 10S.

36—Wampee fine sand, 0 to 5 percent slopes

This nearly level to gently sloping, somewhat poorly drained soil is on low uplands. The mapped areas are irregular in shape and range from about 10 to more than 50 acres in size. The slope is nearly smooth to concave.

Typically, the surface layer of the Wampee soil is fine sand to a depth of 12 inches. The upper 6 inches is very dark gray, and the lower 6 inches is dark grayish brown. The upper part of the subsurface layer is brown fine sand to a depth of 21 inches, and the lower part is light brownish gray sand to a depth of 32 inches. The subsoil is sandy clay loam to a depth of 80 inches or more. The upper 23 inches is gray, and the lower 25 inches is light gray.

In 80 percent of areas mapped as Wampee fine sand, 0 to 5 percent slopes, Wampee soil and similar soils make up 80 to 100 percent of the map unit. The similar soils include soils are poorly drained and soils that have a low base saturation.

Soils that have dissimilar characteristics make up about 0 to 20 percent of the map unit. In 0 to 20 percent of the mapped areas, the dissimilar soils make up more than 20 percent of the unit. The dissimilar soils included in mapping are small areas of Albany and Plummer soils. Albany soils are sandy to a depth of more than 40 inches and have a low base saturation. Plummer soils are poorly drained, have a sandy epipedon more than 40 inches thick, and have a low base saturation. Individual areas of inclusions are smaller than 5 acres in size. Albany and Plummer soils are on the lower parts of the landscape.

A seasonal high water table is at a depth of 12 to 36 inches in the Wampee soil for 1 to 3 months during wet periods in most years. It recedes to a depth of more than 36 inches during dry periods. The available water capacity is low. Permeability is moderate.

This soil is in the North Florida Flatwoods ecological plant community. In most areas, the natural vegetation includes slash pine, sweetgum, red maple, American holly, and laurel oak. The understory consists of dwarf palmetto, Virginia creeper, running oak, gallberry, waxmyrtle, pineland threeawn, bluestem, common greenbriers, and panicum. Most areas of this soil are used for the production of planted pine or pasture.

This soil has severe limitations for cultivated crops because of the wetness and low natural fertility. With a good water-control system and soil-improving measures, this soil is suited to many crops. A water-control system is needed to remove the excess surface water during wet periods and to provide water for subsurface irrigation during droughty periods. Row crops should be rotated with close-growing, soil-improving cover crops. Soil-improving cover crops and crop residue should be used to maintain the content of organic matter and to control erosion. Seedbed preparation should include planting on beds. Fertilizer and lime should be applied according to the needs of the crops.

This soil is well suited to tame pasture. Improved bermudagrass, improved bahiagrass, and clover are well adapted to this soil and grow well if properly managed. A water-control system is needed to remove the excess surface water during heavy rains. To obtain high yields, regular applications of fertilizer are needed. Grazing should be controlled to maintain the vigor of plants.

The potential productivity of this soil for pine trees is high. Slash pine and loblolly pine are suitable for planting. The timely use of site preparation practices, such as harrowing and bedding, help to establish seedlings and increase early growth. Chopping and bedding also reduce the debris, control competing vegetation, and facilitate planting operations. Using field machinery that is equipped with large rubber tires or tracks helps to overcome the equipment limitation, reduces soil compaction, and reduces the damage to roots during thinning operations. A logging system that leaves residual biomass distributed over the site helps to maintain the content of organic matter and the soil fertility. Applications of fertilizer can provide an excellent growth response.

This soil has severe limitations for dwellings without basements, local roads and streets, and septic tank absorption fields. The seasonal high water table, slow percolation, poor filtration, and the sandy texture are the main limitations. Deep drainage reduces the wetness. If areas of this soil are used as a septic tank absorption field, mounding of the field is needed. If the density of housing is moderate to high, community sewage systems may be needed to prevent the contamination of ground water from seepage.

This soil has severe limitations for recreational uses. The seasonal high water table during wet periods and the loose, sandy surface layer limit trafficability. Suitable topsoil fill material or some other type of surface stabilization is necessary to overcome the sandy texture. Soil blowing is a hazard. Establishing and maintaining a good vegetative cover or planting windbreaks can control soil blowing.

This Wampee soil is in capability subclass IIIw, and the woodland ordination symbol is 11W.

37—Pantego and Surrency soils, depressional

These very poorly drained, nearly level soils are in depressions. The soils do not occur in a regular, repeating pattern on the landscape. The slope is smooth or slightly concave and ranges from 0 to 1 percent. Individual areas are irregular in shape and range from about 10 to more than 100 acres in size.

Typically, the surface layer of the Pantego soil is black mucky loamy sand about 10 inches thick. The subsurface layer is light brownish gray sandy loam to a depth of 14 inches. The upper part of the subsoil is sandy clay loam to a depth of 45 inches. The upper 4 inches is light gray, and the lower 27 inches is light brownish gray. Below this is grayish brown sandy clay to a depth of 80 inches or more.

Typically, the surface layer of the Surrency soil is black mucky fine sand about 8 inches thick. The subsurface layer is fine sand to a depth of 32 inches. The upper 18 inches is light brownish gray, and the lower 6 inches is light gray. The upper part of the subsoil is light grayish brown sandy loam to a depth of 60 inches, and the lower part of the subsoil is grayish brown sandy clay loam to a depth of 80 inches or more.

In 80 percent of areas mapped as Pantego and Surrency soils, depressional, Pantego and Surrency soils and similar soils make up 80 to 100 percent of the map unit. The similar soils include soils that are similar to the Pantego soil but are underlain by soft limestone material. Generally, the mapped areas are about 65 percent Pantego soil and similar soils and about 33 percent Surrency and similar soils. Each of the soils does not necessarily occur in every mapped area. The proportions and patterns of Pantego and Surrency soils and similar soils varies from area to area. Areas of individual soils are large enough to be mapped separately. Because of the present and predicted land uses, however, they were mapped as one unit.

In 0 to 20 percent of the mapped areas, the dissimilar soils make up more than 20 percent of the unit. The dissimilar soils included in mapping are small areas of Harbeson and Rawhide soils that have a low base saturation. Individual areas of inclusions are smaller than 5 acres in size. Harbeson and Rawhide soils are in similar landscape positions.

A seasonal high water table is above the surface of these soils for 6 to 9 months during wet periods in most years. It recedes to a depth of more than 12 inches during dry periods. The available water capacity is high in the Pantego soil and moderate in the Surrency soil. Permeability is moderate.

These soils are in the Swamps Hardwoods ecological plant community. In most areas, the natural vegetation consists of pondcypress, baldcypress, pond pine, blackgum, sweetbay, water oak, and red maple. The understory is mainly cordgrass, bullrush, button bush, elderberry, water hyacinth, arrowhead, and dollarwort.

These soils have severe limitations for cultivated crops, tame pasture, and planted pine trees because of the ponding unless a major water-control system is used.

These soils have severe limitations for all urban uses and recreational development, such as playgrounds, picnic areas, and paths and trails. The ponding and the sandy texture are the main limitations. They are very difficult to overcome. Careful consideration should be given before using areas of this map unit for these purposes.

The Pantego and Surrency soils are in capability subclass VIIw, and the woodland ordination symbol is 2W.

38—Pantego and Surrency soils, frequently flooded

These very poorly drained, nearly level soils are on flood plains. The soils do not occur in a regular, repeating pattern on the landscape. The slope is smooth or slightly concave and ranges from 0 to 1 percent. Individual areas are irregular in shape and range from about 20 to more than 100 acres in size.

Typically, the surface layer of the Pantego soil is black mucky loamy sand about 8 inches thick. The subsurface layer is sandy loam to a depth of 19 inches. The upper 6 inches is grayish brown, and the lower 5 inches is light brownish gray. The subsoil is gray sandy clay loam to a depth of 43 inches. Below this depth is light gray sandy clay loam to a depth of 80 inches or more.

Typically, the surface layer of the Surrency soil is black mucky fine sand about 6 inches thick. The subsurface layer is fine sand to a depth of 32 inches. The upper 12 inches is light brownish gray, and the lower 14 inches is light gray. The subsoil is gray sandy clay loam to a depth of 80 inches or more.

In 80 percent of areas mapped as Pantego and Surrency soils, frequently flooded, Pantego and Surrency soils and similar soils make up 80 to 100 percent of the map unit. The similar soils include soils that are similar to the Pantego and Surrency soils but are underlain by soft limestone material. Generally, the mapped areas are about 55 percent Pantego soil and similar soils and about 43 percent Surrency and similar soils. Each of the soils does not necessarily occur in every mapped area. The proportions and patterns of Pantego and Surrency soils and similar soils varies from area to area. Areas of individual soils are large enough to be mapped separately. Because of the present and predicted land uses, however, they were mapped as one unit.

In 0 to 20 percent of the mapped areas, the dissimilar soils make up more than 20 percent of the unit. The dissimilar soils included in mapping are small areas of Harbeson and Rawhide soils. Harbeson and Rawhide soil have a high base saturation. Individual areas of inclusions are smaller than 5 acres in size, and they are in similar landscape positions.

A seasonal high water table is at or near the surface of these soils for 6 to 9 months during wet periods in most years. It recedes to a depth of more than 12 inches during dry periods. The available water capacity is high in the Pantego soil and moderate in the Surrency soil. Permeability is moderate in the Pantego and Surrency soils.

These soils are in the Swamps Hardwoods ecological plant community. In most areas, the natural vegetation consists of baldcypress, pondcypress, water oak, loblolly bay, blackgum, sweetgum, sweetbay, red maple, and pond pine. The understory is mainly maidencane, St. Johnswort, hairy bluestem, cordgrass, bullrush, button bush, elderberry, water hyacinth, arrowhead, and dollarwort.

These soils have severe limitations for cultivated crops, tame pasture, and planted pine trees because of the flooding and the prolonged wetness unless a major water-control system is used.

These soils have severe limitations for all urban uses and recreational development, such as playgrounds, picnic areas, and paths or trails. The flooding and wetness are the main limitations. They are very difficult to overcome. Careful consideration should be given before using areas of this map unit for these purposes.

The Pantego and Surrency soils are in capability subclass VIw, and the woodland ordination symbol is 7W.

39—Eunola fine sand, 0 to 5 percent slopes

This nearly level to gently sloping, moderately well drained soil is on terraces. The mapped areas are irregular in shape and range from about 10 to more than 100 acres in size. The slope is nearly smooth to concave.

Typically, the surface layer of the Eunola soil is very dark grayish brown fine sand to a depth of 7 inches. The subsurface layer is pale brown loamy fine sand to a depth of 18 inches. The upper part of the subsoil is yellowish brown sandy clay loam to a depth of 24 inches. The next 3 inches is light yellowish brown sandy clay loam. The lower part of the subsoil is grayish brown sandy clay to a depth of 35 inches. The next 15 inches is light brownish gray sandy clay. The next 8 inches is grayish brown sandy clay loam. The next 10 inches is brown loamy sand, and the lower 12 inches is pale brown sand.

In 80 percent of areas mapped as Eunola fine sand, Eunola soil and similar soils make up 80 to 100 percent of the map unit. The similar soils are similar to the Eunola soil except the subsoil is loamy or clayey to a depth of 80 inches or more.

Soils that have dissimilar characteristics make up about 0 to 20 percent of the map unit. In 0 to 20 percent of the mapped areas, the dissimilar soils make up more than 20 percent. The dissimilar soils included with these soils in mapping are small areas of Blanton and Ortega soils. Blanton soils are sandy to a depth of 40 to 79 inches. Ortega soils are sandy to a depth of more than 80 inches. Individual areas of inclusions are smaller than 5 acres in size. Blanton and Ortega soils are on the higher parts of the landscape.

A seasonal high water table is at a depth of 12 to 30 inches in the Eunola soil for 1 to 3 months during wet periods in most years. It recedes to a depth of more than 30 inches during dry periods. The available water capacity is low. Permeability is moderately slow to moderate.

This soil is in the Mixed Hardwood and Pine ecological plant community. In most areas, the natural vegetation includes slash pine, loblolly pine, longleaf pine, water oak, sweetgum, southern red oak, and hickory. The understory consists of little bluestem, pancium, and uniola. Most areas of this soil are used for the production of planted pine or pasture.

This soil has moderate limitations for cultivated crops because of the wetness. With a good water-control system and soil-improving measures, this soil is suited to many crops. A water-control system is needed to remove the excess surface water during wet periods and to provide water for subsurface irrigation during droughty periods. Row crops should be rotated with close-growing, soil-improving cover crops. Soil-improving cover crops and crop residue should be used to maintain the content of organic matter and to control erosion. Seedbed preparation should include planting on beds. Fertilizer and lime should be applied according to the needs of the crops.

This soil is well suited to tame pasture. Improved bermudagrass, improved bahiagrass, and clover are well adapted to this soil. They grow well if properly managed. A water-control system is needed to remove the excess surface water during heavy rains. To obtain high yields, regular applications of fertilizer are needed. Grazing should be controlled to maintain the vigor of plants.

The potential productivity of this soil for pine trees is high. Loblolly pine and slash pine are suitable for planting. The timely use of site preparation practices, such as harrowing and bedding, help to establish seedlings, reduce the seedling mortality rate, and increase early growth. Chopping and bedding also reduce the debris, control competing vegetation, and facilitate planting operations. Using field machinery that is equipped with large tires or tracks helps to overcome the equipment limitation, reduces soil compaction, and reduces the damage to roots during thinning operations. A logging system that leaves residual biomass distributed over the site helps to maintain the content of organic matter and the soil fertility. Applications of fertilizer can provide an excellent growth response.

This soil has severe limitations for dwellings without basements and local roads and streets. It has severe limitations for septic tank absorption fields. The seasonal high water table is the main limitation. Deep drainage reduces the wetness. If areas of this soil are used as a septic tank absorption field, mounding of the field is needed. If the density of housing is moderate to high, community sewage systems may be needed to prevent the contamination of ground water from seepage.

This soil has severe limitations for recreational uses. The sandy surface layer limits trafficability. Suitable topsoil fill material or some other type of surface stabilization is necessary to overcome this limitation. Soil blowing is a hazard. Establishing and maintaining a good vegetative cover or planting windbreaks can control soil blowing.

This Eunola soil is in capability subclass IIw, and the woodland ordination symbol is 11W.

41—Meadowbrook and Harbeson soils, depressional

These very poorly drained, nearly level soils are in depressions. The soils do not occur in a regular, repeating pattern on the landscape. The slope is smooth or slightly concave and ranges from 0 to 1 percent. Individual areas are irregular in shape and range from about 20 to more than 100 acres in size.

Typically, the surface layer of the Meadowbrook soil is black mucky fine sand about 6 inches thick. The subsurface layer is gray fine sand to a depth of 45 inches. The subsoil is gray and light gray sandy clay loam to a depth of 80 inches or more.

Typically, the surface layer of the Harbeson soil is black mucky fine sand about 12 inches thick. The subsurface layer is fine sand to a depth of 63 inches. The upper 19 inches is dark grayish brown, the next 11 inches is grayish brown, and the lower 21 inches is light brownish gray. The subsoil is sandy clay loam to a depth of 80 inches or more. The upper 8 inches is gray, and the lower 9 inches is light gray.

In 80 percent of areas mapped as Meadowbrook and Harbeson soils, depressional, Meadowbrook and Harbeson soils and similar soils make up 80 to 100 percent of the map unit. The similar soils include soils that are similar to the Meadowbrook and Harbeson soils but have an organic-coated subsoil. Generally, the mapped areas are about 65 percent Meadowbrook and similar soils and about 25 percent Harbeson and similar soils. Each of the soils does not necessarily occur in every mapped area. The proportions and the patterns of Meadowbrook and Harbeson soils and similar soils varies from area to area. Areas of individual soils are large enough to be mapped separately. Because of the present and predicted land uses, however, they were mapped as one unit.

In 0 to 20 percent of the mapped areas, the dissimilar soils make up more than 20 percent of the unit. The dissimilar soils included in mapping are small areas of Pamlico and Dorovan soils. Individual areas of inclusions are smaller than 5 acres in size. Pamlico and Dorvan soils are in similar landscape positions.

A seasonal high water table is above the surface of these soils for 6 to 9 months during wet periods in most years. It recedes to a depth of more than 12 inches during dry periods. The available water capacity is low in the Meadowbrook soil and moderate in the Harbeson soil. Permeability is moderate slow to moderate.

These soils are in the Swamps Hardwoods ecological plant community. In most areas, the natural vegetation consists of pondcypress, water oak, blackgum, sweetbay, red maple, and pond pine. The understory is mainly maidencane, St. Johnswort, hairy bluestem, cordgrass, bullrush, button bush, elderberry, water hyacinth, arrowhead, and dollarwort.

These soils have severe limitations for cultivated crops, tame pasture, and planted pine trees because of the prolonged wetness unless a major water-control system is used.

These soils have severe limitations for all urban uses and recreational development, such as playgrounds, picnic areas, and paths and trails. The ponding, slow percolation, poor filtration, and sandy texture are the major limitations. They are very difficult to overcome. Careful consideration should be given before using areas of this map unit for these purposes.

The Meadowbrook and Harbeson soils are in capability subclass VIIw, and the woodland ordination symbol is 2W.

42—Sapelo, low-Clara-Surrency, depressional, complex

The poorly drained soils are on low flatwoods, and the very poorly drained soils are in small depressions in the flatwoods. The soils occur in a regular, repeating pattern on the landscape. The slope is smooth or concave and ranges from 0 to 2 percent. Individual areas are irregular in shape and are more than 100 acres in size.

Typically, the surface layer of the Sapelo soil is black fine sand about 8 inches thick. The subsurface layer is fine sand to a depth of 18 inches. The upper 6 inches is grayish brown, and the lower 4 inches is light brownish gray. The upper part of the subsoil is fine sand, and it extends to a depth of 40 inches. The upper 8 inches is very dark brown, the next 8 inches is dark brown, and the lower 4 inches is dark yellowish brown. Below this to a depth of 56 inches is gray fine sand. The lower part of the subsoil is grayish brown sandy clay loam to a depth of 80 inches or more.

Typically, the surface layer of the Clara soil is black fine sand about 4 inches. The subsurface layer is light brownish gray fine sand, and it extends to a depth of 15 inches. The subsoil is fine sand, and it extends to a depth of about 60 inches. The upper 33 inches is dark yellowish brown, and the next 12 inches is brown. Below this depth is grayish brown fine sand to a depth of 80 inches or more.

Typically, the surface layer of the Surrency soil is black mucky fine sand about 7 inches thick. The subsurface layer is fine sand, and it extends to a depth of about 32 inches. The upper 7 inches is dark grayish brown, and the lower 18 inches is light brownish gray. The upper 18 inches of the subsoil is gray sandy clay loam, and the lower part of the subsoil is light gray sandy loam to a depth of 80 inches or more.

In 80 percent of areas mapped as Sapelo, low-Clara-Surrency, depressional, complex, Sapelo, Clara, and

Surrency soils and similar soils make up 80 to 100 percent of the map unit. The similar soils include Chaires and Meadowbrook soils and soils that are similar to the Sapelo soil but that have an upper organic-coated subsoil at a depth of more than 30 inches. Generally, the mapped areas are about 45 percent Sapelo, low, soil and similar soils, about 25 percent Clara soil and similar soils, and about 15 percent Surrency, depressional, soil and similar soils. The components of this map unit occur as areas so intricately intermingled that it was not practical to map them separately at the scale used in mapping. The proportions and patterns of the Sapelo, low, soil; the Clara soil; and the Surrency, depressional, soil and similar soils are relatively consistent in most mapped areas.

In 0 to 20 percent of the mapped areas, the dissimilar soils make up more than 20 percent of the unit. The dissimilar soils included in mapping are small areas of Chaires, Leon, and Pamlico, and other soils that have a sandy epipedon at a depth of 10 to 20 inches. Individual areas of inclusions are smaller than 5 acres in size. Chaires and Leon soils are on low flatwoods, and Pamlico soils are in depressions.

A seasonal high water table is at a depth of 0 to 6 inches in the Sapelo, low, soil and the Clara soil for 1 to 3 months during wet periods in most years. It recedes to a depth of more than 18 inches during dry periods. A seasonal high water table is above the surface of the Surrency, depressional, soil for 6 to 9 months during wet periods in most years. It recedes to a depth of more than 24 inches during dry periods. The available water capacity is low. Permeability is moderately slow to moderate in the Sapelo soil, rapid in the Clara soil, and moderate to moderately rapid in the Surrency soil.

Most areas of these soils are in the North Florida Flatwoods ecological plant community. In most areas in the flatwoods, the natural vegetation includes slash pine, loblolly pine, and water oak. Pondcypress, baldcypress, pond pine, red maple, and water oak are in the low areas and depressions. The understory consists of creeping bluestem, pineywoods dropseed, scattered saw palmetto, hairy panicum, pineland threeawn, waxmyrtle, gallberry, panicum, fetterbush lyonia, brackenfern, and little bluestem in the flatwoods. It consists of fetterbush lyonia, red maple, southern bayberry, gallberry, plumgrass, longleaf uniola, and sedges in the lower areas and depressions. Most areas of this map unit are used for the production of planted pine.

These soils have severe limitations for cultivated crops because of the wetness, ponding, and low natural fertility. However, they are suited to most vegetable crops if they are intensively managed, including the use of a water-control system that removes excess water rapidly and provides for subsurface irrigation. Soil-improving crops and crop residue can protect the soils from erosion and maintain the content of organic matter. Seedbed preparation should include planting on beds. Fertilizer should be applied according to the needs of the crop. Most of the depressional areas are unsuited for cultivated crops.

Except for the depressional areas, this map unit is well suited to tame pasture if water is properly controlled. If properly managed, a good pasture of grass or a grass-legume mixture can be established. Water-control measures are needed to remove the excess surface water during long, rainy periods. Irrigation is needed for the best yields of white clover or other adapted, shallow-rooted pasture plants during dry periods. Establishing an optimum plant population, applying fertilizer and lime, and controlling grazing help to maintain a good plant cover and increase the production of forage. Careful management is required to maintain good grazing. This includes the establishment of a proper plant population, applications of fertilizer and lime, and controlled grazing. Most of the depressional areas are unsuited for tame pasture.

The potential productivity for pine trees is moderately high for the Sapelo and Clara soils. In areas of the Surrency soil in depressions, the productivity is very low. Slash pine is suitable for planting. The equipment limitation, the seedling mortality, and plant competition are management concerns. Seasonal wetness is the main limitation. The use of equipment that has large tires or tracks helps to overcome the equipment limitation and minimizes compaction and root damage during thinning activities. Preparing the site and planting and harvesting the trees during drier periods also help to overcome the equipment limitation. Good site preparation practices, such as harrowing and bedding, help to establish seedlings, control competing vegetation, and facilitate planting. Leaving all of the plant debris on the site helps to maintain the content of organic matter in the soils. The trees respond well to applications of fertilizer.

This map unit has severe limitations for dwellings without basements, local roads and streets, and septic tank absorption fields. The seasonal high water table, ponding, and poor filtration are the main limitations. Deep drainage reduces the wetness. Suitable fill material can be used to elevate building sites. Septic tank absorption fields can be mounded to maintain the system above the seasonal high water table and improve the percolation. Drainage and the use of suitable fill to elevate road beds minimizes wetness in areas of road construction.

This map unit has severe limitations for recreational development, such as playgrounds, picnic areas, and paths and trails. The seasonal high water table, ponding in the depressions, and the sandy surface texture are severe limitations. Drainage is needed before using areas of this map unit for these purposes. Suitable topsoil fill material or resurfacing is needed to improve the trafficability.

The Sapelo soil is in capability subclass IVw, and the woodland ordination symbol is 10W. The Clara soil is in capability subclass VIw, and the woodland ordination symbol is 11W. The Surrency soil is in capability subclass VIw, and the woodland ordination symbol is 2W.

43—Garcon-Albany-Meadowbrook complex, 0 to 5 percent slopes, occasionally flooded

The nearly level to gently sloping, somewhat poorly drained soils are on terraces, and the very poorly drained soils are in depressional areas on flood plains along the Suwannee River. Some areas are isolated by meandering stream channels. The mapped areas are irregular in shape and range from about 20 to more than 150 acres in size. The slope is nearly smooth to convex.

Typically, the surface layer of the Garcon soil is dark gray fine sand about 7 inches thick. The subsurface layer is fine sand, and it extends to a depth of 26 inches. The upper 12 inches is brown, and the lower 7 inches is very pale brown. The subsoil is sandy clay loam and sandy loam to a depth of 51 inches. The upper 14 inches is brownish yellow sandy clay loam, and the lower 11 inches is light brownish gray sandy loam. Below this to a depth of 60 inches is white loamy fine sand. The next 20 inches is white fine sand to a depth of 80 inches or more.

Typically, the surface layer of the Albany soil is very dark gray fine sand about 4 inches thick. The subsurface layer is fine sand to a depth of 63 inches. The upper 10 inches is yellowish brown, the next 9 inches is brown, the next 4 inches is light brownish gray, and the lower 36 inches is light gray. The subsoil is sandy clay loam, and it extends to a depth of 80 inches. It is light gray to a depth of 65 inches and is mottled yellowish brown, pale brown, and light gray to a depth of 80 inches.

Typically, the surface layer of the Meadowbrook soil is black fine sand about 6 inches thick. The subsurface layer is fine sand, and it extends to a depth of 45 inches. The upper 8 inches is dark gray, and the lower 31 inches is light gray. The subsoil is grayish brown sandy clay loam to a depth of 63 inches and grayish brown sandy loam to a depth of 80 inches or more.

In 80 percent of areas mapped as Garcon-Albany-Meadowbrook complex, 0 to 5 percent slopes, occasionally flooded, Garcon, Albany, Meadowbrook, and similar soils make up 80 to 100 percent of the map unit. Generally, the mapped areas are about 65 percent Garcon and similar soils, 20 percent Albany and similar soils, and 15 percent Meadowbrook and similar soils. Garcon and Albany soils are in the higher areas, and Meadowbrook soils are in the depressions. The Meadowbrook soil is on slopes that are less than 2 percent. The components of this map unit are so intricately intermingled that it was not practical to map them separately. The proportions and patterns of Garcon, Albany, and Meadowbrook soils and similar soils are relatively consistent in most delineations of the map unit.

Soils that have dissimilar characteristics make up about 0 to 20 percent of the map unit. In 0 to 20 percent of the mapped areas, the dissimilar soils make up more than 20 percent of the unit. The dissimilar soils included in mapping are small areas of Blanton, Leon, Mandarin, and Ortega soils. Individual areas of inclusions are smaller than 5 acres in size. Mandarin and Leon soils have an organic-coated subsoil at a depth of 20 to 30 inches. Leon soils are also poorly drained and are on low parts of the landform. Blanton, Mandarin, and Ortega soils are moderately well drained and are on the higher parts of the landform.

A seasonal high water table is at a depth of 18 to 36 inches in the Garcon soil and at a depth of 12 to 30 inches in the Albany soil for 1 to 3 months during wet periods in most years. It recedes to a depth of more than 30 inches during dry periods. A seasonal high water table is above the surface of the Meadowbrook soil for 6 to 9 months during wet periods in most years. It recedes to a depth of more than 12 inches during dry periods. Flooding occurs in areas of the Garcon and Albany soils several times during a 10-year span. The duration and extent of flooding are variable, and they are directly related to the intensity and frequency of rainfall. The flooding occurs for less than 7 days in areas of the Garcon and Albany soils and for a few weeks to several months in areas of the Meadowbrook, depressional, soil. The excess water ponds in the lowest areas of the Meadowbrook soil. The available water capacity is low in the Garcon, Albany, and Meadowbrook soils. Permeability is moderate in the Garcon soil and moderately slow to moderate in the Albany and Meadowbrook soils.

Most areas of these soils are in the mixed Hardwood-Pine ecological plant community. In areas of Garcon and Albany soils, the natural vegetation includes slash pine, loblolly pine, longleaf pine, live oak, laurel oak, and water oak. The understory consists of lopsided indiangrass, hairy panicum, chalky bluestem, creepy bluestem, pineland threeawn, grassleaf goldaster, switchgrass, gallberry, lespedeza, and southern bayberry. Baldcypress, pondcypress, scattered sweetgums, and pond pine are common in areas of the Meadowbrook soil. Most areas of this map unit are used for the production of planted pine or pasture.

These soils have severe limitations for cultivated crops because of the flooding, wetness, and ponding in depressions during wet periods. The high water table during wet seasons can limit the growth of roots. Plant nutrients leach rapidly. Corn, peanuts, soybeans, and watermelons are crops that can be grown with intensive management and the use of good conservation practices. Using a crop rotation system that includes cover crops, returning crop residue to the soil, and properly applying fertilizer and lime are practices that are necessary for good yields. Irrigation is desirable during droughty periods. Soil blowing is a severe hazard if the topsoil is left unprotected. Most of the depressional areas are unsuited for cultivated crops.

This map unit is moderately suited to tame pasture. Deep-rooting grasses, such as improved bahiagrass and bermudagrass, are suited. Yields are generally reduced by periodic droughts. Careful management is required to maintain good grazing. This includes the establishment of a proper plant population, applications of fertilizer and lime, and controlled grazing. Irrigation improves the quality of grazing and of hay crops. If available during long dry periods, the use of irrigation water may be economically justifiable. These soils are not suited to shallow-rooting pasture plants because the soils cannot retain sufficient moisture in the rooting zone for good growth. Most of the depressional areas are unsuited for tame pasture.

The potential productivity for pine trees is moderately high for the Garcon soil and high for the Albany soil. In depressions and low areas, the productivity is very low. Slash pine and loblolly pine are suitable for planting except in depressions. The thick, sandy texture restricts the use of wheeled equipment. This limitation can be overcome by harvesting when the soils are moist. Seedling mortality, which is caused by droughtiness, can be partially reduced by increasing the tree planting rate and the planting depth. Plant competition can be controlled by site preparation practices, such as chopping or controlled burning. A harvesting system that leaves most of the biomass on the surface is recommended.

This map unit has severe limitations for local roads and streets, septic tank absorption fields, dwellings without basements, and small commercial buildings. Flooding, wetness, ponding, poor filtration, and the sandy texture are the main limitations. Deep drainage reduces the wetness. If areas of this map unit are used as a septic tank absorption field, mounding of the field may be needed. If the density of housing is moderate to high, community sewage systems are needed to prevent the contamination of ground water from seepage.

This map unit has severe limitations for recreational uses. The flooding, ponding, and the loose, sandy surface layer limit trafficability. Suitable topsoil fill material or some other type of surface stabilization is necessary to overcome the sandy texture. Soil blowing is a hazard. Establishing and maintaining a good vegetative cover or planting windbreaks can control soil blowing.

The Garcon soil is in capability subclass IIw, and the woodland ordination symbol is 10W. The Albany soil is in capability subclass IIIw, and the woodland ordination symbol is 11W. The Meadowbrook soil is in capability subclass VIIw, and the woodland ordination symbol is 7W.

44—Albany-Ousley-Meadowbrook complex, 0 to 5 percent slopes, occasionally flooded

The nearly level to gently sloping, somewhat poorly drained soils are on terraces, and the very poorly drained soils are in depressional areas on flood plains along the Suwannee River. Some areas are isolated by meandering stream channels. The mapped areas are irregular in shape and range from about 20 to more than 150 acres in size. The slope is nearly smooth to convex.

Typically, the surface layer of the Albany soil is very dark gray fine sand about 6 inches thick. The subsurface layer is fine sand to a depth of 53 inches. The upper 10 inches is yellowish brown, the next 9 inches is brown, the next 4 inches is light brownish gray, and the lower 24 inches is light gray. The subsoil is sandy clay loam, and it extends to a depth of 80 inches. The upper 2 inches is light gray and the lower 25 inches is mottled yellowish brown, pale brown, and light gray.

Typically, the surface layer of the Ousley soil is dark gray fine sand about 4 inches thick. The underlying material is fine sand, and it extends to a depth of 80 inches or more. The upper 15 inches is pale brown, the next 21 inches is brown, the next 17 inches is light brownish gray, and the lower 23 inches is light gray.

Typically, the surface layer of the Meadowbrook soil is black fine sand about 6 inches thick. The subsurface layer is fine sand, and it extends to a depth of 45 inches. The upper 8 inches is dark gray, and the lower 31 inches is light gray. The upper part of the subsoil is grayish brown sandy clay loam to a depth of about 63 inches, and the lower part of the subsoil is grayish brown sandy loam to a depth of 80 inches or more.

In 80 percent of areas mapped as Albany-Ousley-Meadowbrook complex, 0 to 5 percent slopes, occasionally flooded, Albany, Ousley, and Meadowbrook soils and similar soils make up 80 to 100 percent of the map unit. Generally, the mapped areas are about 55 percent Albany and similar soils, 30 percent Ousley and similar soils, and 15 percent Meadowbrook and similar soils. The Meadowbrook soil is on slopes that are less than 2 percent. The components of this map unit are so intricately intermingled that it was not practical to map them separately. The proportions and patterns of Albany, Ousley, and Meadowbrook soils and similar soils are relatively consistent in most delineations of the map unit.

Soils that have dissimilar characteristics make up about 0 to 20 percent of the map unit. In 0 to 20 percent of the mapped areas, the dissimilar soils make up more than 20 percent. The dissimilar soils included in mapping are small areas of Blanton, Leon, Mandarin, and Ortega soils. Individual areas of inclusions are smaller than 5 acres in size. Mandarin and Leon soils have an organic-coated subsoil at a depth of 20 to 30 inches. Leon soils are also poorly drained and are on the lower parts of the landform. Blanton and Ortega soils are moderately well drained and are on the higher parts of the landform.

A seasonal high water table is at a depth of 12 to 30 inches in the Albany soil and at a depth of 18 to 36 inches in the Ousley soil for 1 to 3 months during wet periods in most years. It recedes to a depth of more than 30 inches during dry periods. A seasonal high water table is at or above the surface of the Meadowbrook soil for 6 to 9 months during wet periods in most years. It recedes to a depth of more than 12 inches during dry periods. Flooding occurs in areas of the Albany and Ousley soils several times during a 10-year span. The duration and extent of flooding are variable, and they are directly related to the intensity and frequency of rainfall. The flooding occurs for less than 7 days in areas of the Albany and Ousley soils and from a few weeks to several months in areas of the Meadowbrook soil. Excess water ponds in the lowest areas of the Meadowbrook soil. The available water capacity is low in the Albany and Ousley soils and moderate in the Meadowbrook soil. Permeability is moderate to moderately slow in the Albany and Meadowbrook soils and rapid throughout the Ousley soil.

Most areas of these soils are in the Mixed Hardwood-Pine ecological plant community. In areas of Albany and Ousley soils, the natural vegetation includes slash pine, loblolly pine, longleaf pine, live oak, laurel oak, and water oak. The understory consists of lopsided indiangrass, hairy panicum, chalky bluestem, creepy bluestem, pineland threeawn, grassleaf goldaster, switchgrass, gallberry, lespedeza, and southern bayberry. Baldcypress, pondcypress, scattered sweetgums, and pond pine are common in areas of the Meadowbrook soil. Most areas of this map unit are used for the production of planted pine or pasture.

These soils have severe limitations for cultivated crops because of the flooding, wetness, and ponding in depressions during wet periods. The high water table during wet seasons can limit the growth of roots. Plant nutrients leach rapidly. Corn, peanuts, soybeans, and watermelons are crops that can be grown with intensive management and the use of good conservation practices. Using a crop rotation system that includes cover crops, returning crop residue to the soil, and properly applying fertilizer and lime are practices that are necessary for good yields. Irrigation is desirable during droughty periods. Soil blowing is a severe hazard if the topsoil is left unprotected. Most of the depressional areas are unsuited for cultivated crops.

This map unit is moderately suited to tame pasture. Deep-rooting grasses, such as improved bahiagrass and bermudagrass, are suited. Yields are generally reduced by periodic droughts. Careful management is required to maintain good grazing. This includes the establishment of a proper plant population, applications of fertilizer and lime, and controlled grazing. Irrigation improves the quality of grazing and of hay crops. If available during long dry periods, the use of irrigation water may be economically justifiable. These soils are not suited to shallow-rooting pasture plants because the soils cannot retain sufficient moisture in the rooting zone for good growth. Most of the depressional areas are unsuited for tame pasture.

The potential productivity for pine trees is high for the Albany soil and moderately high for the Ousley soil. In areas of the Meadowbrook soil in depressions and low areas, the productivity is very low. Slash pine, loblolly pine, and longleaf pine are suitable for planting except in areas of the Meadowbrook soil. The thick, sandy texture restricts the use of wheeled equipment. This limitation can be overcome by harvesting when the soils are moist. Seedling mortality, which is caused by droughtiness, can be partially reduced by increasing the tree planting rate and the planting depth. Plant competition can be controlled by site preparation practices, such as chopping or controlled burning. A harvesting system that leaves most of the biomass on the surface is recommended.

This map unit has severe limitations for local roads and streets, septic tank absorption fields, dwellings without basements, and small commercial buildings. Flooding, wetness, ponding, poor filtration, and the sandy texture are the main limitations. Deep drainage reduces the wetness. If areas of this map unit are used as a septic tank absorption field, mounding of the field may be needed. If the density of housing is moderate to high, community sewage systems are needed to prevent the contamination of ground water from seepage.

This map unit has severe limitations for recreational uses. The flooding, ponding, wetness, and the loose, sandy surface layer limit trafficability. Suitable topsoil fill material or some other type of surface stabilization is necessary to overcome the sandy texture. Soil blowing is a hazard. Establishing and maintaining a good vegetative cover or planting windbreaks can control soil blowing.

The Albany soil is in capability subclass IIIw, and the woodland ordination symbol is 11W. The Ousley soil is in capability subclass IIIw, and the woodland ordination symbol is 10W. The Meadowbrook soil is in capability subclass VIIw, and the woodland ordination symbol is 7W.

45—Wekiva-Rawhide-Tooles complex, occasionally flooded

These nearly level, poorly drained and very poorly drained soils are on low ridges, in low areas, and in depressions on the flood plain along the Steinhatchee River. Some areas are isolated by meandering stream channels. The mapped areas are irregular in shape and range from about 20 to more than 150 acres in size. The slope is nearly smooth to convex. The slope ranges from 0 to 2 percent.

Typically, the surface layer of the Wekiva soil is very dark gray fine sand about 6 inches thick. The subsurface layer is grayish brown fine sand to a depth of 14 inches. The subsoil is brown sandy clay loam to a depth of 26 inches. Below this depth is limestone bedrock. Most areas of the Wekiva soil are on low ridges.

Typically, the surface layer of the Rawhide soil is black mucky fine sand about 8 inches thick. The subsoil is sandy clay loam, and it extends to a depth of 80 inches. The upper 22 inches is dark gray, the next 11 inches is grayish brown, the next 27 inches is light grayish brown, and the lower 12 inches is gray sandy loam. Most areas of the Rawhide soil are in depressions.

Typically, the surface layer of the Tooles soil is black fine sand about 6 inches thick. The subsurface layer is fine sand, and it extends to a depth of 32 inches. The upper 8 inches is light gray, and the lower 18 inches is brown. The subsoil is light greenish gray sandy clay loam, and it extends to a depth of about 45 inches. Below this depth is fractured limestone. Most areas of the Tooles soil are in the low areas.

In 80 percent of areas mapped as Wekiva-Rawhide-Tooles complex, occasionally flooded, Wekiva, Rawhide, and Tooles soils and similar soils make up 80 to 100 percent of the map unit. Generally, the mapped areas are about 55 percent Wekiva and similar soils, 20 percent Rawhide and similar soils, and 10 percent Tooles and similar soils. The components of this map unit are so intricately intermingled that it was not practical to map them separately. The proportions and patterns of Wekiva, Rawhide, and Tooles soils and similar soils are relatively consistent in most delineations of the map unit.

Soils that have dissimilar characteristics make up about 0 to 20 percent of the map unit. In 0 to 20 percent of the mapped areas, the dissimilar soils make up more than 20 percent of the unit. The dissimilar soils included in mapping are small areas of Chaires, Leon, and Surrency soils. They are in similar landscape positions. Individual areas of inclusions are smaller than 5 acres in size. Chaires and Leon soils have an organic-coated subsoil at a depth of 20 to 30 inches. Leon soils have a sandy texture to a depth of 80 inches or more. Surrency soils have a low base saturation.

A seasonal high water table is at a depth of 0 to 12 inches in the Wekiva soil and at a depth of 0 to 6 inches in the Tooles soil for 2 to 6 months during wet periods in most years. It recedes to a depth of more than 20 inches during dry periods. A seasonal high water table is above the surface of the Rawhide soil for 6 to 9 months during wet periods in most years. It recedes to a depth of more than 12 inches during dry periods. Flooding occurs in areas of the Wekiva and Tooles soils several times during a 10-year span. The duration and extent of flooding are variable, and they are directly related to the intensity and frequency of rainfall. The flooding occurs for less than 7 days in areas of the Wekiva and Tooles soils and from a few weeks to several months in areas of the Rawhide soil. Excess water ponds in the lowest areas of the Rawhide soil. The available water capacity is low in the Wekiva and Tooles soils and moderate in the Rawhide soil. Permeability is moderately slow in the Wekiva soil, slow or very slow in the Rawhide soil, and slow in the Tooles soil.

These soils are in the Wetland Hardwood Hammocks ecological plant community. In most broad areas on the flood plain, the natural vegetation includes slash pine, loblolly pine, laurel oak, southern red cedar, sweetgum, and magnolia. Pondcypress, pond pine, baldcypress, water oak, laurel oak, red maple, and sweetbay are in the lower areas of the flood plain. The understory consists of hairy panicum, chalky bluestem, pineland threeawn, greenbrier, paspalum, waxmyrtle, cabbage palm, longleaf uniola, eastern gamagrass, maidencane, and blue maidencane. Most areas of these soils support the natural vegetation.

These soils have severe limitations for cultivated crops because of the flooding, wetness, and ponding in depressions during wet periods. The high water table during wet seasons can limit the growth of roots. Plant nutrients leach rapidly. Corn, soybeans, and tomatoes are crops that can be grown with intensive management and the use of good conservation practices. Using a crop rotation system that includes cover crops, returning crop residue to the soil, and properly applying fertilizer and lime are practices that are necessary for good yields. Irrigation is desirable during droughty periods. Soil blowing is a severe hazard if the topsoil is left unprotected. Most of the depressional areas are unsuited for cultivated crops.

This map unit is moderately suited to tame pasture. Deep-rooting grasses, such as improved bahiagrass and bermudagrass, are suited. Yields are generally reduced by periodic droughts. Careful management is required to maintain good grazing. This includes the establishment of a proper plant population, applications of fertilizer and lime, and controlled grazing. Irrigation improves the quality of grazing and of hay crops. If available during long dry periods, the use of irrigation water may be economically justifiable. These soils are not suited to shallow-rooting pasture plants because the soils cannot retain sufficient moisture in the rooting zone for good growth. Most of the depressional areas are unsuited for tame pasture.

The potential productivity for pine trees is moderate on the higher parts of the flood plain. In depressions and low

Figure 12.—Young slash pine in an area of Wekiva-Rawhide-Tooles complex, occasionally flooded. Plant competition is severe. Site preparation practices, such as chopping, controlled burning, and planting on beds, help to control plant competition. They also improve the seedling survival rate by elevating the trees above the seasonal high water table.

areas, the productivity is very low. Slash pine and loblolly pine are suitable for planting except in depressions. The sandy texture restricts the use of wheeled equipment. This limitation can be overcome by harvesting when the soils are moist. Seedling mortality, which is caused by wetness, can be partially reduced by increasing the tree planting rate and by planting on beds. Plant competition (fig. 12) can be controlled by site preparation practices, such as chopping or controlled burning. A harvesting system that leaves most of the biomass on the surface is recommended.

This map unit has severe limitations for local roads and streets, septic tank absorption fields, dwellings without basements, and small commercial buildings. Flooding, wetness, ponding, depth to rock, poor filtration, and the sandy texture are the main limitations. Shallow and deep drainage can reduce the wetness. If areas of this map unit are used as a septic tank absorption field, mounding of the field may be needed.

This map unit has severe limitations for recreational uses. The flooding, ponding, depth to rock, slow percolation, and the loose, sandy surface layer limit trafficability. Suitable topsoil fill material or some other type of surface stabilization is necessary to overcome the sandy texture. Soil blowing is a hazard. Establishing and maintaining a good vegetative cover or planting windbreaks can control soil blowing.

The Wekiva soil is in capability subclass Vw, and the woodland ordination symbol is 8W. The Rawhide soil is in capability subclass VIIw, and the woodland ordination symbol is 2W. The Tooles soil is in capability subclass Vw, and the woodland ordination symbol is 10W.

46—Tooles-Rawhide complex, frequently flooded

These nearly level, poorly drained and very poorly drained soils are on the flood plains. Rawhide soils are in the lower areas on the flood plain. Some areas are isolated by meandering stream channels. The mapped areas are irregular in shape and range from about 100 to more than 250 acres in size. The slope is nearly smooth to convex and ranges from 0 to 1 percent.

Typically, the surface layer of the Tooles soil is black fine sand about 8 inches thick. The subsurface layer is light gray fine sand to a depth of 18 inches. The upper part of the subsoil is brownish yellow fine sand to a depth of 28 inches. The lower part of the subsoil is gray sandy clay loam to a depth of 43 inches. Below this depth is limestone bedrock.

Typically, the surface layer of the Rawhide soil is black mucky fine sand about 18 inches thick. The upper part of the subsoil is sandy clay loam to a depth of 40 inches. The upper 9 inches is dark gray, and the next 13 inches is grayish brown. The lower part of the subsoil is gray sandy loam to a depth of 65 inches and light gray loamy fine sand to a depth of 80 inches or more.

In 80 percent of areas mapped as Tooles-Rawhide complex, frequently flooded, Tooles and Rawhide soils and similar soils make up 80 to 100 percent of the map unit. Generally, the mapped areas are about 55 percent Tooles and similar soils and 35 percent Rawhide and similar soils. The components of this map unit are so intricately intermingled that it was not practical to map them separately. The proportions and patterns of Tooles and Rawhide soils and similar soils are relatively consistent in most delineations of the map unit.

Soils that have dissimilar characteristics make up about 0 to 20 percent of the map unit. In 0 to 20 percent of the mapped areas, the dissimilar soils make up more than 20 percent of the unit. The dissimilar soils included with these soils in mapping are small areas of Chaires, Leon, and Surrency soils. Individual areas of inclusions are smaller than 5 acres in size. Chaires and Leon soils have an organic-coated subsoil at a depth of 20 to 30 inches. Leon soils have a sandy texture to a depth of 80 inches or more. Surrency soils have a low base saturation.

A seasonal high water table is at a depth of 0 to 6 inches in the Tooles soil for 2 to 6 months during wet periods in most years. The Rawhide soils have a seasonal high water table above the surface for 6 to 9 months during wet periods in most years. The water table recedes to a depth of more than 12 inches during dry periods. Flooding occurs in areas of the Tooles and Rawhide soils frequently during rainy periods. The duration and extent of flooding are variable, and they are directly related to the intensity and frequency of rainfall. The flooding occurs for less than 7 days in areas of the Tooles soil and from a few weeks to several months in areas of the Rawhide soil. Excess water ponds in the lowest areas of the Rawhide soil. The available water capacity is low in the Tooles soil and moderate in the Rawhide soil. Permeability is slow in the Tooles soil and slow or very slow in the Rawhide soil.

These soils are in the Wetland Hardwood Hammocks ecological plant community. In most broad areas on the flood plain, the natural vegetation includes slash pine, loblolly pine, water oak, laurel oak, southern redcedar, sweetgum, and magnolia. Pondcypress, baldcypress, pond pine, red maple, cabbage palm, and sweetbay are in the lower areas of the flood plain. The understory vegetation consists of hairy panicum, chalky bluestem, pineland threeawn, greenbrier, paspalum, waxmyrtle, cabbage palm, longleaf uniola, and eastern gamagrass on the higher parts of the landform. It consists of maidencane and various water-tolerant grasses in the low areas. Most areas of these soils support the natural vegetation.

These soils have severe limitations for cultivated crops, tame pasture, and planted pine trees because of the flooding and the prolonged wetness unless a major water-control system is used.

This map unit has severe limitations for local roads and streets, septic tank absorption fields, dwellings without basements, and small commercial buildings. Flooding, wetness, ponding, and poor filtration are the main limitations. Shallow and deep drainage can reduce the wetness. If areas of this map unit are used as a septic tank absorption field, mounding of the field may be needed.

This map unit has severe limitations for recreational uses. The flooding, ponding, and the loose, sandy surface layer are the main limitations for trafficability. Suitable topsoil fill material or some other type of surface stabilization is necessary to overcome the sandy texture. Soil blowing is a hazard. Establishing and maintaining a good vegetative cover or planting windbreaks can control soil blowing.

The Tooles soil is in capability subclass Vw, and the woodland ordination symbol is 10W. The Rawhide soil is in capability subclass VIIw, and the woodland ordination symbol is 2W.

48—Otela, limestone substratum-Shadeville-Penney complex, 0 to 5 percent slopes

These nearly level to gently sloping soils are on uplands. The Otela and Shadeville soils are moderately well drained, and the Penney soil is excessively drained. The mapped areas are irregular in shape and range from about 50 to more than 150 acres in size. The slope is nearly smooth to convex.

Typically, the surface layer of the Otela soil is very dark grayish brown fine sand about 8 inches thick. The subsurface layer is fine sand, and it extends to a depth of 58 inches. The upper 10 inches is light yellowish brown, the next 20 inches is yellowish brown, the next 14 inches is very pale brown, and the lower 6 inches is yellowish brown and light gray. The subsoil is light gray sandy clay loam, and it extends to a depth of 72 inches. Below this depth is limestone bedrock.

Typically, the surface layer of the Shadeville soil is dark brown fine sand to a depth of about 8 inches. The subsurface layer is fine sand, and it extends to a depth of about 28 inches. The upper 10 inches is pale brown, and the lower 10 inches is light yellowish brown. The subsoil is sandy clay loam, and it extends to a depth of about 55 inches. The upper 10 inches is reddish yellow, the next 8 inches is strong brown, and the lower 9 inches is yellowish brown. Below this depth is limestone bedrock.

Typically, the surface layer of the Penney soil is very dark grayish brown fine sand about 7 inches thick. The subsurface layer is fine sand, and it extends to a depth of 54 inches. The upper 24 inches is yellowish brown, and the lower 23 inches is very pale brown. Below this is 26 inches of very pale brown fine sand and thin lamallae of yellowish brown loamy fine sand.

In 95 percent of areas mapped as Otela, limestone substratum-Shadeville-Penney complex, 0 to 5 percent slopes, Otela, limestone substratum, Shadeville, and Penney soils and similar soils make up 80 to 100 percent of the map unit. Generally, the mapped areas are about 45 percent Otela, limestone substratum, and similar soils, about 33 percent Shadeville and similar soils, and about 15 percent Penney and similar soils. The components of this map unit are so intricately intermingled that it was not practical to map them separately. The proportions and patterns of Otela, limestone substratum, Shadeville, and Penney soils and similar soils are relatively consistent in most delineations of the map unit.

Soils that have dissimilar characteristics make up about 0 to 20 percent of the map unit. In 0 to 20 percent of the mapped areas, the dissimilar soils make up more than 20 percent of the unit. The dissimilar soils included in mapping are small areas of Albany, Blanton, Ortega, Ridgewood, and Tooles soils and soils that have sand over rock. Individual areas of inclusions are smaller than 5 acres in size. Albany and Blanton soils have a low base saturation. Albany soils are somewhat poorly drained. Ortega and Ridgewood soils are sandy throughout the profile. Ridgewood soils are somewhat poorly drained. Tooles soils are poorly drained and are on the lower parts of the landscape.

A seasonal high water table is at a depth of 48 to 72 inches in the Otela, limestone substratum, and Shadeville soils during wet periods in most years. The Penney soil has a water table at a depth of more than 72 inches during wet periods. The available water capacity is low in the Otela, limestone substratum, soil and in the Shadeville soil. It is very low in the Penney soil. Permeability is moderately slow in the Otela soil, moderate in the Shadeville soil, and rapid throughout the Penney soil.

These soils are in the Longleaf Pine-Turkey Oak Hills ecological plant community. In most areas, the natural vegetation includes slash pine, loblolly pine, longleaf pine, live oak, laurel oak, post oak, turkey oak, bluejack oak, southern redcedar, and black cherry. The understory consists of lopsided indiangrass, hairy panicum, greenbriar, hawthorn, persimmon, fringeleaf paspalum, hairy tick clover, dwarf huckleberry, chalky bluestem, creepy bluestem, and pineland threeawn. Most areas of this map unit are used for the production of planted pine, crops, or pasture.

These soils have severe limitations for cultivated crops because of droughtiness during dry periods. Plant nutrients leach rapidly. Corn, peanuts, soybeans, tobacco, and watermelons are crops that can be grown with intensive management and the use of good conservation practices. Using a crop rotation system that includes cover crops, returning crop residue to the soil, and properly applying fertilizer and lime are practices that are necessary for good yields. Irrigation is desirable during droughty periods. Soil blowing is a severe hazard if the topsoil is left unprotected.

This map unit is moderately suited to tame pasture. Deep-rooting grasses, such as improved bahiagrass and bermudagrass, are suited. Yields are generally reduced by periodic droughts. Careful management is required to maintain good grazing. This includes the establishment of a proper plant population, applications of fertilizer and lime, and controlled grazing. Irrigation improves the quality of grazing and of hay crops. If available during long dry periods, the use of irrigation water may be economically justifiable. These soils are not suited to shallow-rooting pasture plants because the soils cannot retain sufficient moisture in the rooting zone for good growth.

The potential productivity for pine trees is moderate. Slash pine and longleaf pine are suitable for planting. The thick, sandy texture restricts the use of wheeled equipment. This limitation can be overcome by harvesting when the soils are moist. Seedling mortality, which is caused by droughtiness, can be partially reduced by increasing the tree planting rate and the planting depth. Plant competition can be controlled by site preparation practices, such as chopping or controlled burning. A harvesting system that leaves most of the biomass on the surface is recommended.

This map unit has slight limitations for dwellings without basements and local roads and streets. It has moderate limitations for septic tank absorption fields. The depth to bedrock, wetness, and slow percolation are the main limitations. In areas that have a concentration of homes and septic tank absorption fields, ground-water contamination can be a hazard because of wetness, depth of rock, and poor filtration.

This map unit has severe limitations for recreational uses. The loose, sandy surface layer is a severe limitation for trafficability. Suitable topsoil fill material or some other type of surface stabilization is necessary to overcome this limitation. Soil blowing is a hazard. Establishing and maintaining a good vegetative cover or planting windbreaks can control soil blowing.

The Otela soil is in capability subclass IIIs, and the woodland ordination symbol is 10S. The Shadeville soil is in capability IIIs, and the woodland ordination symbol is 11S. The Penney soil is in capability subclass IVs, and the woodland ordination symbol is 8S.

52—Mandarin fine sand

This soil is nearly level and somewhat poorly drained. It is on low ridges on the flatwoods. The mapped areas are irregular in shape and range from about 10 to more than 50 acres in size. The slope is nearly smooth to convex. The slope ranges from 0 to 2 percent.

Typically, the surface layer of the Mandarin soil is dark gray fine sand about 6 inches thick. The subsurface layer is fine sand to a depth to a depth of 25 inches. The upper 4 inches is light brownish gray, and the lower 15 inches is light gray. The subsoil is fine sand to a depth of 52 inches. The upper 4 inches is very dark grayish brown, the next 8 inches is very dark brown, and the lower 15 inches is brown. The underlying material is fine sand, and it extends to a depth of 80 inches or more. The upper 18 inches is light gray, and the lower 10 inches is light brownish gray.

In 80 percent of areas mapped as Mandarin fine sand, the Mandarin soil and similar soils make up 80 to 100 percent of the map unit. The similar soils include Hurricane and Leon soils.

Soils that have dissimilar characteristics make up about 0 to 20 percent of the map unit. In 0 to 20 percent of the mapped areas, the dissimilar soils make up more than 20 percent of the unit. The dissimilar soils included in mapping are small areas of Albany and Ridgewood soils. Individual areas of inclusions are smaller than 5 acres in size. Albany soils have a loamy subsoil. Ridgewood soils do not have an organic-coated subsoil. Albany and Ridgewood soils are in higher positions on the landscape than the Mandarin soil.

A seasonal high water table is at a depth of 18 to 42 inches in the Mandarin soil for 1 to 3 months during wet periods in most years. It recedes to a depth of more than 40 inches during the dry periods. The available water capacity is low. Permeability is moderate.

This soil is in the North Florida Flatwoods ecological plant community. In most areas, the natural vegetation includes slash pine, longleaf pine, live oak, and laurel oak. The understory consists of lopsided indiangrass, hairy panicum, creepy bluestem, pineland threeawn, broomsedge bluestem, grassleaf goldaster, and saw palmetto. Most areas of this soil are used for the production of pasture or planted pine.

This soil has severe limitations for cultivated crops. The high water table during wet seasons can limit the growth of roots. Plant nutrients are rapidly leached because of the sandy texture. Corn, peanuts, soybeans, tobacco, and watermelons are crops that can be grown with intensive management and the use of good conservation practices. Using a crop rotation system that includes cover crops, returning crop residue to the soil, and properly applying fertilizer and lime are practices that are necessary for good yields. Irrigation is desirable during droughty periods. Soil blowing is a severe hazard if the topsoil is left unprotected.

This soil is moderately suited to tame pasture. Improved bahiagrass, bermudagrass, and clover are suited. Yields are generally reduced by periodic wetness. Careful management is required to maintain good grazing. This includes the establishment of a proper plant population, applications of fertilizer and lime, and controlled grazing. Irrigation improves the quality of grazing and of hay crops. A water-control system is needed to remove the excess surface water during heavy rains and to provide irrigation during droughty periods.

The potential productivity of this soil for pine trees is moderate. Slash pine and longleaf pine are suitable for planting. The thick, sandy texture restricts the use of wheeled equipment. This limitation can be overcome by harvesting when the soil is moist. Plant competition can be controlled by site preparation practices, such as chopping or controlled burning. A harvesting system that leaves most of the biomass on the surface is recommended.

This soil has moderate limitations for dwellings without basements and local roads and streets. It has severe limitations for septic tanks absorption fields. Wetness, poor filtration, and the sandy texture are the main limitations. Deep drainage reduces the wetness. If areas of this soil are used as a septic tank absorption field, mounding of the field may be needed. In areas that have a concentration of homes, a community sewage system is needed to prevent the contamination of ground water from poor filtration and the high water table during wet periods.

This map unit has severe limitations for recreational uses. The loose, sandy surface layer limits trafficability. Suitable topsoil fill material or some other type of surface stabilization is necessary to overcome this limitation. Soil blowing is a hazard. Establishing and maintaining a good vegetative cover or planting windbreaks can control soil blowing.

This Mandarin soil is in capability subclass VIs, and the woodland ordination symbol is 8S.

53—Penney sand, 5 to 8 percent slopes

This gently sloping to sloping, excessively drained soil is on uplands. The mapped areas are irregular in shape and range from about 10 to more than 100 acres in size. The slope is gently rolling.

Typically, the surface layer of the Penney soil is very dark grayish brown fine sand about 4 inches thick. The subsurface layer is yellowish brown and very pale brown fine sand, and it extends to a depth of 55 inches. Below this is 25 inches of very pale brown fine sand and thin lamellae of yellowish brown loamy fine sand.

In 80 percent of areas mapped as Penney sand, 5 to 8 percent slopes, Penney soil and similar soils make up 80 to 100 percent of the map unit. The similar soils are coated in the control section.

Soils that have dissimilar characteristics make up about 0 to 20 percent of the map unit. In 0 to 20 percent of the mapped areas, the dissimilar soils make up more than 20 percent of the unit. The dissimilar soils included in mapping are small areas of Blanton and Ortega soils and soils that have sand over rock. Individual areas of inclusions are smaller than 5 acres in size. Blanton and Ortega soils are moderately well drained and are on the lower parts of the landscape.

A seasonal high water table is at a depth of more than 72 inches for 1 to 3 months during wet periods in most years. It recedes to a depth of more than 72 inches during dry periods. The available water capacity is very low. Permeability is rapid throughout the profile.

This soil is in the Longleaf Pine-Turkey Oak Hills ecological plant community. In most areas, the natural vegetation includes slash pine, longleaf pine, sand pine, live oak, post oak, turkey oak, and bluejack oak. The understory consists of lopsided indiangrass, hairy panicum, greenbriar, hawthorn, persimmon, fringeleaf paspalum, hairy tick clover, dwarf huckleberry, chalky bluestem, creepy bluestem, and pineland threeawn. Most areas of this soil are used for the production of planted pine or pasture.

This soil has very severe limitations for cultivated crops because of droughtiness during dry periods. Plant nutrients leach rapidly. Corn, peanuts, soybeans, tobacco, and watermelons are crops that can be grown with intensive management and the use of good conservation practices. Using a crop rotation system that includes cover crops, returning crop residue to the soil, and properly applying fertilizer and lime are practices that are necessary for good yields. Irrigation is desirable during droughty periods. Soil blowing is a severe hazard if the topsoil is left unprotected.

This soil is moderately suited to tame pasture. Deep-rooting grasses, such as improved bahiagrass and bermudagrass, are suited. Yields are generally reduced by periodic droughts. Careful management is required to maintain good grazing. This includes the establishment of a proper plant population, applications of fertilizer and lime, and controlled grazing. Irrigation improves the quality of grazing and of hay crops. If available during long dry periods, the use of irrigation water may be economically justifiable. These soils are not suited to shallow-rooting pasture plants because the soils cannot retain sufficient moisture in the rooting zone for good growth.

The potential productivity of this soil for pine trees is moderate. Sand pine, slash pine, and longleaf pine are suitable for planting. The thick, sandy texture restricts the use of wheeled equipment. This limitation can be overcome by harvesting when the soil is moist. Seedling mortality, which is caused by droughtiness, can be partially reduced by increasing the tree planting rate and the planting depth. Plant competition can be controlled by site preparation practices, such as chopping or controlled burning. A harvesting system that leaves most of the biomass on the surface is recommended.

This soil has slight limitations for dwellings without basements, local roads and streets, and septic tank absorption fields. In areas that have a concentration of homes and septic tank absorption fields, ground-water contamination can be a hazard because of poor filtration.

This soil has severe limitations for recreational uses. The loose, sandy surface layer limits trafficability. Suitable topsoil fill material or some other type of surface stabilization is necessary to overcome this limitation. Soil blowing is a hazard. Establishing and maintaining a good vegetative cover or planting windbreaks can control soil blowing.

This Penney soil is in capability subclass VIs, and the woodland ordination symbol is 8S.

54—Garcon-Eunola complex, 2 to 5 percent slopes, occasionally flooded

These nearly level, somewhat poorly drained and moderately well drained soils are on terraces along the Suwannee River. Some areas are isolated by meandering stream channels. The mapped areas are irregular in shape and range from about 20 to more than 150 acres in size. The slope is nearly smooth to convex.

Typically, the surface layer of the Garcon soil is dark gray fine sand about 6 inches thick. The subsurface layer is fine sand, and it extends to a depth of 23 inches. The upper 10 inches is brown, and the lower 7 inches is very pale brown. The subsoil is sandy clay loam and sandy loam to a depth of 58 inches. The upper 15 inches is brownish yellow sandy clay loam, and the lower 20 inches is light brownish gray sandy loam. Below this depth is white fine sand to a depth of 80 inches or more.

Typically, the surface layer of the Eunola soil is very dark grayish brown fine sand about 6 inches thick. The subsurface layer is pale brown fine sand to a depth of 15 inches. The subsoil is sandy clay loam and sandy loam to a depth of 55 inches. The upper part is yellowish red, the next part is strong brown, and the lower part is yellowish red sandy loam. The underlying material is very pale brown fine sand to a depth of 80 inches or more.

In 80 percent of areas mapped as Garcon-Eunola complex, 2 to 5 percent slopes, occasionally flooded, Garcon and Eunola soils and similar soils make up 80 to 100 percent of the map unit. Generally, the mapped areas are about 65 percent Garcon and similar soils and 30 percent Eunola and similar soils. The components of this map unit are so intricately intermingled that it was not practical to map them separately. The proportions and patterns of Garcon and Eunola soils and similar soils are relatively consistent in most delineations of the map unit.

Soils that have dissimilar characteristics make up about 0 to 20 percent of the map unit. In 0 to 20 percent of the mapped areas, the dissimilar soils make up more than 20 percent of the unit. The dissimilar soils included in mapping are small areas of Blanton, Mandarin, and Ortega soils. Individual areas of inclusions are smaller than 5 acres in size. Mandarin soils have an organic-coated subsoil at a depth of 20 to 30 inches. Blanton and Ortega soils are moderately well drained and are on the higher parts of the landscape. Blanton soils have a sandy epipedon at a depth of 40 to 80 inches, and Ortega soils are sandy to a depth of 80 inches or more.

A seasonal high water table is at a depth of 18 to 36 inches in the Garcon soil and at a depth of 18 to 30 inches in the Eunola soil for 1 to 3 months during wet periods in most years. It recedes to a depth of more than 30 inches during dry periods. Flooding occurs in areas of the Garcon and Eunola soils several times during a 10-year span. The duration and extent of flooding are variable, and they are directly related to the intensity and frequency of rainfall. The flooding occurs for less than 7 days in areas of the Garcon and Eunola soils. The available water capacity is low in both of these soils. Permeability is moderate.

These soils are in the mixed Hardwood-Pine ecological plant community. In most broad upland areas on the flood plain, the natural vegetation includes slash pine, loblolly pine, longleaf pine, water oak, sweetgum, live oak, laurel oak, and hickory. The understory consists of pineland threeawn, grassleaf goldaster, gallberry, waxmyrtle, blueberry, saw palmetto, American holly, huckleberry, panicum, longleaf uniola, and little bluestem. Most areas of these soils are used for the production of planted pine or pasture.

These soils have severe limitations for cultivated crops because of the flooding and wetness. The high water table during wet seasons can limit the growth of roots. Plant nutrients leach rapidly. Corn, soybeans, and oats are crops that can be grown with intensive management and the use of good conservation practices. Using a crop rotation system that includes cover crops, returning crop residue to the soil, and properly applying fertilizer and lime are practices that are necessary for good yields. Irrigation is desirable during droughty periods. Soil blowing is a severe hazard if the topsoil is left unprotected.

This map unit is moderately suited to tame pasture. Deep-rooting grasses, such as improved bahiagrass and bermudagrass, are suited. Yields are generally reduced by periodic droughts. Careful management is required to maintain good grazing. This includes the establishment of a proper plant population, applications of fertilizer and lime, and controlled grazing. Irrigation improves the quality of grazing and of hay crops. If available during long dry periods, the use of irrigation water may be economically justifiable. These soils are not suited to shallow-rooting pasture plants because the soils cannot retain sufficient moisture in the rooting zone for good growth.

The potential productivity for pine trees is moderately high for the Garcon soil and high for the Eunola soil. Slash pine and loblolly pine are suitable for planting. The thick, sandy texture restricts the use of wheeled equipment. This limitation can be overcome by harvesting when the soils are moist. Seedling mortality, which is caused by droughtiness, can be partially reduced by increasing the tree planting rate and the planting depth. Plant competition can be controlled by site preparation practices, such as chopping or controlled burning. A harvesting system that leaves most of the biomass on the surface is recommended.

This map unit has severe limitations for local roads and streets, septic tank absorption fields, dwellings without basements, and small commercial buildings. Flooding, poor filtration, and wetness are the main limitations. Deep drainage reduces the wetness. If areas of this map unit are used as a septic tank absorption field, mounding of the field may be needed. If the density of housing is moderate to high, community sewage systems are needed to prevent the contamination of ground water from seepage.

This map unit has severe limitations for recreational uses. The flooding and the loose, sandy surface layer limit trafficability. Suitable topsoil fill material or some other type of surface stabilization is necessary to overcome the sandy surface texture. Soil blowing is a hazard. Establishing and maintaining a good vegetative cover or planting windbreaks can control soil blowing.

The Garcon soil is in capability subclass IIw, and the woodland ordination symbol is 10W. The Eunola soil is in capability subclass IIw, and the woodland ordination symbol is 11W.

Use and Management of the Soils

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

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

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

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

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm or loose 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 buildings, homes, streets, roads, campgrounds, playgrounds, lawns, and pond reservoir areas or sites for other uses.

Crops and Pasture

General management needed for crops and pasture is suggested in this section. The crops or pasture plants best suited to the soils, including some not commonly grown in the survey area, are identified; the system of land capability classification used by the Natural Resources Conservation Service is explained; and the estimated yields of the main crops and hay and pasture plants are listed for each soil.

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

In 1990, approximately 95,847 acres in Lafayette County were used for crops and pasture. The acreage includes areas used for tame pasture; field crops, mainly corn, peanuts, tobacco, sorghum, wheat, oats, peanuts, soybeans, peas, and hay; and specialty crops, such as sweet corn, watermelons, field peas, and a small acreage of grapes and pecans.

The potential of the soils in Lafayette County for the increased production of food is fair. About 300 acres of potentially good cropland is now used as woodland, and about 400 acres is used as pasture. The areas of woodland and pasture could be used as cropland, but intensive conservation measures would be required to control the soil blowing on sandy soils and to control the fluctuating water table. In addition to the reserve capacity of cropland represented by these areas, the production of food could be increased by extending the latest technology to all of the cropland in the county.

Soil erosion is a concern on about three-fourths of the cropland and pasture in Lafayette County. If the slope is more than 2 percent, erosion is a hazard, especially in areas of the moderately well drained Blanton, Eunola, Shadeville, and Otela soils and the somewhat poorly drained Albany and Ridgewood 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 uses, for recreational uses, and for fish and wildlife.

Erosion-control practices provide a protective surface cover, reduce the runoff rate, and increase the rate of infiltration. A cropping system that keeps a 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, including legume and grass forage crops in the cropping system reduces erosion on sloping land and provides nitrogen and improves tilth for the following crops.

Minimizing tillage and leaving crop residue on the surface increase the infiltration rate and reduce the hazards of runoff and erosion. Conservation tillage practices for corn and soybeans are effective in reducing erosion in sloping areas. These practices can be adapted to most of the 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 the slope and also reduce the runoff rate and the hazard of 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 of the 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 providing surface mulch minimize 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. Controlling wind erosion minimizes dust storms 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, depending on the erodibility of the soils 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 ensure 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 planting windbreaks and screens and planting and caring for trees and shrubs can be obtained from local offices of the Natural Resources 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 "Erosion Control Handbook—Florida," which is available at local offices of the Natural Resources Conservation Service.

Soil drainage is a major management concern on about 10 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 soils include the poorly drained Leon and Sapelo soils, the poorly drained and very poorly drained Chaires soils, and the very poorly drained Pamlico, Dorovan, and Surrency soils. These soils make up about 128,637 acres of the survey area.

Unless they are artificially drained, some of the somewhat poorly drained soils are wet enough in the root zone to damage most crops during most years. Soils that are somewhat poorly drained include Albany, Hurricane, and Ridgewood soils, which make up about 18,748 acres of the survey area.

Unless they are artificially drained, some of the poorly drained Chaires, Leon, and Sapelo soils are wet enough to cause some damage to pasture plants. These soils also have a low water capacity and are droughty during dry periods. They require subsurface irrigation for an adequate production of pasture.

The very poorly drained Chaires, Pamlico, Dorovan, Wesconnett, and Surrency soils are very wet during rainy periods. They 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 in areas of these soils for intensive pasture production.

Information about water control and irrigation for each kind of soil in the county is available at the local offices of the Natural Resources Conservation Service.

Soil fertility is naturally low in most of the soils in the survey area. Most of the soils have a sandy surface layer and are light colored. Many have a loamy subsoil. Included are the Albany, Eunola, Otela, and Blanton soils. Otela and Shadeville 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. Applications of ground limestone are needed in areas of these soils to raise the pH level sufficiently for good crop growth. Nitrogen, potassium, and available phosphorus levels are naturally low in most of these soils. All 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 that have good tilth are easily cultivated with common tillage equipment. They provide a good seedbed.

Most of the soils in the survey area have a sandy surface layer or a surface layer of loamy fine sand. The layer is light in color and has a low to moderate content of organic matter. Some exceptions include Dorovan, Pamlico, and Wesconnett soils, which are organic soils or soils that 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 have a low content of organic matter receive intense rainfall, 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 the soil structure and reduce the formation of crusts.

Fall plowing is generally not advisable. If sloping soils, which make up about one-fourth of the cropland in the survey area, are plowed in the fall, 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 is subject to soil blowing. Tons of soil are lost each year in the survey area as result of wind erosion during the spring plowing season.

The field crops grown in the survey area include corn, soybeans, peanuts, and tobacco. The production of grain sorghum can be increased if economic conditions are favorable. Rye and wheat are the common close-growing crops. Oats can also be grown in the survey area.

The main specialty crop grown commercially in the survey area is watermelons. A small acreage is used for squash, blueberries, grapes, pecans, and field peas. If economic conditions are favorable, the acreage of blueberries, nursery sod, cabbage, 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 11,938 acres of Eunola, Otela, Penney, Shadeville, and Blanton soils that have slopes of less than 8 percent are very well suited to vegetables and small fruits. If adequately drained, about 18,748 acres of Ridgewood, Hurricane, and Albany soils are also very well suited to vegetables and small fruits.

Information and suggestions for growing specialty crops can be obtained from the local offices of the Cooperative Extension Service and the Natural Resources 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. Seeds can be harvested from bahiagrass for improved pasture plantings as well as for commercial purposes. Many cattlemen seed small grains in areas of cropland and overseed rye in pastures in the fall for winter and spring grazing. In bermudagrass pastures, the 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 Penney, Otela, Shadeville, Blanton, and Eunola soils are well suited to bahiagrass and improved bermudagrass. With good management, hairy indigo and Alyce clover can be grown during the summer and the fall.

The somewhat poorly drained Albany and Hurricane soils are well suited to bahiagrass and to improved bermudagrass if they are grown with legumes, such as sweetclover, and if adequate amounts of lime and fertilizer are applied.

If drainage is provided in areas where it is needed, Hurricane, Leon, Mandarin, and Sapelo soils are well suited to bahiagrass pastures. Subsurface irrigation increases the length of the growing season and total production of forage. With adequate applications 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. Yields can be increased by irrigation, by applications of fertilizer and lime, and by growing legumes.

Differences in the amount and kinds of pasture yields are related closely to the kind of soils. Management of pasture is based on the interrelationship of soils, pasture, plants, lime and fertilizer, and moisture. 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 at local offices of the Cooperative Extension Service and the Natural Resources 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 ensures the smallest possible loss.

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

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

Land Capability Classification

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

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit. Only class and subclass are used in this survey.

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

Class I soils have few limitations that restrict their use.

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

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

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

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

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

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

Class VIII soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

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

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

The capability classification of each map unit is given in the section “Detailed Soil Map Units.”

Woodland Management and Productivity

Forestry has played an important role in the economic development of Lafayette County. The forest industry presently ranks fifth in providing jobs in the county.

About 286,790 acres in Lafayette County, or about 82 percent of the land area, is used as woodland. These areas of commercial woodland are mainly owned by large timber and wood products industries. The rest of the woodland acreage consists of small, privately owned tracts.

The main commercial trees are slash pine, longleaf pine, and loblolly pine. The most common hardwoods include laurel oak, water oak, sweetgum, black cherry, and various types of hickory trees.

The soils and climate of Lafayette County are well suited to the commercial production of timber. Currently, most areas of woodland in the county are on Chaires, Leon, Sapelo, and Meadowbrook soils. These soils are typical of poorly drained soils in the flatwoods throughout the county. In better drained areas, the soils that are commonly used as woodland include Blanton, Albany, Ridgewood, Hurricane, and Ortega soils. These soils are in the southern and southwestern parts of the county, in and around Cook Hammock and Buckville.

For many years, individuals and woodland industries have planted and grown pines for profit. Recently, many farmers have been planting pines in idle fields because of declining profits in agriculture. Slash pine is the most common tree planted because it has a fast growth rate on a wide variety of soils. It can be easily transplanted. Longleaf pine is recommended on the dry, sandy soils that are mostly in the northern and northeastern parts of the county. Loblolly pine grow exceptionally well.

On a properly managed pine plantation, the production of 1½ cords per acre per year is not unusual. Some recommended woodland management practices include plowing fire lines annually to protect the stand from wildfires, periodic selective thinning to reduce excessive competition, and regular prescribed burnings to control the growth of undesirable hardwoods and to improve the habitat for wildlife.

Soils vary in their ability to support trees. The depth of the soil, fertility, texture, and the available water capacity influence tree growth. The available water capacity and depth of the root zone are the major influences on tree growth.

This soil survey can be used by woodland managers planning ways to increase the productivity of forest land. Some soils respond better to applications of fertilizer than others, and some are more susceptible to landslides and erosion after roads are built and timber is harvested. Some soils require special reforestation efforts. In the section "Detailed Soil Map Units," the description of each map unit in the survey area suitable for timber includes information about productivity, limitations in harvesting timber, and management concerns in producing timber. The common forest understory plants also are listed. Table 6 summarizes this forestry information and rates the soils for a number of factors to be considered in management. *Slight, moderate,* and *severe* are used to indicate the degree of the major soil limitations to be considered in forest management.

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

The second part of the ordination symbol, a letter, indicates the major kind of soil limitation affecting use and management. The letter *R* indicates a soil that has a significant limitation because of steepness of slope. The letter *X* indicates that a soil has restrictions because of stones or rocks on the surface. The letter *W* indicates a soil in which excessive water, either seasonal or year-round, causes a significant limitation. The letter *S* indicates a dry, sandy soil. The letter *A* indicates a soil having no significant limitations that affect forest use and management. If a soil has more than one limitation, the priority is as follows: R, X, W, and S.

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

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

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

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

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

The *potential productivity* of *common trees* on a soil is expressed as a *site index*. Common trees are listed in the order of their observed general occurrence. Generally, only two or three tree species dominate.

For soils that are commonly used to produce timber, the yield is predicted in cubic meters. It is predicted at the point where mean annual increment culminates.

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

The *productivity class* represents an expected volume produced by the most important trees, expressed in cubic meters per hectare per year. Cubic meters per hectare can be converted to cubic feet per acre by multiplying by 14.3. Cubic feet can be converted to board feet by multiplying by a factor of about 5. For example, a productivity class of 8 means that the soil can be expected to produce 114 cubic feet per acre per year at the point where mean annual increment culminates, or about 570 board feet per acre per year.

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

Grazing Land

Sid B. Brantly, State range conservationist, Natural Resources Conservation Service, helped to prepare this section.

Grazing land in Lafayette County provides food and cover for livestock and wildlife. White-tailed deer, wild turkey, quail, dove, squirrel, and numerous nongame wildlife species live on pasture, rangeland, and grazeable woodland areas. About 22,000 head of cattle and calves are also maintained on Lafayette County grazing lands.

Pasture

Pasture vegetation consists mainly of introduced forage species that do not require annual tillage. Pasture areas in Lafayette County are mainly used to produce forage for beef and dairy cattle. Bahiagrass and bermudagrass are the major pasture plants grown in Lafayette County. Some producers overseed rye or other small grains on pasture in the fall for winter and spring grazing. Excess grass may be harvested as hay during the summer months for feeding during the winter months. Pasture plants in some parts of the county have been depleted by continued excessive use. Some areas that were planted to pasture species have experienced weed and brush invasions. In areas that have similar climates and topography, the differences in the kind and amount of forage produced are related closely to the kind of soil. Effective management practices take into account the relationship of soils to each other, species of pasture plants, water control, and applications of lime and fertilizer.

Sound management practices in areas of pasture generally include weed control, applications of fertilizer and lime as necessary, and a planned grazing system. Bahiagrass is successfully managed with a stubble height of about two inches. Short grazing periods should be followed by a three-week recovery period. The stubble height on improved varieties of bermudagrass should be at a height of about four inches, with a five-week recovery period between grazing periods.

Rangeland

The dominant vegetation in rangeland areas is native grasses, grasslike plants, forbs, and shrubs that are suitable for grazing. Sound management plans for this land include the practices described in the following paragraphs.

Proper grazing use requires manipulating the length and intensity of grazing so that no more than 50 percent of the current year's growth of desirable plants is removed each year. It is best accomplished by implementing a *planned grazing system*, which allows for deferment periods during the growing season.

Weed and brush management can be used to alter the type and distribution of brush and weeds to approximate natural conditions. Mechanical treatment, chemical treatment, and prescribed burning can be used individually or in conjunction to accomplish the range manager's goals.

Deferred grazing improves the condition and vigor of forage plants through a period of complete rest from any type of use by livestock. Generally, a deferment of at least 30 days follows prescribed burning. A similar 90-day deferment follows mechanical treatment.

A *range site* is a distinctive kind of rangeland that produces a characteristic climax plant community that differs from natural plant communities on other range sites in kind, amount, or proportion of range plants. The relationship between soils and vegetation was ascertained during this survey; thus, range sites generally can be determined directly from the soil map. Soil properties that affect moisture supply and plant nutrients have the greatest influence on the productivity of range plants.

Range condition is a measure of the present plant community in relation to the potential climax native plant community.

The productivity of the sites is closely related to the natural drainage of the soil. The wettest soils, such as those in marshes, generally produce the greater amounts of vegetation. The deep, droughty, sandy soils normally produce the least amount of herbage annually.

Five range sites are important for wildlife and livestock in the survey area. A brief description of each is provided in the following paragraphs.

North Florida Flatwoods. This range site is characterized by poorly drained soils that are in nearly level areas and have a moderate to high potential for producing native forage. This range site can be easily recognized by the dominant chalky or creeping bluestem (or indiangrass and creeping bluestem in drier areas) when the site is in excellent condition. In poor or fair range condition, this site is identified by its association with saw palmetto, gallberry, and wiregrass. It generally has a fairly dense stand of slash pine, longleaf pine, and loblolly pine. The average production from sites in excellent condition is about 4,500 pounds of forage per acre.

Slough. This range site, which is often wooded, is characterized by nearly level areas that act as road natural drainage courses. The potential plant community is dominated by blue maidencane, chalky bluestem, and panicums. These grasses are all readily utilized by livestock. If overgrazing occurs for prolonged periods, wiregrass, bottlebrush threeawn, muhlys, and other less desirable species replace the better plants. The average production from sites in excellent condition is about 5,500 pounds of forage per acre. This total is reduced in areas that have a heavy timber canopy.

Wetland Hardwood Hammock. This range site is forested, nearly level, and somewhat poorly drained to poorly drained. Oaks, red maple, sweetgum, and cypress dominate the forest canopy. Due to the density of the overstory, the potential production of forage is low. Longleaf uniola, eastern gamagrass, switchgrass, chalky bluestem, and maidencane are important forages when this site is in excellent condition. In poor condition, wiregrass and dogfennel are common as ground vegetation. The average annual production from sites in excellent production is 2,500 pounds of forage per acre.

Longleaf Pine-Turkey Oak Hills. This range site is in nearly level to rolling areas. Areas of this site are identified by the stands of longleaf pine and turkey oak. In areas that are in excellent condition, the average annual production of air-dry plant material from all sources varies from approximately 4,000 pounds per acre in favorable years to about 2,000 pounds per acre in unfavorable years. In excellent condition, the relative percentage of total annual vegetation production is approximately 60 percent grasses and grasslike plants, 20 percent forbs, and 20 percent woody plants and trees.

Freshwater Marsh and Ponds. This range site consists of an open grassland marsh or pond. It has potential for producing significant amounts of maidencane and cutgrass. The water level fluctuates throughout the year. During periods of high water, grazing by livestock is naturally deferred. This range site is a preferred grazing area for cattle, but it deteriorates with prolonged overgrazing. Pickerelweed and, in some areas, sawgrass are increasers. Buttonbush, willows, and baccharis also increase if the overuse continues. If in excellent condition, the site is capable of producing more than 10,000 pounds of air-dry material per acre in favorable years. The production in unfavorable years is about 5,000 pounds per acre. If the site is in excellent condition, the relative percentage of total annual production is about 80 percent grasses and grasslike plants, 15 percent forbs, and 5 percent woody plants and trees.

Grazable Woodland

Grazable woodland is forest land that produces, at least periodically, sufficient understory vegetation suitable for forage that grazing will not significantly impair the production of wood. Sound management practices in areas of grazable woodland include adjusting the intensity and duration of livestock grazing so that half of the current year's growth on grazing plants is left at the end of each grazing season.

Another recommended practice is locating supplemental feeding troughs, mineral feeders, and water developments away from newly planted areas. New plantings or stands that are naturally regenerating are often excluded from grazing for one growing season or until well established.

A planned grazing system that provides for periodic deferments during the growing season optimizes the production of forage plants. Prescribed burning, chemical brush control, and mechanical brush control help keep the understory plant community in balance.

Windbreaks and Environmental Plantings

Windbreaks protect livestock, buildings, and yards from wind and snow. They also protect fruit trees and gardens, and they furnish habitat for wildlife. Several rows of low- and high-growing broadleaf and coniferous trees and shrubs provide the most protection.

Field windbreaks are narrow plantings made at right angles to the prevailing wind and at specific intervals across the field. The interval depends on the erodibility of the soil. Field windbreaks protect cropland and crops from wind, help to keep snow on the fields, and provide food and cover for wildlife.

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 ensure 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 on planting and caring for trees and shrubs can be obtained from local offices of the Natural Resources Conservation Service or the Cooperative Extension Service or from a commercial nursery.

Recreation

Lafayette County provides a variety of recreational activities. Hunting for deer, dove, quail, or turkey is a popular activity in the area. Fishing opportunities in the many lakes and ponds are enjoyed by year-round residents and by visitors. The Suwannee River provides opportunities for boating and canoeing, and Blue Springs and Troy Springs provide opportunities for swimming and scuba or skin diving. A golf course, baseball fields, tennis courts, handball courts, and basketball courts are also available in Lafayette County.

In table 7, the soils of the survey area are rated according to the limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation are also important. Soils subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In the table, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations, if any, 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 soil reclamation, special design, intensive maintenance, limited use, or a combination of these measures.

The information in the table can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 10 and interpretations for dwellings without basements and for local roads and streets in table 9.

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

Wildlife is a valuable resource of Lafayette County. Fishing and hunting are popular, year-round activities. Large areas of wetlands and uplands provide habitat for a wide variety of wildlife.

The main wildlife species include white-tailed deer, squirrels, turkey, bobwhite quail, feral hogs, and water fowl. Nongame species include raccoon, otter, and a variety of songbirds, wading birds, woodpeckers, predatory birds, reptiles, and amphibians. Some of the more important habitat areas are the large wetland areas of the Cook Hammock and Steinhatchee Wildlife Management Area in the southern part of the county and along the Suwannee River on the eastern boundary.

Lafayette County contains numerous small lakes. Five lakes are more than 100 acres in size. The largest lake is Alton Lake, which is 155 acres in size. Good opportunities for fishing are found throughout the county. Game and nongame species include largemouth bass, channel catfish, bullhead catfish, bluegill, redear, and spotted sunfish, warmouth, black crappie, chain pickerel, gar, bowfin, and sucker.

A number of endangered and threatened wildlife species are in Lafayette County, ranging from the seldom-seen, red-cockaded woodpecker to the more commonly seen southeastern kestrel. A detailed list of endangered and threatened species, with information about range and habitat needs, is available from the local office of the Natural Resources Conservation Service.

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

In table 8, 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 flooding. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, soybeans, wheat, browntop millet, and grain sorghum.

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

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flooding. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are bluestem, goldenrod, beggarweed, partridge pea, and 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, available water capacity, and wetness. Examples of these plants are oak, palmetto, cherry, sweetgum, wild grape, hawthorn, dogwood, hickory, blackberry, and blueberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are firethorn, wild plum, and American beautyberry.

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

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

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

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

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

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

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

Engineering

Elwyn O. Cooper, area engineer, Natural Resources Conservation Service, helped to 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. Ratings are given for building site development, sanitary facilities, construction materials, and water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the "Soil Properties" section.

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

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

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

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 or 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 kinds of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, earthfill, and topsoil; plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

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

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

Building Site Development

Table 9 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, if any, are minor and easily overcome; *moderate* if soil properties or site features are somewhat restrictive 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 that special design, soil reclamation, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to 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 depth to the water table.

Dwellings and *small commercial buildings* are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, shrinking and swelling, and organic layers can cause the movement of footings. Depth to 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 or 6 feet are not considered.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or stabilized soil material; and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. Depth to bedrock or to a cemented pan, depth to 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, depth to 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 10 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, if any, are minor and easily overcome; *moderate* if soil properties or site features are moderately favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or alteration.

The table also shows the suitability of the soils for use as daily cover for landfill. A rating of *good* indicates that soil properties and site features are favorable for the use and that 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, depth to 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.

The table 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, depth to a high water table, depth to bedrock or to a cemented pan, flooding, large stones, and content of organic matter.

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

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

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

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

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

Construction Materials

Table 11 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good, fair,* or *poor* as a source of roadfill and topsoil. They are rated as a *probable* or *improbable* source of sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

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

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

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

Soils rated *good* contain significant amounts of sand or gravel or both. They have at least 5 feet of suitable material, a low shrink-swell potential, few cobbles and stones, and slopes of 15 percent or less. Depth to the water table is more than 3 feet. Soils rated *fair* are more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have a moderate shrink-swell potential, slopes of 15 to 25 percent, or many stones. Depth to the water table is 1 to 3 feet. Soils rated *poor* have a plasticity index of more than 10, a high shrink-swell potential, many stones, or slopes of more than 25 percent. They are wet and have a water table at a depth of less than 1 foot. 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. They are used in many kinds of construction. Specifications for each use vary widely. In the table, 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 high water table at or near the surface.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and releases a variety of plant nutrients as it decomposes.

Water Management

Table 12 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; and aquifer-fed excavated ponds. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations, if any, are minor and are easily overcome; *moderate* if soil properties or site features are somewhat restrictive 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 unfavorable for the use. Special design, possibly increased maintenance, or alteration are required.

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

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

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

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth 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 or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table, permeability of the aquifer, and the salinity of the soil. 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 the potential for 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, and 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 control 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 erosion 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 19.

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

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

Engineering Index Properties

Table 13 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

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

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is as much as 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 19.

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 generally 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 14 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, or component, consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each major soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

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

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at $^{1}/_{3}$-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 movement of water through the soil when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

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

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

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

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

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

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion. Losses are expressed in tons per acre per year. These 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 0.02 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 over a sustained period without affecting crop productivity. The rate is expressed 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. Soils are grouped according to the following distinctions:

1. Coarse sands, sands, fine sands, and very fine sands. These soils are extremely erodible, and vegetation is difficult to establish.

2. Loamy coarse sands, 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. Coarse sandy loams, sandy loams, fine sandy loams, and very fine sandy loams. These soils are highly erodible. Crops can be grown if intensive measures to control wind erosion are used.

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

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

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

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

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

8. Soils that are not subject to wind erosion because of rock fragments on the surface or because of surface wetness.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In the table, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

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

Soil and Water Features

Table 15 gives estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

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

The four hydrologic soil groups are:

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

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

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

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

If a soil is assigned to two hydrological groups in the table, the first letter is for drained areas and the second is for undrained areas. Onsite investigation is needed to determine the hydrological group in a particular area.

Flooding, the temporary covering of the soil surface by flowing water, is caused by overflowing streams, by runoff from adjacent slopes, or by inflow from high tides. Shallow water standing or flowing for short periods after rainfall or snowmelt is not considered flooding. Standing water in swamps and marshes or in a closed depression is considered ponding.

The table 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 generally is expressed as *none, rare, occasional,* or *frequent. None* means that flooding is not probable. *Rare* means that flooding is unlikely but possible under unusual weather conditions (the chance of flooding is nearly 0 percent to 5 percent in any year). *Occasional* means that flooding occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year). *Frequent* means that flooding occurs often under normal weather conditions (the chance of flooding is more than a 50 percent in any year). *Common* is used when the occasional and frequent classes are grouped for certain purposes. Duration is expressed as *very brief* (less than 2 days), *brief* (2 to 7 days), *long* (7 days to 1 month), and *very long* (more than 1 month).

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

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

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

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

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

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 generally results from either desiccation and shrinkage or oxidation of organic material, or both, following drainage. Subsidence takes place gradually, usually over a period of several years. The table shows the expected initial subsidence, which usually is a result of drainage, and total subsidence, which results from a combination of factors.

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

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

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

Physical, Chemical, and Mineralogical Analyses of Selected Soils

Analyses were performed by the University of Florida's Soil and Water Science Department, supervised by Dr. Mary E. Collins, professor.

The parameters for the physical, chemical, and mineralogical properties of representative pedons sampled in Lafayette County are presented in tables 16, 17, and 18. Detailed descriptions of the analyzed soils are given in the section "Soil Series and Their Morphology." Laboratory data and profile information for additional soils sampled in Lafayette County, as well as for other counties in Florida, are on file at the Soil Science Department, University of Florida.

The typical pedons were sampled from pits at carefully selected locations. The samples were air dried, crushed, and sieved through a 2-millimeter screen. Most of the analytical methods used are outlined in a soil survey investigations report *(26)*.

Particle-size distribution was determined using a modified pipette method with sodium hexametaphosphate dispersion. Hydraulic conductivity and bulk density were determined on undisturbed soil cores. Water-retention parameters were obtained from duplicate undisturbed soil cores placed in tempe pressure cells. Weight percentages of water retained at 100-centimeters water ($^{1}/_{10}$ bar) and 345-centimeters water ($^{1}/_{3}$ bar) were calculated from volumetric water percentages divided by the bulk density. Samples were oven dried and ground to pass a 2-millimeter sieve, and the 15-bar water retention was determined. The organic carbon content of the samples was determined by a modified Walkley-Black wet combustion method.

Extractable bases were determined by leaching the samples with normal ammonium acetate buffered at pH 7.0. Sodium and potassium in the extract were determined by flame emission. Calcium and magnesium were determined by atomic absorption spectrophotometry. Extractable acidity was determined by the barium chloride-triethanolamine method at pH 8.2. Cation-exchange capacity was calculated by summation of extractable bases and extractable acidity. Base saturation is expressed as a percentage, using the ratio of extractable bases to cation-exchange capacity. The pH measurements were made with a glass electrode using a soil-water ratio of 1:1; a 0.01 molar calcium chloride solution in a 1:2 soil-solution ratio; and normal potassium chloride solution in a 1:1 soil-solution ratio.

Electrical conductivity determinations were made with a conductivity bridge on 1:1 soil-water mixtures. Iron and aluminum extractable in sodium dithionite-citrate were determined by atomic absorption spectrophotometry. Aluminum, carbon, and iron were extracted from probable spodic horizons with 0.1 molar sodium pyrophosphate. Determination of iron and aluminum was by atomic absorption, and the determination of extracted carbon was by the Walkley-Black wet combustion method.

Mineralogy of the clay fraction less than 2 microns was ascertained by x-ray diffraction. Peak heights at 18-angstrom, 14-angstrom, 7.2-angstrom, and 4.31-angstrom positions represent montmorillonite, interstratified expandable vermiculite or 14-angstrom intergrades, kaolinite, and quartz, respectively. Peaks were measured, added, and normalized to give the percent of soil minerals identified in the x-ray diffractograms. These percentage values do not indicate the 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.

Engineering Index Test Data

Table 19 shows laboratory test data for several pedons sampled at carefully selected sites in the county. 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 Florida Department of Transportation, Soils Laboratory, 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)*.

Table 19 contains engineering test data about some of the major soils in Lafayette County. These tests help to 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 a combined sieve and hydrometer method. In this method, the various grain-size fractions are calculated on the basis of all the material in the soil sample, including that material 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 clayey soil is increased from a dry state, the material changes from a semisolid to plastic state. If the moisture content is further increased, the material changes from a plastic to a liquid state. The plastic limit is the moisture content at which the soil material changes from a semisolid to a plastic state, and the liquid limit is the moisture content at which the soil material changes from a plastic to a liquid state. The plasticity index is the numerical difference between the liquid limit and the plastic limit. It indicates the range in moisture content within which a soil material is plastic. The data on liquid limit and plasticity index in table 19 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 and the moisture content increases. The highest dry density obtained in the compactive test is called the maximum dry density. As a rule, the 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 *(25)*. 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 on laboratory measurements. Table 20 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Eleven soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Entisol.

SUBORDER. Each order is divided into suborders, primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Aquent (*Aqu*, meaning water, plus *ent*, from Entisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Haplaquents (*Hapl*, meaning minimal horizonation, plus *aquent*, the suborder of the Entisols that has an aquic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Haplaquents.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineral content, temperature regime, depth of the root zone, consistence, moisture equivalent, slope, and permanent cracks. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is 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. There can be some variation in the texture of the surface layer or of the substratum 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" *(27)*. Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" *(25)*. Unless otherwise stated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section "Detailed Soil Map Units."

Albany Series

The Albany series consists of somewhat poorly drained soils. They are on low ridges in the flatwoods, on low uplands, and on terraces. Slopes range from 0 to 5 percent. These soils formed in deposits of sandy and loamy marine sediments. They are loamy, siliceous, thermic Grossarenic Paleudults.

Albany soils are geographically associated with Blanton, Hurricane, and Ridgewood soils. Blanton soils have sandy A and E horizons that are 40 to 79 inches thick and are underlain by a loamy Bt horizon. Hurricane soils have a Bh horizon. Ridgewood soils are sandy to a depth of 80 inches.

Typical pedon of Albany fine sand, in an area of Albany-Ridgewood complex, 0 to 5 percent slopes; about 500 feet south and 1,000 feet west of the northeast corner of sec. 19, T. 5 S., R. 12 E.

Ap—0 to 6 inches; dark gray (10YR 4/1) fine sand; weak fine granular structure; very friable; many fine medium and large roots; moderately acid; clear wavy boundary.

E1—6 to 12 inches; yellowish brown (10YR 5/4) fine sand; single grained; loose; many fine medium and few large roots; few charcoal fragments; few fine roots; slightly acid; gradual wavy boundary.

E2—12 to 21 inches; brown (10YR 5/3) fine sand; single grained; loose; slightly acid; gradual wavy boundary.

E3—21 to 25 inches; light brownish gray (10YR 6/2) fine sand; single grained; loose; common fine roots; slightly acid; gradual wavy boundary.

E4—25 to 64 inches; light gray (10YR 7/1) fine sand; few fine faint yellowish brown and gray mottles; single grained; loose; slightly acid; clear wavy boundary.

Btg1—64 to 72 inches; light gray (10YR 7/1) fine sandy loam; common medium prominent yellowish brown (10YR 5/6 and 5/8) mottles; weak medium subangular blocky structure; friable; very strongly acid; gradual wavy boundary.

Btg2—72 to 80 inches; light gray (10YR 7/2) sandy clay loam; common medium distinct yellowish brown (10YR 5/8) and pale brown (10YR 6/3) mottles; moderate medium subangular blocky structure; firm; very strongly acid.

The solum is 80 inches or more thick. Reaction is extremely acid to slightly acid in the A and E horizons, except in areas that have been limed. It is very strongly acid to moderately acid in the B horizon.

The A horizon has hue of 10YR, value of 2 to 6, and chroma of 1 or 2. It ranges from 6 to 10 inches thick.

The E horizon has hue of 10YR, value of 5 to 8, and chroma of 1 to 8. In places, it has mottles in shades of white, gray, yellow, olive, brown, and red. Mottles that have chroma of 2 or less are within a depth of 30 inches. Texture is sand or fine sand. Thickness is 34 to 70 inches.

The Bt horizon has hue of 10YR, value of 4 to 8, and chroma of 0 to 8. Mottles are in shades of white, gray, yellow, brown, and red. In some pedons, the Bt horizon does not have a matrix color and is mottled in shades of red, yellow, brown, or gray. Texture is fine sandy loam or sandy clay loam.

Blanton Series

The Blanton series consists of moderately well drained soils on uplands. Slopes range from 0 to 5 percent. These soils have a sandy texture to a depth of 40 inches or more and are loamy below that depth. They formed in beds of sandy and loamy marine deposits. These soils are loamy, siliceous, thermic Grossarenic Paleudults.

Blanton soils are geographically associated with Albany, Ortega, Otela, Penney, and Ridgewood soils. Albany and Ridgewood soils are somewhat poorly drained. Otela soils have limestone below a depth of 60 inches. Ortega, Penney, and Ridgewood soils have a sandy texture to a depth of more than 80 inches. Penney soils have lamellae below a depth of 50 inches. They are excessively drained.

Typical pedon of Blanton fine sand, in an area of Blanton-Ortega complex, 0 to 5 percent slopes; about 500 feet south of a graded road and 1,500 feet east of a graded road, and about 3,500 feet north and 500 feet east of the southwest corner of sec. 33, T. 5 S., R. 13 E.

A—0 to 6 inches; dark gray (10YR 4/1) fine sand; weak fine granular structure; very friable; strongly acid; clear wavy boundary.

E1—6 to 29 inches; light yellowish brown (10YR 6/4) fine sand; single grained; few fine roots; loose; few clean white (10YR 8/1) sand grains; few charcoal fragments; very strongly acid; gradual wavy boundary.

E2—29 to 44 inches; very pale brown (10YR 7/3) fine sand; few medium prominent yellow (10YR 6/6) mottles; single grained; loose; very strongly acid; gradual wavy boundary.

Bt—44 to 60 inches; brownish yellow (10YR 6/6) sandy clay loam; few medium distinct yellowish red (5YR 5/8) and gray (10YR 6/2) mottles; moderate medium subangular blocky structure; very friable; very strongly acid; gradual wavy boundary.

Btg—60 to 80 inches; gray (10YR 5/1) sandy clay loam; many coarse prominent brownish yellow (10YR 6/6) and common coarse prominent red (5YR 5/8) mottles; moderate medium subangular blocky structure; firm; strongly acid.

The solum ranges from 60 to more than 80 inches thick. Reaction is very strongly acid to moderately acid, except in areas that have been limed.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 1 or 2. It ranges from 6 to 10 inches thick.

The E horizon has hue of 10YR, value of 5 to 8, and chroma of 1 to 8. Many pedons have mottles in shades of gray, yellow, or brown. In some pedons, the E horizon has few to many fine and medium pockets of clean sand grains. The thickness of the E horizon ranges from 33 to 65 inches.

The Bt horizon has hue of 10YR, value of 5 to 7, and chroma of 3 to 8. In places, the horizon has gray, yellow, brown, or red mottles. Gray mottles, which indicate wetness, are within the upper 10 inches of the Bt horizon. Texture is loamy fine sand, sandy loam, or sandy clay loam.

The Btg horizon has hue of 5Y to 7.5YR, value of 5 to 8, and chroma of 1 or 2; or it is dominated by chroma of 2 or less and is mottled in varying shades of brown, yellow, red, and gray. Texture is sandy loam, fine sandy loam, or sandy clay loam.

Chaires Series

The Chaires series consists of poorly drained soils on flatwoods and very poorly drained soils in depressions. Slopes range from 0 to 2 percent. These soils have a sandy texture to a depth of 40 inches or more and have a loamy subsoil. They formed in thick beds of sandy and loamy marine sediments. These soils are sandy, siliceous, thermic Alfic Alaquods.

Chaires soils are geographically associated with Harbeson, Leon, Lynn Haven, Oaky, Tooles, and Wesconnett soils. Harbeson, Oaky, and Tooles soils do not have a spodic horizon. Oaky soils have an argillic horizon less than 20 inches deep, and Tooles soils have fractured limestone at a depth of 41 to 60 inches. Leon, Lynn Haven, and Wesconnett soils do not have an argillic horizon. Harbeson, Lynn Haven, and Wesconnett soils are very poorly drained.

Typical pedon of Chaires fine sand, in an area of Chaires-Chaires, depressional complex; about 2,500 feet west of Florida Highway 51 and 50 feet south of a trail road, and about 2,200 feet north and 3,200 feet east of the southwest corner of sec. 10, T. 7 S., R. 10 E.

Ap—0 to 8 inches; black (10YR 2/1) fine sand; weak fine granular structure; friable; many fine roots; extremely acid; clear wavy boundary.

E1—8 to 15 inches; grayish brown (10YR 5/2) fine sand; single grained; loose; common very dark gray (10YR 3/1) vertical streaks; common and few roots; extremely acid; clear wavy boundary.

E2—15 to 24 inches; light brownish gray (10YR 6/2) fine sand; single grained; loose; common medium distinct very dark gray (10YR 3/1) root stains; common light gray and white sand streaks; common medium roots; very strongly acid; abrupt wavy boundary.

Bh1—24 to 28 inches; black (10YR 2/1) loamy fine sand; weak medium subangular blocky structure; friable; few fine and medium roots; extremely acid; clear wavy boundary.

Bh2—28 to 32 inches; dark brown (7.5YR 3/2) fine sand; weak fine granular structure; friable; common medium distinct very dark grayish brown (10YR 3/2) streaks along root channels; few fine roots; extremely acid; gradual wavy boundary.

E'—32 to 46 inches; brown (10YR 5/3) fine sand; weak fine granular structure; very friable; strongly acid; gradual wavy boundary.

Btg—46 to 72 inches; grayish brown (10YR 5/2) sandy clay loam; common medium distinct dark brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; friable; moderately acid; gradual wavy boundary.

The thickness of the solum is 60 to 80 inches or more. Reaction ranges from extremely acid to strongly acid in the A and Bh horizons and strongly acid to neutral in the Btg horizon.

The A horizon has hue of 10YR, value of 2 to 4, and chroma of 2 or less or is neutral and has value of 2 to 4. It ranges from 3 to 8 inches thick. Texture is fine sand and mucky fine sand.

The E horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2. Some pedons have mottles in shades of gray, yellow, and brown. Texture is sand or fine sand. The horizon ranges from 7 to 22 inches thick.

The Bh horizon has hue of 5YR to 10YR, value of 2 to 4, and chroma of 1 or 2 or is neutral and has value of 2. Texture is sand, fine sand, or loamy fine sand. The horizon is 5 to 39 inches thick.

The BE horizon, if it occurs, has hue of 10YR, value of 4, and chroma of 3 or 4. Texture is sand or find.

The E' horizon has hue of 10YR, value of 5 to 7, and chroma of 2 to 4. Texture is sand or fine sand.

The Btg horizon has hue of 10YR, value of 4 or 6, and chroma of 1 or 2. Texture is sandy loam, fine sandy loam, or sandy clay loam. Some pedons have texture of sandy clay in the lower part. Many pedons have few to common mottles in shades of red, brown, yellow, or gray.

Clara Series

The Clara series consists of very poorly drained soils in low flatwoods, on flood plains, and on depressions. Slopes are 0 to 2 percent. These soils have a sandy texture to a depth of more than 80 inches. They formed in beds of sandy marine sediments. These soils are siliceous, thermic Spodic Psammaquents.

Clara soils are geographically associated with Chaires, Leon, Lynn Haven, and Wesconnett soils. Chaires soils have an argillic horizon below the Bh horizon. Leon, Lynn Haven, and Wesconnett soils do not have an argillic horizon. Leon soils are poorly drained.

Typical pedon of Clara mucky fine sand, in an area of Clara and Meadowbrook soils, frequently flooded; about 500 feet north of a trail road and 1,800 feet east of a trail road, and about 1,500 feet south and 1,200 feet east of the northwest corner of sec. 13, T. 7 S., R. 11 E.

A—0 to 6 inches; black (10YR 2/1) mucky fine sand; weak fine granular structure; friable; many fine roots; very strongly acid; clear wavy boundary.

E—6 to 18 inches; light brownish gray (10YR 6/2) fine sand; single grained; loose; common very dark gray (10YR 3/1) streaks; common and few roots; very strongly acid; clear wavy boundary.

Bw1—18 to 23 inches; dark brown (10YR 4/3) fine sand; single grained; loose; few fine roots; very strongly acid; gradual wavy boundary.

Bw2—23 to 48 inches; brown (10YR 5/3) fine sand; single grained; loose; common medium distinct very dark gray (10YR 3/1) root stains; common light gray and white vertical streaks of sand; few very fine roots; very strongly acid; gradual wavy boundary.

C—48 to 80 inches; light brownish gray (10YR 6/2) fine sand; common medium distinct dark yellowish brown pore linings along root channels; single grained; loose; few fine roots; strongly acid.

The thickness of the solum ranges from 20 to 60 inches. The soil depth is more than 80 inches. Reaction ranges from extremely acid to moderately alkaline throughout the profile.

The A horizon has hue of 10YR, value of 2 to 4, and chroma of 2 or less if rubbed. Texture is fine sand or mucky fine sand. Some pedons have a layer of muck, up to 3 inches thick, at the surface.

The E horizon has hue of 10YR, value of 6 or 7, and chroma of 1 to 3 or has value of 5 and chroma of 1 or 2. Many pedons have vertical streaks in shades of brown or gray in the E horizon. If chroma is 1, the pedon does not always have mottles. Texture is sand or fine sand. The combined thickness of the A and E horizons is 8 to 39 inches.

The Bw horizon has hue of 10YR, value of 4 or 5, and chroma of 3 to 6 or has value of 6 or 7 and chroma of 6. If chroma is less than 6 in the upper part of the Bw horizon, the color is more than 1 unit of value darker than the overlying E horizon. Some pedons have small splotches, streaks, or discontinuous lenses of organically stained material with value of less than 4 in the upper part of the Bw horizon. Mottles, if they occur, are in shades of brown, yellow, or gray. Texture is sand or fine sand.

The C horizon has hue of 10YR, value of 5, and chroma of 2 or less or has value of 6 or 7 and chroma of 3 or less. Mottles are in shades of brown or yellow. Texture is sand, fine sand, or loamy fine sand.

Dorovan Series

The Dorovan series consists of very poorly drained, organic soils on the flood plains and depressions in the flatwoods. Slopes range from 0 to 1 percent. These soils formed in thick, highly decomposed, acid-organic materials underlain by sandy or loamy materials. These soils are dysic, thermic Typic Medisaprists.

Dorovan soils are geographically associated with Pamlico, Leon, and Surrency soils. All of these soils except Pamlico soils are of mineral origin. Leon soils are poorly drained. They have a Bh horizon within a depth of 30 inches. Pamlico soils have sapric material less than 50 inches thick overlying sandy material. Surrency soils have an argillic horizon at a depth of 20 to 40 inches.

Typical pedon of Dorovan muck, in an area of Pamlico and Dorovan soils, depressional; about 1,000 feet north of a trail road and 1,500 feet west of a trail road, and about 3,500 feet north and 1,500 feet east of the southwest corner of sec. 10, T. 7 S., R. 13 E.

Oa1—0 to 30 inches; black (N 2/0) muck; 33 percent fiber unrubbed, less than 10 percent fiber rubbed; massive; very friable; fibers are from leaves, twigs, and roots; extremely acid; gradual wavy boundary.

Oa2—30 to 45 inches; black (N 2/0) muck; about 50 percent fiber unrubbed, less than 10 percent fiber rubbed; massive; very friable; many fine and coarse roots; extremely acid; clear wavy boundary.

Oa3—45 to 57 inches; dark reddish brown (5YR 2.5/2) muck; about 30 percent fiber unrubbed, less than 10 percent fiber rubbed; massive; nonsticky; many fine roots; less than 10 percent mineral matter; extremely acid; clear wavy boundary.

Cg—57 to 80 inches; gray (10YR 6/1) fine sand; single grained; nonsticky; loose; strongly acid.

The solum ranges from 51 to more than 80 inches thick. Reaction is extremely acid in the organic layers. It is strongly acid or very strongly acid in the Cg horizon.

The Oa horizon has hue of 5YR to 10YR, value of 2 or 3, and chroma of 3 or less.

The Cg horizon, if it occurs, has hue of 10YR, value of 5 to 7, and chroma of 1 or 2. Texture is sandy or loamy material. The Cg horizon is at a depth of more than 51 inches.

Eunola Series

The Eunola series consists of moderately well drained soils on terraces. Slopes range from 0 to 5 percent. These soils formed in sandy and loamy marine and fluvial sediments. They are fine-loamy, siliceous, thermic Aquic Hapludults.

Eunola soils are geographically associated with Blanton, Ortega, and Penney soils. Blanton soils have a sandy texture to a depth of 40 inches or more. Ortega and Penney soils have a sandy texture to a depth of more than 80 inches. Penney soils have lamellae below a depth of 50 inches and are excessively drained.

Typical pedon of Eunola fine sand, 0 to 5 percent slopes, about 400 feet north of a trail road and 100 feet west of a trail road, and about 1,000 feet north and 2,000 feet east of the southwest corner of sec. 28, T. 5 S., R. 13 E.

A—0 to 7 inches; very dark grayish brown (10YR 3/2) fine sand; weak fine granular structure; very friable; strongly acid; clear wavy boundary.

E—7 to 18 inches; pale brown (10YR 6/3) loamy fine sand; common medium distinct strong brown (7.5YR 5/8) mottles; weak fine granular structure; very friable; few fine roots; few charcoal fragments; very strongly acid; abrupt wavy boundary.

Bt1—18 to 24 inches; yellowish brown (10YR 5/6) sandy clay loam; common medium distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; strongly acid; gradual wavy boundary.

Bt2—24 to 27 inches; light yellowish brown (10YR 6/4) sandy clay loam; common medium distinct yellowish red (5YR 5/6) and common fine distinct grayish brown (10YR 5/2) mottles; weak medium granular structure; friable; strongly acid; gradual wavy boundary.

Btg1—27 to 35 inches; grayish brown (10YR 5/2) sandy clay; common medium distinct yellowish brown (10YR 5/6) and many medium prominent red (10R 4/8) mottles; moderate medium subangular blocky structure; firm; common fine roots; strongly acid; gradual wavy boundary.

Btg2—35 to 50 inches; light brownish gray (10YR 6/2) sandy clay; many coarse prominent dark red (2.5YR 3/6) mottles; moderate medium subangular blocky structure; friable; strongly acid; gradual wavy boundary.

BCg—50 to 58 inches; grayish brown (10YR 5/2) sandy clay loam; many medium distinct reddish brown (5YR 5/4) mottles; weak medium subangular blocky structure; friable; strongly acid; clear wavy boundary.

C1—58 to 68 inches; brown (7.5YR 5/4) loamy sand; common medium distinct yellowish brown (10YR 5/8) mottles; weak medium granular structure; very friable; strongly acid; gradual wavy boundary.

C2—68 to 80 inches; pale brown (10YR 6/3) sand; common medium distinct brownish yellow (10YR 6/6) mottles; single grained; loose; strongly acid.

The solum ranges from 40 to more than 60 inches thick. Reaction is very strongly acid or strongly acid.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 1 or 2. It ranges from 6 to 8 inches thick. Texture is loamy fine sand.

The E horizon has hue of 10YR, value of 5 to 7, and chroma of 2 to 4. Some pedons have mottles in shades of yellow or brown. The thickness of the E horizon ranges from 0 to 13 inches. Texture is loamy sand or loamy fine sand.

The Bt horizon has hue of 10YR, value of 5 to 7, and chroma of 3 to 8. It has mottles in shades of gray, yellow, brown, or red. In some pedons, the lower part of the Bt horizon is mottled and does not have a dominant matrix hue. Texture of the Bt horizon is fine sandy loam, sandy clay loam, or clay loam.

The Btg horizon has hue of 10YR, value of 5 or 6, and chroma of 1 or 2. It has brown or red mottles or is mottled in shades of gray, red, and brown. Texture is sandy clay loam.

The BCg horizon has hue of 10YR, value of 5 or 6, and chroma of 1 or 2. Some pedons have mottles in shades of gray, red, and brown. Texture is sandy clay or sandy clay loam.

The C horizon has hue of 5YR to 10YR, value of 4 to 8, and chroma of 1 to 8. Some pedons are mottled in shades of gray, red, and brown. Texture is sand, fine sand, or loamy sand.

Garcon Series

The Garcon series consists of somewhat poorly drained soils on terraces. Slopes range from 0 to 5 percent. The soils formed in sandy and loamy acid marine sediments. These soils are loamy, siliceous, thermic Arenic Hapludults.

Blanton soils are geographically associated with Albany, Ortega, Otela, Penney, and Ridgewood soils. Albany soils have a sandy texture to a depth of more than 40 inches and are loamy below that depth. Ridgewood soils have a sandy texture to a depth of 80 inches or more. Otela soils are moderately well drained. They have a sandy texture to a depth of 40 inches or more and have a loamy subsoil underlain by limestone below a depth of 60 inches. Ortega and Penney soils have a sandy texture to a depth of more than 80 inches. Penney soils have lamellae below a depth of 50 inches. They are excessively drained.

Typical pedon of Garcon fine sand, in an area of Garcon-Albany-Meadowbrook complex, 0 to 5 percent slopes, occasionally flooded; about 500 feet north of a trail road and 700 feet east of a trail road, and about 1,700 feet north and 1,000 feet east of the southwest corner of sec. 34, T. 7 S., R. 14 E.

A—0 to 7 inches; dark gray (10YR 4/1) fine sand; weak fine granular structure; very friable; strongly acid; clear wavy boundary.

E1—7 to 19 inches; brown (10YR 5/3) fine sand; single grained; loose; few clean white (10YR 8/1) sand grains; few charcoal fragments; few fine roots; strongly acid; gradual wavy boundary.

E2—19 to 26 inches; very pale brown (10YR 7/4) fine sand; single grained; loose; very strongly acid; gradual wavy boundary.

Bt1—26 to 40 inches; brownish yellow (10YR 6/6) sandy clay loam; common medium distinct light brownish gray (10YR 6/2) and strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; very friable; strongly acid; gradual wavy boundary.

Bt2—40 to 51 inches; light brownish gray (10YR 6/2) sandy loam; common medium prominent brownish yellow (10YR 6/6) mottles; moderate medium subangular blocky structure; firm; strongly acid.

BC—51 to 60 inches; white (10YR 8/2) loamy fine sand; common medium prominent brownish yellow (10YR 6/6) mottles; weak medium granular structure; friable; strongly acid; gradual wavy boundary.

C—60 to 80 inches; white (10YR 8/2) fine sand; common medium faint light gray (10YR 7/2) mottles; single grained; loose; strongly acid.

The solum ranges from 45 to 60 inches thick. Reaction is very strongly acid to strongly acid throughout the profile.

The A horizon has hue of 10YR, value of 2 to 4, and chroma of 1 or 2. It ranges from 5 to 12 inches thick.

The E horizon has hue of 10YR, value of 5 to 7, and chroma of 3 to 6. Some pedons have mottles in shades of gray, yellow, or brown. Other pedons have few to many fine and medium pockets of clean sand grains. The thickness of the E horizon ranges from 13 to 35 inches. Texture is fine sand or loamy fine sand.

The Bt1 horizon has hue of 10YR, value of 5 to 7, and chroma of 3 to 6. In places, the Bt1 horizon has gray, yellow, brown, or red mottles. The gray mottles, which indicate wetness, are within the upper 10 inches of the Bt horizon. Texture is sandy clay loam, sandy loam, or fine sandy loam.

The Bt2 horizon has hue of 10YR, value of 5 or 6, and chroma of 1 or 2. It has fine to coarse mottles in shades of gray, brown, yellow, or red. Texture is sandy loam, fine sandy loam, or sandy clay loam.

The C horizon has hue of 10YR, value of 6 to 8, and chroma of 1 or 2. It has mottles in shades of red, brown, yellow, and gray. Texture is fine sand or sand.

Harbeson Series

The Harbeson series consists of very poorly drained soils in depressions. Slopes range from 0 to 1 percent. The soils formed in beds of sandy and loamy marine sediments. These soils are loamy, siliceous, thermic, Grossarenic Umbraqualfs.

Harbeson soils are geographically associated with Leon, Lynn Haven, and Pamlico soils. Leon and Lynn Haven soils have a Bh horizon. Pamlico soils have a muck surface layer that is 16 to 38 inches thick.

Typical pedon of Harbeson mucky fine sand, in an area of Rawhide and Harbeson soils, depressional; about 1,500 feet south of a trail road and 1,200 feet west of a trail road, and about 200 feet north and 500 feet west of the southeast corner of sec. 8, T. 6 S., R. 10 E.

A—0 to 18 inches; black (10YR 2/1) mucky fine sand; weak medium granular structure; very friable; many fine roots; slightly acid; clear wavy boundary.

Eg1—18 to 36 inches; light brownish gray (10YR 6/2) fine sand; single grained; loose; many fine roots; neutral; gradual wavy boundary.

Eg2—36 to 55 inches; light gray (10YR 7/2) fine sand; single grained; loose; neutral; gradual wavy boundary.

Btg—55 to 80 inches; gray (5Y 6/1) sandy clay loam; moderate medium subangular blocky structure; friable; moderately alkaline.

The thickness of the solum is 80 inches or more. Reaction ranges from very strongly acid to mildly alkaline in the A and Eg horizons and from moderately acid to moderately alkaline in the Btg horizon.

The A horizon has hue of 10YR, value of 2 or 3, and chroma of 1 or 2. It ranges from 10 to 22 inches thick.

The E or Eg horizon has hue of 10YR, value of 4 to 7, and chroma of 4 or less. Some pedons have mottles in shades of gray and brown. Texture is sand, fine sand, or loamy fine sand. The horizon ranges from 33 to 42 inches thick.

The Btg horizon has hue of 10YR to 5BG, value of 4 to 6, and chroma of 2 or less. Some pedons have mottles in shades of gray. Texture is sandy loam, fine sandy loam, or sandy clay loam.

Hurricane Series

The Hurricane series consists of somewhat poorly drained soils on low uplands that are slightly higher than the adjacent flatwoods. Slopes range from 0 to 5 percent. The soils formed in thick beds of sandy marine sediments. These soils are sandy, siliceous, thermic Oxyaquic Alorthods.

Hurricane soils are geographically associated with

Albany, Blanton, Leon, Ortega, and Ridgewood soils. Albany and Blanton soils have an argillic horizon within a depth of 80 inches. Blanton soils are moderately well drained. Leon soils have a Bh horizon at a depth of less than 30 inches. They are poorly drained. Ortega and Ridgewood soils do not have a Bh horizon within a depth of 80 inches.

Typical pedon of Hurricane fine sand, in an area of Ridgewood-Hurricane complex, 0 to 5 percent slopes; about 100 feet west of a trail road and 100 feet south of a trail road, and about 2,000 feet north and 1,000 feet east of the southwest corner of sec. 34, T. 4 S., R. 11 E.

Ap—0 to 5 inches; very dark gray (10YR 3/1) fine sand; single grained; very friable; many fine medium and large roots; neutral; clear wavy boundary.

E1—5 to 16 inches; grayish brown (10YR 5/2) fine sand; single grained; loose; many fine medium and few large roots; common medium distinct black (10YR 2/1) charcoal fragments; neutral; gradual wavy boundary.

E2—16 to 25 inches; brown (10YR 5/3) fine sand; common medium distinct yellowish brown (10YR 5/6) mottles and light brownish gray (10YR 6/2) uncoated sand grains; single grained; loose; neutral; clear wavy boundary.

E3—25 to 51 inches; pale brown (10YR 6/3) fine sand; common medium distinct yellowish brown (10YR 5/6 and 5/8) mottles; single grained; loose; common fine roots; neutral; clear wavy boundary.

Bh1—51 to 54 inches; dark brown (7.5YR 4/2) fine sand; single grained; loose; moderately acid; clear wavy boundary.

Bh2—54 to 65 inches; dark reddish brown (5YR 2.5/2) fine sand; weak fine granular structure; very friable; moderately acid; gradual wavy boundary.

Bh3—65 to 80 inches; black (10YR 2/1) fine sand; weak medium subangular blocky structure; friable; moderately acid.

The solum is 60 or more inches thick. The spodic horizon is at a depth of 51 to 79 inches. Reaction is generally extremely acid to moderately acid throughout the profile. If limed, however, reaction ranges to neutral in the A and E horizons.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 1 or 3. It ranges from 3 to 8 inches thick.

The E horizon has hue of 10YR or 2.5Y, value of 5 to 8, and chroma of 1 to 8. The chroma of 1 or 2 commonly are in the lower part of the horizon. The horizon has mottles in shades of brown, gray, or yellow below a depth of 16 inches. Texture is sand or fine sand. The horizon ranges from 46 to 65 inches thick.

The Bh horizon has hue of 10YR, 7.5YR, or 5YR, value of 2 to 5, and chroma of 4 or less. The sand grains are well coated with organic matter. Texture is sand, fine sand, or loamy fine sand.

Leon Series

The Leon series consists of poorly drained soils on broad areas of the flatwoods. Slopes range from 0 to 2 percent. The soils formed in thick beds of sandy marine sediments. These soils are sandy, siliceous, thermic Aeric Alaquods.

Leon soils are geographically associated with Chaires, Hurricane, Lynn Haven, Ridgewood, and Wesconnett soils. Chaires soils have an argillic horizon below the Bh horizon. Hurricane and Ridgewood soils are somewhat poorly drained. Ridgewood soils do not have a Bh horizon. Hurricane soils have a Bh horizon at a depth of more than 50 inches. Lynn Haven and Wesconnett soils have a dark A horizon that is thicker than that of the Leon soils. They are very poorly drained.

Typical pedon of Leon fine sand, about 500 feet north of a trail road and 300 feet east of a trail road, and about 500 feet north and 3,500 feet east of the southwest corner of sec. 27, T. 5 S., R. 10 E.

Ap—0 to 4 inches; black (10YR 2/1) fine sand; weak fine granular structure; friable; many fine roots; extremely acid; clear wavy boundary.

E—4 to 10 inches; light brownish gray (10YR 6/2) fine sand; single grained; loose; common very dark gray (10YR 3/1) streaks; common and few roots; very strongly acid; clear wavy boundary.

Bh—10 to 17 inches; dark reddish brown (5YR 2/2) fine sand; few common distinct black (10YR 2/1) mottles; weak fine subangular blocky structure; friable; weakly cemented in parts; sand grains coated with organic matter; few fine roots; very strongly acid; clear wavy boundary.

BE—17 to 24 inches; yellowish brown (10YR 5/4) fine sand; few fine distinct strong brown and moderate medium prominent black (5YR 2.5/1) mottles; single grained; loose; common medium distinct very dark gray (10YR 3/1) root stains; common light gray and white sand streaks; common medium roots; strongly acid; gradual wavy boundary.

E'1—24 to 44 inches; light gray (10YR 7/2) fine sand; common medium distinct dark yellowish brown root stains; single grained; loose; few fine roots; strongly acid; gradual wavy boundary.

E'2—44 to 63 inches; light brownish gray (10YR 6/2) fine sand; single grained; loose; strongly acid; abrupt wavy boundary.

B'h—63 to 80 inches; very dark brown (10YR 2/2) fine sand; common medium distinct yellowish brown

(10YR 5/4) mottles; weak fine subangular blocky structure; friable; strongly acid.

Reaction ranges from extremely acid to slightly acid throughout the profile.

The A horizon has hue of 10YR, value of 2 to 4, and chroma of 2 or less. It ranges from 2 to 8 inches thick.

The E horizon has hue of 10YR or 2.5Y, value of 6 to 8, and chroma of 1 or 2. Some pedons have mottles in shades of gray, yellow, and brown. Texture is sand or fine sand. The horizon ranges from 4 to 22 inches thick.

The Bh horizon has hue of 10YR, value of 2 to 4, and chroma of 1 to 3. Texture is sand, fine sand, or loamy fine sand. The horizon is 5 to 15 inches thick.

The BE horizon, if it occurs, has hue of 10YR or 2.5Y, value of 4 to 5, and chroma of 2 to 4. Texture is sand or fine sand. The horizon is 0 to 7 inches thick.

In pedons that have E' and B'h horizons, the colors are the same as those described for the E and Bh horizons.

Some pedons have a C horizon that has hue of 7.5YR or 10YR, value of 4 to 8, and chroma of 3 or 4.

Some pedons do not have a bisequm of E' and B'h horizons below the Bh horizon.

Lynn Haven Series

The Lynn Haven series consists of very poorly drained soils in depressions. Slopes range from 0 to 1 percent. The soils formed in thick beds of sandy marine deposits. These soils are sandy, siliceous, thermic Typic Alaquods.

Lynn Haven soils are geographically associated with Chaires, Hurricane, Leon, Pamlico, and Ridgewood soils. Chaires, Hurricane, and Leon soils do not have an umbric epipedon. Chaires soils have an argillic horizon below the Bh horizon, and they are also poorly drained. Hurricane soils have a Bh horizon at a depth of more than 50 inches. They are somewhat poorly drained. Pamlico soils have muck surface layer that is 16 to 38 inches thick. Ridgewood soils do not have a Bh horizon. They are somewhat poorly drained.

Typical pedon of Lynn Haven mucky fine sand (fig. 13), in an area of Wesconnett and Lynn Haven soils, depressional; about 2,000 feet north of a trail road and 200 feet east of a trail road, and about 2,300 feet north and 3,200 feet east of the southwest corner of sec. 27, T. 5 S., R. 10 E.

A—0 to 13 inches; black (10YR 2/1) mucky fine sand; moderate fine granular structure; very friable; sand grains coated with organic matter; extremely acid; gradual wavy boundary.

E—13 to 19 inches; light brownish gray (10YR 6/2) fine sand; single grained; loose; few fine roots; very strongly acid; clear wavy boundary.

Bh—19 to 27 inches; black (5YR 2/1) fine sand; weak fine granular structure; friable; sand grains coated with organic matter; extremely acid; gradual wavy boundary.

BE—27 to 34 inches; dark yellowish brown (10YR 4/4) fine sand; single grained; loose; few fine and medium roots; strongly acid; clear wavy boundary.

E'—34 to 52 inches; yellowish brown (10YR 5/4) fine sand; few medium distinct dark yellowish brown (10YR 3/6) mottles; single grained; loose; few fine and medium roots; strongly acid; gradual wavy boundary.

B'h—52 to 80 inches; dark reddish brown (5YR 3/2) fine sand; weak fine granular structure; friable; sand grains coated with organic matter; very strongly acid.

Reaction is extremely acid to strongly acid throughout the profile.

The A horizon has hue of 10YR, value of 2 or 3, and chroma of 1 or is neutral with these values. It ranges from 8 to 20 inches thick.

The E horizon has hue of 10YR, value of 5 to 7, and chroma of 2 or less. Texture is sand or fine sand. The horizon is 2 to 18 inches thick.

The Bh and B'h horizons have hue of 5YR to 10YR, value of 2 or 3, and chroma of 1 to 3. Sand grains are well coated with organic matter and are weakly cemented in parts. Texture is sand, fine sand, or loamy fine sand.

Some pedons have a C horizon that has hue of 10YR, value of 4 to 7, and chroma of 1 to 3. Texture is sand or fine sand.

Mandarin Series

The Mandarin series consists of somewhat poorly drained soils on low ridges on the flatwoods. Slopes range from 0 to 2 percent. These soils formed in thick, sandy deposits on marine terraces. They are sandy, siliceous, thermic Oxyaquic Alorthods.

Mandarin soils are geographically associated with Chaires, Hurricane, Lynn Haven, Ridgewood, and Wesconnett soils. Chaires soils have an argillic horizon below the Bh horizon. Hurricane soils have a Bh horizon more than 50 inches deep, and Ridgewood soils do not have a Bh horizon. Lynn Haven and Wesconnett soils have a dark A horizon that is thicker than that of the Mandarin soils. They are very poorly drained.

Typical pedon of Mandarin fine sand, about 2,200 feet south of a graded road and 1,500 feet east of Highway 53, and about 2,000 feet south and 400 feet east of the northwest corner of sec. 13, T. 3 S., R. 10 E.

Ap—0 to 6 inches; dark gray (10YR 4/1) fine sand; weak fine granular structure; very friable; extremely acid; clear wavy boundary.

E1—6 to 10 inches; light brownish gray (10YR 6/2) fine sand; single grained; loose; common very dark gray (10YR 3/1) streaks; extremely acid; clear wavy boundary.

E2—10 to 25 inches; light gray (10YR 7/1) fine sand; single grained; loose; extremely acid; abrupt wavy boundary.

Bh1—25 to 29 inches; very dark grayish brown (10YR 3/2) fine sand; weak fine subangular blocky structure; friable; weakly cemented in parts; sand grains coated with organic matter; few fine roots; very strongly acid; gradual wavy boundary.

Bh2—29 to 37 inches; very dark brown (10YR 2/2) fine sand; few fine distinct strong brown and moderate medium prominent black (5YR 2.5/1) mottles; subangular blocky structure; friable; very strongly acid; clear wavy boundary.

BE—37 to 52 inches; brown (10YR 5/3) fine sand; single grained; loose; few fine roots; strongly acid; gradual wavy boundary.

C1—52 to 70 inches; light gray (10YR 7/1) fine sand; single grained; loose; very strongly acid; clear wavy boundary.

C2—70 to 80 inches; light brownish gray (10YR 6/2) fine sand; single grained; loose; strongly acid.

Reaction ranges from extremely acid to moderately acid in the A, E, and Bh horizons and from extremely acid to neutral in the BE, E', and B'h horizons. The texture of all horizons is fine sand or sand, except the Bh horizon is loamy fine sand in some pedons.

The A horizon has hue of 10YR, value of 2 to 6, and chroma of 1. It ranges from 2 to 8 inches thick.

The E horizon has hue of 10YR, value of 5 to 8, and chroma of 1 to 8. It ranges from 10 to 24 inches thick.

The Bh horizon has hue of 7.5YR, value of 3, and chroma of 2 or has hue of 10YR, value of 2 to 4, and chroma of 1 to 3. It is 8 to 25 inches thick.

The BE horizon, if it occurs, has hue of 10YR, value of 4 to 6, and chroma of 2 to 4; hue of 7.5YR, value of 4, and chroma of 2 to 4; or value of 5 and chroma of 4. It is 0 to 22 inches thick.

The E' horizon, if it occurs, has hue of 10YR, value of 5 to 8, and chroma of 1 to 8.

The B'h horizon, if it occurs, has the same colors as the Bh horizon described above.

Meadowbrook Series

The Meadowbrook series consists of poorly drained and very poorly drained soils on low flats and flood plains and in depressions. Slopes range from 0 to 2 percent. The soils formed in sandy and loamy marine sediments. These soils are loamy, siliceous, thermic Grossarenic Endoaqualfs.

Meadowbrook soils are geographically associated with Albany, Leon, Sapelo, and Surrency soils. Albany soils are somewhat poorly drained. Leon soils are sandy throughout the profile. They have a spodic horizon. Sapelo soils also have a spodic horizon. Surrency soils have an argillic horizon at a depth of 20 to 40 inches. They are very poorly drained.

Typical pedon of Meadowbrook fine sand, in an area of Meadowbrook-Chaires complex; about 300 feet east of a trail road and 1,700 feet south of a graded road, and about 700 feet south and 2,300 feet east of the northwest corner of sec. 36, T. 7 S., R. 10 E.

A—0 to 8 inches; very dark gray (10YR 3/1) fine sand; weak fine granular structure; very friable; many fine and few medium and coarse roots; moderately acid; gradual wavy boundary.

Eg1—8 to 14 inches; light gray (10YR 7/1) sand; common medium distinct very dark gray (10YR 3/1) mottles; single grained; loose; common and fine roots; slightly acid; gradual wavy boundary.

Eg2—14 to 31 inches; very pale brown (10YR 7/3) and yellowish brown (10YR 5/4) fine sand; single grained; loose; few fine roots; slightly acid; clear wavy boundary.

Eg3—31 to 50 inches; light gray (10YR 7/1) fine sand; single grained; loose; few fine roots; slightly acid; gradual wavy boundary.

Eg4—50 to 64 inches; brown (10YR 5/3) fine sand; single grained; loose; slightly acid; abrupt clear boundary.

Btg—64 to 80 inches; gray (10YR 5/1) fine sandy loam; weak fine medium subangular blocky structure; slightly acid.

The thickness of the solum ranges from 50 to more than 80 inches. The reaction ranges from extremely acid to neutral in the surface layer, from extremely acid to moderately alkaline in the subsurface layers, and very strongly acid to moderately alkaline in the subsoil.

The A horizon has hue of 10YR, value of 2 to 5, and chroma of 1 or 2. Texture is fine sand or mucky fine sand. The horizon ranges from 4 to 10 inches thick.

The Eg horizon has hue of 10YR, value of 4 to 7, and chroma of 1 to 3. It has mottles in shades of gray, yellow, and brown. Texture is sand or fine sand. The horizon ranges from 31 to 70 inches thick.

The Btg horizon has hue of 10YR to 5GY, value of 4 to 7, and chroma of 2 or less. Some pedons have mottles in various shades of gray, yellow, brown, and red. Texture is sandy loam, fine sandy loam, or sandy clay loam. Some pedons have a thin layer of loamy sand or loamy fine sand in the upper part of the profile. Some pedons have limestone below a depth of 40 inches.

Oaky Series

The Oaky series consists of poorly drained soils on broad areas of the flatwoods. Slopes range from 0 to 2 percent. The soils formed in beds of sandy and loamy marine sediments. These soils are fine-loamy, siliceous, thermic Mollic Albaqualfs.

Oaky soils are geographically associated with Chaires, Leon, Pamlico, and Wesconnett soils. Chaires, Leon, and Wesconnett soils have a spodic horizon. Pamlico soils have a muck surface layer that is more than 16 inches thick. Pamlico and Wesconnett soils are very poorly drained.

Typical pedon of Oaky fine sand, in an area of Oaky-Rawhide, depressional, complex; about 1,000 feet north and 400 feet east of the southwest corner of sec. 7, T. 6 S., R. 11 E.

Ap—0 to 6 inches; very dark gray (10YR 3/1) fine sand; single grained; loose; common medium and fine roots; very strongly acid; clear smooth boundary.

E—6 to 13 inches; light gray (10YR 7/2) fine sand; single grained; loose; very dark gray (10YR 3/1) root stains around root channels; common medium and fine roots; very strongly acid; abrupt smooth boundary.

Btg1—13 to 40 inches; gray (10YR 6/1) sandy clay loam; many medium prominent brownish yellow (10YR 6/6 and 6/8) mottles; moderate medium subangular blocky structure; friable; many fine and medium roots; slightly acid; gradual wavy boundary.

Btg2—40 to 51 inches; gray (10YR 5/1) sandy clay loam; many medium prominent brownish yellow (10YR 6/6 and 6/8) mottles; moderate medium subangular blocky structure; friable; common white limestone fragments; neutral; few fine roots; gradual wavy boundary.

Btg3—51 to 80 inches; gray (10YR 6/1) sandy clay loam; weak medium subangular blocky structure; friable; few fine roots; mildly alkaline.

The thickness of the solum is 50 to 80 inches or more. Reaction ranges from very strongly acid to slightly acid in the A and E horizons and from slightly acid to mildly alkaline in the other layers.

The A horizon has hue of 10YR, value of 2 or 3, and chroma of 1 or 2. It ranges from 5 to 8 inches thick.

The E horizon has hue of 10YR, value of 4 to 7, and chroma of 1 or 2. Some pedons have mottles in shades of gray, yellow, and brown. Texture is sand or fine sand. The horizon ranges from 0 to 12 inches thick. Pedons that do not have an E horizon have an abrupt texture change between the A or Bw horizon and the Btg horizon.

Some pedons have a Bw horizon that has hue of 10YR or 7.5YR, value of 3 to 6, and chroma of 2 to 4. Texture is sand or fine sand. The horizon ranges from 0 to 12 inches thick.

The Btg horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 or 2. Pedons that have chroma of 2 also have few to many mottles in shades of red, yellow, brown, gray, or white. Texture is sandy loam, fine sandy loam, or sandy clay loam. The weighted average clay content of the control section is 18 to 35 percent.

The Cg horizon, if it occurs, has hue of 10YR, value of 6 to 8, and chroma of 1 or 2; hue of 5Y, value of 5 to 7, and chroma of 1 or 2; or hue of 5GY, value of 5 or 6, and chroma of 1. Texture is loamy fine sand or sandy loam. In some pedons, this horizon is a mixture of sand and shell fragments.

Ortega Series

The Ortega series consists of moderately well drained soils on uplands. Slopes range from 0 to 5 percent. The soils formed in thick, sandy deposits on marine terraces. These soils are thermic, uncoated Typic Quartzipsamments.

Ortega soils are geographically associated with Albany, Blanton, Centenary, Hurricane, Penney, and Ridgewood soils. Albany and Blanton soils have sandy A and E horizons that are 40 to 79 inches thick. These horizons are underlain by a loamy Bt horizon. Albany soils are somewhat poorly drained. Hurricane soils have a Bh horizon. They are somewhat poorly drained. Penney soils are excessively drained, and Ridgewood soils are somewhat poorly drained.

Typical pedon of Ortega fine sand, 0 to 5 percent slopes, about 2,000 feet south of a graded road and 4,000 feet west of U.S. Highway 27, and about 4,500 feet east and 3,200 feet north of the southwest corner of sec. 4, T. 6 S., R. 13 E.

A—0 to 6 inches; very dark grayish brown (10YR 3/2) fine sand; weak fine granular structure; very friable; many fine roots; very strongly acid; clear wavy boundary.

C1—6 to 31 inches; brown (10YR 5/3) fine sand; single grained; loose; few clean white (10YR 8/1) sand grains; few charcoal fragments; few fine roots; very strongly acid; gradual wavy boundary.

C2—31 to 52 inches; pale brown (10YR 6/3) fine sand; single grained; loose; very strongly acid; gradual wavy boundary.

C3—52 to 80 inches; light gray (10YR 7/2) fine sand; common medium prominent yellowish brown (10YR 5/6) and brownish yellow (10YR 6/6 and 6/8) mottles; single grained; loose; many clean sand grains; strongly acid.

Texture is fine sand or sand to a depth of 80 inches or more. The content of silt plus clay is less than 5 percent

Figure 13.—A typical profile of Lynn Haven mucky fine sand. Depth is marked in meters on the left side of the tape and in feet on the right.

Figure 14.—A typical profile of Rawhide mucky fine sand. Depth is marked in meters on the left and feet on the right.

Figure 15.—A typical profile of Ridgewood fine sand. Depth is marked in meters on the left and feet on the right.

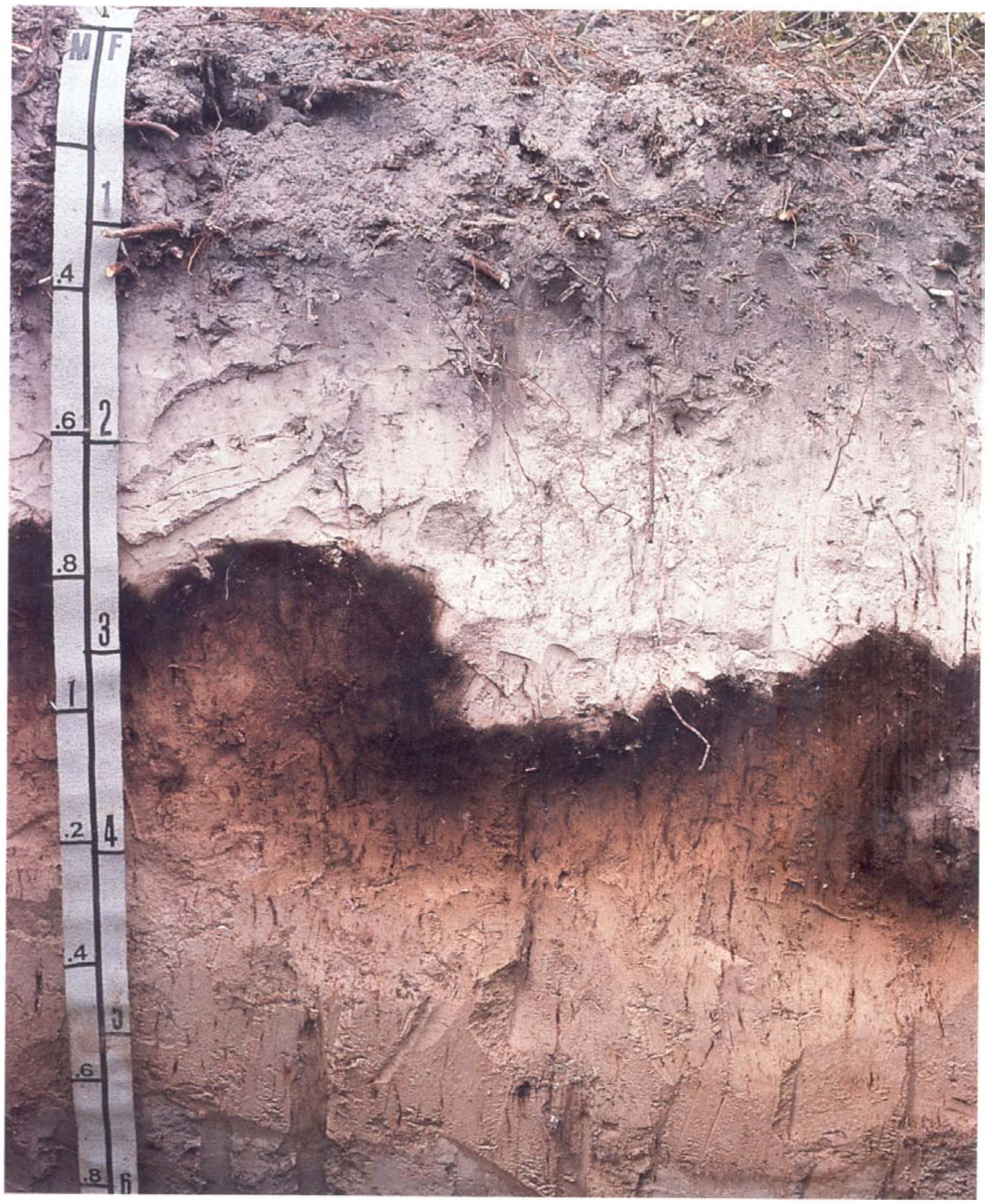

Figure 16.—A typical profile of Sapelo fine sand. Depth is marked in meters on the left and feet on the right.

between the depths of 10 and 40 inches. Reaction is extremely acid to slightly acid in all horizons.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 1 or 2. It ranges from 3 to 6 inches thick.

The upper part of the C horizon has hue of 10YR, value of 5 to 7, and chroma of 3 to 8. The white or light gray mottles are a result of uncoated sand grains and are not indicative of wetness. The lower part of the C horizon has hue of 10YR, value of 5 to 8, and chroma of 1 or 2. It has mottles and low chroma that are the result of wetness.

Otela Series

The Otela series consists of moderately well drained soils on uplands. Slopes range from 0 to 5 percent. The soils formed in sandy and loamy marine sediments on karst topography. In places, they are underlain by limestone. These soils are loamy, siliceous, thermic Grossarenic Paleudalfs.

Otela soils are geographically associated with Albany, Ortega, Penney, and Ridgewood soils. Ridgewood soils are somewhat poorly drained. Ortega, Penney, and Ridgewood soils have a sandy texture to a depth of more than 80 inches. Penney soils have lamellae below a depth of 50 inches. They are excessively drained.

Typical pedon of Otela fine sand, in an area of Otela-Penney complex, 0 to 5 percent slopes; about 1,500 feet north of Florida Highway 53 and 1,000 feet east of a graded road, and about 2,000 feet north and 3,500 feet east of the southwest corner of sec. 34, T. 4 S., R. 11 E.

A—0 to 6 inches; dark grayish brown (10YR 4/2) fine sand; weak fine granular structure; very friable; strongly acid; clear wavy boundary.

E1—6 to 21 inches; brown (10YR 5/3) fine sand; single grained; loose; few clean white (10YR 8/1) sand grains; few charcoal fragments; few fine roots; very strongly acid; gradual wavy boundary.

E2—21 to 31 inches; pale brown (10YR 6/3) fine sand; few medium prominent yellow (10YR 6/6) mottles; single grained; loose; strongly acid; gradual wavy boundary.

E3—31 to 40 inches; very pale brown (10YR 7/4) fine sand; common medium distinct white (10YR 8/1) clean sand grains; single grained; loose; strongly acid; gradual wavy boundary.

E4—40 to 60 inches; yellowish brown (10YR 5/8) fine sand; single grained; loose; white (10YR 8/2) clean sand grains; strongly acid; abrupt wavy boundary.

Bt1—60 to 65 inches; yellowish brown (10YR 5/4) sandy loam; weak medium subangular blocky structure; friable; strongly acid; gradual wavy boundary.

Bt2—65 to 75 inches; yellowish brown (10YR 5/4) sandy loam; common medium distinct white (10YR 8/1) mottles; weak medium subangular blocky structure; friable; strongly acid; gradual wavy boundary.

Btg—75 to 80 inches; light gray (10YR 7/2) sandy clay loam; common medium distinct yellowish brown (10YR 5/8) mottles; moderate medium subangular blocky structure; very friable; strongly acid.

The thickness of the solum and the depth to bedrock range from 60 to more than 80 inches. Reaction is very strongly acid to neutral in the A and E horizons, from extremely acid to mildly alkaline in the upper part of the Bt horizon, and from extremely acid to moderately alkaline in the lower part of the Bt horizon.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 1 or 2. It ranges from 6 to 10 inches thick.

The E horizon has hue of 10YR, value of 5 to 7, and chroma of 3 or 8. Some pedons have mottles in shades of yellow or brown. Other pedons have few to many fine and medium pockets of clean sand grains. The thickness of the E horizon ranges from 33 to 65 inches. Texture is fine sand or sand.

The Bt horizon has hue of 10YR, value of 5 or 6, and chroma of 3 to 6 or has value of 7 and chroma of 3 to 6. In places, this horizon has gray, white, yellow, brown, or red mottles. Gray mottles, which are indicative of wetness, are within the upper 10 inches of the Bt horizon. Texture is sandy loam or sandy clay loam.

The Btg horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2. Some pedons have mottles in shades of gray, yellow, or brown. Mottles in shades of red may also be present. Texture is sandy loam, sandy clay loam, or sandy clay. Some pedons have a clayey 2Btg horizon. In some pedons, about 5 percent gravel or cobble-sized limestone or chert fragments may be in the lower part of this horizon.

In some pedons, a BC horizon is below the Bt or Btg horizon at a depth of more than 60 inches. It has hue of 10YR, value of 5 or 6, and chroma of 6 or has value of 7 or 8 and chroma of 3 to 6. Texture is fine sand or loamy fine sand.

Ousley Series

The Ousley series consists of somewhat poorly drained soils on terraces and flood plains. Slopes range from 0 to 5 percent. The soils formed in beds of sandy fluvial marine deposits. These soils are thermic, uncoated, Aquic Quartzipsamments.

Ousley soils are geographically associated with Albany, Garcon, Hurricane, Meadowbrook, and Ortega soils. Albany, Garcon, and Meadowbrook soils have a loamy Bt horizon. Meadowbrook soils are very poorly drained. Hurricane soils have a Bh horizon. Ortega soils are moderately well drained.

Typical pedon of Ousley fine sand, in an area of Albany-Ousley-Meadowbrook complex, 0 to 5 percent slopes, occasionally flooded; about 1,000 feet north of a trail road and 900 feet east of a graded road, and about 1,400 feet south and 1,000 feet west of the northeast corner of sec. 20, T. 6 S., R. 14 E.

A—0 to 4 inches; dark gray (10YR 4/1) fine sand; weak fine granular structure; very friable; many fine medium and large roots; strongly acid; clear wavy boundary.

C1—4 to 19 inches; pale brown (10YR 6/3) fine sand; single grained; loose; many fine medium and few large roots; few charcoal fragments; few fine roots; moderately acid; gradual wavy boundary.

C2—19 to 40 inches; brown (10YR 5/3) fine sand; few fine prominent yellowish brown (10YR 5/6) mottles; light brownish gray splotches; single grained; loose; few fine and medium charcoal fragments; strongly acid; gradual wavy boundary.

Cg1—40 to 57 inches; light brownish gray (10YR 6/2) fine sand; common medium prominent yellowish brown (10YR 5/6 and 5/8) and few fine prominent strong brown (7.5YR 5/6) mottles; single grained; loose; common fine roots; strongly acid; gradual wavy boundary.

Cg2—57 to 80 inches; light gray (10YR 7/2) fine sand; few fine prominent light yellowish brown (10YR 5/6) mottles; single grained; loose; strongly acid.

Texture is fine sand or sand to a depth of 80 inches or more. Reaction is very strongly acid to moderately acid in all horizons.

The A horizon has hue of 10YR, value of 2 to 7, and chroma of 1 or 2. It ranges from 0 to 16 inches thick. If the value is 2 or 3, the thickness of the horizon is less than 10 inches.

The upper part of the C horizon, to a depth of 40 inches, has hue of 10YR, value of 4 to 8, and chroma of 3 to 6. It has mottles in shades of red, yellow, brown and gray within a depth of 40 inches.

The C horizon below a depth of 40 inches has hue of 10YR, value of 4 to 8, and chroma of 1 to 4. It has few to many mottles in shades of gray, brown, or yellow.

Pamlico Series

The Pamlico series consists of very poorly drained, organic soils on flood plains and in depressions in the flatwoods. Slopes are less than 1 percent. The soils formed in decomposed organic material underlain by sandy sediments. These soils are sandy or sandy-skeletal, siliceous, dysic, thermic Terric Medisaprists.

Pamlico soils are geographically associated with Dorovan, Leon, Osier, and Surrency soils. All of these soils except Dorovan soils are of mineral origin. Leon soils are poorly drained. They have a Bh horizon within a depth of 30 inches. Dorovan soils have more than 51 inches of muck. Osier soils are poorly drained and are sandy to a depth of 80 inches or more. Surrency soils have an argillic horizon at a depth of 20 to 40 inches.

Typical pedon of Pamlico muck, in an area of Pamlico and Dorovan mucks, depressional; about 1,000 feet north of a trail road and 1,000 feet west of a trail road, and about 1,200 feet north and 500 feet west of the southeast corner of sec. 29, T. 5 S., R. 10 E.

Oa1—0 to 3 inches; black (7.5YR N 2/0) muck; 30 percent fiber unrubbed, 10 percent fiber rubbed; massive; very friable; fibers are from leaves, twigs, and roots; sodium pyrophosphate color is light yellowish brown (10YR 6/4); extremely acid; gradual wavy boundary.

Oa2—3 to 22 inches; black (10YR 2/1) muck; less than 5 percent fiber after rubbing; massive; sodium pyrophosphate color is dark yellowish brown (10YR 4/4); extremely acid; clear wavy boundary.

Cg—22 to 80 inches; light brownish gray (10YR 6/2) fine sand; single grained; loose; very strongly acid.

The Oa horizon has hue of 10YR or 7.5YR, value of 2 or 3, and chroma of 1 or 2 or is neutral in hue and has value of 2 or 3. The content of fiber is 30 percent or less before rubbing and less than 10 percent after rubbing. Reaction is extremely acid. The horizon is 16 to 51 inches thick.

The Cg horizon has hue of 10YR, value of 3 to 6, and chroma of 1 or 2 or is neutral in hue. Texture is sand or fine sand. Reaction is extremely acid to strongly acid.

Pantego Series

The Pantego series consists of very poorly drained soils in depressions and on flood plains in the flatwoods. Slopes range from 0 to 1 percent. The soils formed in sandy, loamy, and clayey deposits. These soils are fine-loamy, siliceous, thermic Umbric Paleaquults.

Pantego soils are geographically associated with Chaires, Leon, Pamlico, and Wesconnett soils. Chaires, Leon, and Wesconnett soils have a spodic horizon. Pamlico soils have a muck surface layer more than 16 inches thick.

Typical pedon of Pantego mucky loamy sand, in an area of Pantego and Surrency soils, depressional; about 200 feet north of a trail road and 600 feet east of a trail road, and about 1,500 feet north and 1,500 feet east of the southwest corner of sec. 21, T. 6 S., R. 12 E.

A—0 to 10 inches; black (10YR 2/1) mucky loamy sand; weak fine granular structure; very friable; many fine roots; strongly acid; gradual wavy boundary.

Eg—10 to 14 inches; light brownish gray (10YR 6/2) sandy loam; weak fine granular structure; very friable; very dark gray (10YR 3/1) root stains around root channels; common medium and fine roots; strongly acid; clear wavy boundary.

Btg1—14 to 18 inches; light gray (10YR 7/2) sandy clay loam; few fine and medium prominent brownish yellow (10YR 6/6 and 6/8) mottles; moderate medium subangular blocky structure; friable; strongly acid; gradual wavy boundary.

Btg2—18 to 45 inches; light brownish gray (10YR 6/2) sandy clay loam; many medium prominent brownish yellow (10YR 6/6 and 6/8) mottles; moderate medium subangular blocky structure; friable; strongly acid; gradual wavy boundary.

Btg3—45 to 80 inches; grayish brown (10YR 5/2) sandy clay; moderate medium subangular blocky structure; firm; strongly acid.

The thickness of the solum is more than 60 inches. Reaction is strongly acid, very strongly acid, or extremely acid.

The A horizon has hue of 10YR, value of 2 or 3, and chroma of 0 or 2. It ranges from 10 to 14 inches thick.

The Eg horizon, if it occurs, has hue of 10YR, value of 4 to 6, and chroma of 1 or 2. Texture is sandy loam or loamy fine sand. It ranges from 0 to 8 inches thick.

The Btg horizon has hue of 10YR, value of 4 to 7, and chroma of 1 or 2. Some pedons have mottles in shades of red, yellow, brown, gray, or white. Texture is sandy loam, clay loam, sandy clay loam, or sandy clay. The weighted clay percent in the upper 20 inches is 18 to 35 percent.

The Cg horizon, if it occurs, has hue of 10YR, value of 5 to 7, and chroma of 1 or 2. It has higher chroma mottles. Texture ranges from sand to sandy clay loam.

Penney Series

The Penney series consists of excessively drained soils on uplands. Slopes range 0 to 8 percent. The soils formed in thick beds of sandy marine deposits. These soils are thermic, uncoated Typic Quartzipsamments.

Penney soils are geographically associated with Albany, Blanton, Otela, Ortega, and Shadeville soils. Albany, Blanton, Otela, and Shadeville soils have a Bt horizon within a depth of 80 inches. Albany soils are somewhat poorly drained. Blanton, Ortega, Otela, and Shadeville soils are moderately well drained.

Typical pedon of Penney sand, 0 to 5 percent slopes, about 700 feet east of a trail road and 2,000 feet south of U.S. Highway 27, and about 700 feet east and 3,500 feet north of the southwest corner of sec. 3, T. 6 S., R. 13 E.

A—0 to 7 inches; very dark grayish brown (10YR 3/2) sand; weak fine granular structure; very friable; many fine and few medium and coarse roots; uncoated sand grains; moderately acid; clear smooth boundary.

E1—7 to 24 inches; yellowish brown (10YR 5/4) sand; brown (10YR 5/3) streaks and splotches; single grained; loose; moderately acid; gradual wavy boundary.

E2—24 to 55 inches; very pale brown (10YR 7/4) sand; few medium distinct brown (10YR 5/3) splotches and white (10YR 8/2) sand grains; single grained; loose; few fine roots; moderately acid; gradual wavy boundary.

E&Bt—55 to 80 inches; very pale brown (10YR 8/3) fine sand (E); single grained; loose; many clean sand grains; strong brown (7.5YR 5/6) loamy fine sand lamellae (B) that are about 3 to 6 inches long and 1/8 to 1/4 inches thick; well coated sand grains; moderately acid.

The solum is 80 inches or more thick. The content of silt plus clay is less than 5 percent at a depth of 10 to 40 inches. Thin lamellae are at a depth of 45 to 80 inches. Reaction is extremely acid to moderately acid in all horizons.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 1 to 3. It ranges from 3 to 8 inches thick. Texture is sand and fine sand.

The E horizon has hue of 10YR, value of 5 to 8, and chroma of 3 to 8. This horizon generally has few to common fine and medium streaks that have hue of 10YR, value of 7 or 8, and chroma of 1 or 2; however, the color is that of uncoated sand grains and is not indicative of wetness. Texture is sand or fine sand. The thickness of the E horizon ranges from 47 to 72 inches.

The E part of the E&Bt horizon has hue of 10YR, value of 5 to 8, and chroma of 3 to 8. Texture of the E part is sand or fine sand, and it is 2 to 8 inches thick between the lamellae. The Bt part consists of lamellae that have hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 4 to 8. Texture of the lamellae is loamy sand, loamy fine sand, or sandy loam. The lamellae are 1/32 to 1/4 inch thick and 1/2 inch to 24 inches long. They are at a depth of 50 to 80 inches, and they generally increase in thickness with increasing depth. Some pedons have few to small pockets of light gray or white clean sand grains in the E part of the horizon.

Plummer Series

The Plummer series consists of poorly drained soils on low flatwoods and very poorly drained soils in depressions. Slopes range from 0 to 2 percent. The soils formed in sandy and loamy sediments. These soils are loamy, siliceous, thermic Grossarenic Paleaquults.

Plummer soils are geographically associated with

Albany, Ridgewood, and Sapelo soils. Albany and Ridgewood soils are somewhat poorly drained and are in higher positions on the landscape than the Plummer soils. Sapelo soils have a spodic horizon.

Typical pedon of Plummer fine sand, about 1,200 feet north and 600 feet west of the southeast corner of sec. 28, T. 5 S., R. 12 E.

Ap—0 to 7 inches; black (10YR 2/1) fine sand; single grained; loose; few fine and very fine roots; very strongly acid; clear wavy boundary.

Eg1—7 to 14 inches; grayish brown (10YR 5/2) fine sand; single grained; loose; very strongly acid; clear wavy boundary.

Eg2—14 to 22 inches; gray (10YR 6/1) fine sand; single grained; loose; very dark grayish brown (10YR 3/2) root stains; few charcoal fragments; strongly acid; gradual wavy boundary.

Eg3—22 to 55 inches; light gray (10YR 7/1) fine sand; common medium distinct yellowish brown (10YR 5/6 and 5/8) mottles; single grained; loose; few medium distinct very dark gray root stains; strongly acid; abrupt wavy boundary.

Btg—55 to 80 inches; gray (10YR 6/1) fine sandy loam; many medium prominent yellowish brown (10YR 5/6 and 5/8) mottles; weak medium subangular blocky structure; friable; strongly acid.

The thickness of the solum is 80 inches or more. Reaction ranges from extremely acid to strongly acid.

The A horizon has hue of 10YR to 5Y, value of 2 to 4, and chroma of 1 or 2 or is neutral and has value of 2 to 4. If the value is 2 or 3, the horizon is less than 8 inches thick. The thickness of the A horizon ranges from 4 to 12 inches. In depressional areas, some pedons have an O horizon that is 8 inches or less in thickness.

The Eg horizon has hue of 10YR to 5Y, value of 5 to 8, and chroma of 1 or 2 or is neutral and has value of 5 to 8. Some pedons have mottles in shades of yellow and brown. Texture is sand, fine sand, or loamy fine sand. The thickness of the horizon ranges from 36 to 68 inches.

The Btg horizon has hue of 10YR to 5Y, value of 4 to 7, and chroma of 1 to 2. Some pedons have mottles in shades of yellow and brown. Texture is sandy loam, fine sandy loam, or sandy clay loam. The weighted average clay content of the control section is less than 35 percent.

Rawhide Series

The Rawhide series consists of very poorly drained soils in depressions and on flood plains. Slopes range from 0 to 2 percent. The soils formed in sandy and loamy marine sediments. These soils are fine-loamy, siliceous, thermic Typic Argiaquolls.

Rawhide soils are geographically associated with Lynn Haven and Surrency soils. Lynn Haven soils have a Bh horizon. Surrency soils are sandy to a depth of more than 20 inches, and they have a loamy subsoil.

Typical pedon of Rawhide mucky fine sand (fig. 14), in an area of Rawhide and Harbeson soils, depressional; about 600 feet west and 1,200 feet south of the northeast corner of sec. 17, T. 7 S., R. 11 E.

A—0 to 6 inches; black (N 2/0) mucky fine sand; weak medium granular structure; friable; common medium and fine roots; slightly acid; clear smooth boundary.

Bt1—6 to 18 inches; black (10YR 2/1) sandy clay loam; weak fine subangular blocky structure; sticky and slightly plastic; neutral; clear wavy boundary.

Bt2—18 to 26 inches; very dark gray (10YR 3/1) sandy clay loam; common medium distinct gray (10YR 5/1) mottles; weak fine subangular blocky structure; sticky and plastic; many fine and medium roots; neutral; gradual wavy boundary.

Btg1—26 to 40 inches; gray (10YR 5/1) sandy clay loam; common fine prominent strong brown (7.5YR 5/8) mottles; weak medium subangular blocky structure; sticky and plastic; few fine roots; many fine to coarse and soft to hard white accumulations and nodules of carbonates; moderately alkaline; gradual wavy boundary.

Btg2—40 to 65 inches; gray (10YR 6/1) sandy clay loam; few medium prominent strong brown (7.5YR 5/8) mottles; weak medium subangular blocky structure; sticky and plastic; many fine and medium nodules of carbonates; moderately alkaline; gradual wavy boundary.

BCg—65 to 80 inches; gray (10YR 5/1) sandy clay loam; weak coarse subangular blocky structure; slightly sticky; pockets of gray (10YR 6/1) fine sand; few fine white (10YR 8/1) nodules of carbonates; moderately alkaline.

The thickness of the solum is more than 40 inches. Reaction ranges from moderately acid to slightly acid in the A horizon and from slightly acid to moderately alkaline in the other horizons.

The A horizon has hue of 7.5YR or 10YR, value of 2 or 3, and chroma of 0 to 2 or is neutral in hue. It ranges from 4 to 18 inches thick.

The Bt horizon has hue of 10YR, value of 2 or 3, and chroma of 1 or 2. The Btg horizon has hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 1 or 2. It has mottles in shades of red, yellow, brown, or gray. Texture of the Bt and Btg horizons is sandy loam, fine sandy loam, or sandy clay loam. The weighted clay content of the particle-size control section ranges from 18 to 35 percent. The Bt horizon ranges from 10 to 40 inches thick.

The BCg horizon, if it occurs, has hue of 10YR, value of 5 to 8, and chroma of 1 or 2 or has hue of 5GY, value of 5 or 6, and chroma of 1. Texture is loamy fine sand, sandy loam, or sandy clay loam.

Some pedons have a C horizon that consists of mixed sand and shell fragments.

Ridgewood Series

The Ridgewood series consists of somewhat poorly drained soils on low uplands. Slopes range from 0 to 5 percent. The soils formed in thick beds of sandy marine deposits. These soils are thermic, uncoated Aquic Quartzipsamments.

Ridgewood soils are geographically associated with Albany, Hurricane, and Ortega soils. Albany soils have sandy A and E horizons that are 40 to 79 inches thick. These horizons are underlain by a loamy Bt horizon. Hurricane soils have a Bh horizon. Ortega soils are moderately well drained.

Typical pedon of Ridgewood fine sand (fig. 15), in an area of Ridgewood-Hurricane complex, 0 to 5 percent slopes; about 3,800 feet north of County Highway 355A and 100 feet west of a trail road, and about 4,300 feet north and 300 feet east of the southwest corner of sec. 31, T. 5 S., R. 12 E.

Ap—0 to 6 inches; very dark gray (10YR 3/1) fine sand; weak fine granular structure; very friable; many fine medium and large roots; strongly acid; clear wavy boundary.

C1—6 to 18 inches; brown (10YR 5/3) fine sand; common coarse distinct dark yellowish brown (10YR 4/4) mottles in the upper part of horizon and few medium distinct light brownish gray (10YR 6/2) mottles in the lower part; single grained; loose; many fine and medium and few large roots; few charcoal fragments; moderately acid; gradual wavy boundary.

C2—18 to 39 inches; very pale brown (10YR 7/3) fine sand; few fine distinct yellowish brown and gray mottles; single grained; loose; few fine and medium charcoal fragments; strongly acid; gradual wavy boundary.

C3—39 to 80 inches; light gray (10YR 7/2) fine sand; common coarse prominent yellowish brown (10YR 5/6 and 5/8) and few fine prominent strong brown (7.5YR 5/6) mottles; single grained; loose; common fine roots; moderately acid.

The texture is sand or fine sand to a depth of 80 inches or more. The content of silt plus clay is less than 5 percent at a depth of 10 to 40 inches. Reaction is very strongly acid to neutral in all horizons.

The A horizon has hue of 10YR, value of 2 to 5, and chroma of 1 or 2 or is neutral in hue and has value of 2 to 5. It ranges from 4 to 9 inches thick.

The C horizon has hue of 10YR, value of 5 to 8, and chroma of 2 to 4 or has value of 4 and chroma of 3. It has mottles in shades of red, yellow, brown and gray within a depth of 40 inches.

Sapelo Series

The Sapelo series consists of poorly drained soils in broad areas of the flatwoods. Slopes range from 0 to 2 percent. The soils formed in beds of sandy sediments overlying loamy marine sediments. These soils are sandy, siliceous, thermic Ultic Alaquods.

Sapelo soils are geographically associated with Chaires, Harbeson, Leon, Lynn Haven, Oaky, Tooles, and Wesconnett soils. Chaires soils have a base saturation of more than 35 percent in the argillic horizon. Harbeson, Oaky, and Tooles soils do not have a spodic horizon. Oaky soils have an argillic horizon at a depth of less than 20 inches, and Tooles soils have limestone bedrock at a depth of 41 to 60 inches. Leon, Lynn Haven, and Wesconnett soils do not have an argillic horizon. Harbeson, Lynn Haven, and Wesconnett soils are very poorly drained.

Typical pedon of Sapelo fine sand (fig. 16), in an area of Sapelo-Chaires, depressional, complex; about 2,000 feet north of County Road 355A and 100 feet east of a trail road, and about 2,700 feet north and 700 feet east of the southwest corner of sec. 31, T. 5 S., R. 12 E.

A—0 to 6 inches; very dark gray (10YR 3/1) fine sand; weak fine granular structure; very friable; many fine roots; extremely acid; clear wavy boundary.

E1—6 to 13 inches; gray (10YR 5/1) fine sand; single grained; loose; common very dark gray (10YR 3/1) streaks; common and few roots; extremely acid; clear wavy boundary.

E2—13 to 28 inches; light gray (10YR 7/1) fine sand; single grained; loose; common medium distinct very dark gray (10YR 3/1) root stains; common light gray and white sand streaks; common medium roots; strongly acid; abrupt wavy boundary.

Bh1—28 to 34 inches; black (10YR 2/1) fine sand; weak fine granular structure; friable; many sand grains coated with organic matter; few clean sand grains; few fine and medium roots; very strongly acid; clear wavy boundary.

Bh2—34 to 45 inches; dark reddish brown (5YR 3/4) fine sand; weak fine granular structure; friable; common medium distinct very dark grayish brown (10YR 3/2) streaks along root channels; few fine roots; strongly acid; gradual wavy boundary.

E'—45 to 60 inches; light gray (10YR 7/2) fine sand; common medium distinct dark yellowish brown (10YR 4/4) root stains; single grained; loose; few fine roots; moderately acid; gradual wavy boundary.

Btg—60 to 73 inches; light brownish gray (2.5Y 6/2) sandy clay loam; many coarse prominent strong brown (7.5YR 5/6 and 5/8) and common medium prominent red (2.5YR 4/6 and 4/8) mottles; weak medium subangular blocky structure; friable; strongly acid; gradual wavy boundary.

BCg—73 to 80 inches; light olive gray (5Y 6/2) fine sandy loam; common medium distinct yellowish brown (10YR 5/6) mottles; weak fine granular structure; slightly sticky; moderately acid.

The solum is 70 to 80 inches or more thick. Reaction ranges from extremely acid to strongly acid to a depth of about 34 inches and from extremely acid to moderately acid below that depth. The depth to the Bh horizon is 10 to 30 inches, and the depth to the Bt horizon ranges from 40 to 70 inches.

The A horizon has hue of 10YR, value of 2 to 4, and chroma of 1. It ranges from 3 to 8 inches thick.

The E horizon has hue of 10YR, value of 5 to 8, and chroma of 1 or 2. It ranges from 7 to 22 inches thick.

The Bh horizon has hue of 2.5YR to 10YR, value of 2 to 4, and chroma of 2 to 4. Texture is sand, fine sand, or loamy fine sand. The horizon is 5 to 18 inches thick.

The E' horizon has hue of 10YR to 5Y, value of 5 to 8, and chroma of 1 to 4. Texture is sand or fine sand. The horizon ranges from 20 to 31 inches thick.

The Btg horizon has hue of 10YR to 5Y, value of 5 to 8, and chroma of 1 or 2. In places it has mottles in shades of red, yellow, and brown. Texture is sandy loam, fine sandy loam, or sandy clay loam. Some pedons have lenses and pockets of sand and clay.

Shadeville Series

The Shadeville series consists of moderately well drained soils on low uplands. Slopes range from 0 to 5 percent. The soils formed in sandy and loamy marine deposits overlying fractured limestone bedrock. These soils are loamy, siliceous, thermic Arenic Hapludalfs.

Shadeville soils are geographically associated with Ortega, Otela, Penney, and Ridgewood soils. Otela soils have an argillic horizon at a depth of 40 to 80 inches. Ortega, Penney, and Ridgewood soils are sandy throughout the profile. Penney soils are excessively drained. They are in slightly higher positions on the landscape than the Shadeville soils. Ridgewood soils are somewhat poorly drained, and they are in slightly lower positions on the landscape than the Shadeville soils.

Typical pedon of Shadeville fine sand, in an area of Otela, limestone substratum-Shadeville-Penney complex, 0 to 5 slopes; about 2,500 feet south of the Suwannee River and 500 feet east of a graded road, and about 1,000 feet south and 2,000 feet west of the northeast corner of sec. 34, T. 4 S., R. 11 E.

Ap—0 to 8 inches; dark brown (10YR 3/3) fine sand; weak fine granular structure; very friable; moderately acid; clear wavy boundary.

E1—8 to 18 inches; pale brown (10YR 6/3) fine sand; single grained; loose; few fine roots; few charcoal fragments; slightly acid; gradual wavy boundary.

E2—18 to 28 inches; light yellowish brown (10YR 6/4) fine sand; single grained; loose; slightly acid; abrupt wavy boundary.

Bt1—28 to 38 inches; reddish yellow (7.5YR 6/6) sandy clay loam; weak medium subangular blocky structure; firm; slightly acid; clear wavy boundary.

Bt2—38 to 46 inches; strong brown (7.5YR 5/6) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; slightly acid; gradual wavy boundary.

Bt3—46 to 55 inches; yellowish brown (10YR 5/6) sandy clay loam; many coarse prominent grayish brown (2.5Y 5/2) and common coarse prominent reddish yellow (7.5YR 6/6) mottles; moderate medium subangular blocky structure; firm; moderately acid.

2R—55 inches; fractured limestone bedrock.

The thickness of the solum and the depth to limestone range from 40 to 60 inches. Reaction is very strongly acid to neutral in the A and E horizons and is very strongly acid to moderately alkaline in the Bt horizon.

The A horizon has hue of 10YR, value of 4 to 6, and chroma of 1 to 3. It ranges from 4 to 7 inches thick.

The E horizon has hue of 10YR, value of 6 or 7, and chroma of 1 to 4. Texture is sand or fine sand. The horizon ranges from 13 to 31 inches thick.

The Bt horizon has hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 6 to 8. Some pedons have mottles in shades of gray, yellow, or brown in the lower part of this horizon. Some pedons have few limestone chips or pebbles directly above the limestone. Texture is sandy loam, fine sandy loam, or sandy clay loam. The Bt horizon ranges from 6 to 30 inches thick.

Surrency Series

Surrency series consists of very poorly drained soils in depressions and on flood plains. Slopes range from 0 to 1 percent. The soils formed in thick beds of sandy and loamy marine or fluvial deposits. These soils are loamy, siliceous, thermic Arenic Umbric Paleaquults.

Surrency soils are geographically associated with Hurricane, Leon, Lynn Haven, Pamlico, and Ridgewood soils. Hurricane, Leon, and Lynn Haven soils have a Bh horizon. Hurricane soils are somewhat poorly drained. Pamlico soils have muck surface layer that is 16 to 38 inches thick. Ridgewood soils do not have a Bh horizon, and they are somewhat poorly drained.

Typical pedon of Surrency mucky fine sand, in an area of Pantego and Surrency soils, depressional; about 700 feet south of a trail road and 1,700 feet east of a trail road, and about 600 feet south and 600 feet east of the northwest corner of sec. 27, T. 6 S., R. 12 E.

A—0 to 8 inches; black (10YR 2/1) mucky fine sand; moderate fine granular structure; very friable; sand grains coated with organic matter; very strongly acid; gradual wavy boundary.

Eg1—8 to 26 inches; light brownish gray (10YR 6/2) fine sand; single grained; loose; very strongly acid; gradual wavy boundary.

Eg2—26 to 32 inches; light gray (10YR 7/2) fine sand; common medium distinct yellowish brown (10YR 5/4) mottles; single grained; loose; very strongly acid; gradual wavy boundary.

Btg1—32 to 60 inches; light grayish brown (10YR 6/2) sandy loam; weak medium subangular blocky structure; friable; very strongly acid; gradual wavy boundary.

Btg2—60 to 80 inches; grayish brown (10YR 5/2) sandy clay loam; common medium prominent yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; very strongly acid.

The solum is 60 inches or more thick. Reaction is extremely acid to strongly acid in all horizons.

The A horizon has hue of 10YR, value of 2 or 3, and chroma of 1 or 2 or is neutral and has value of 2 or 3. It is 10 to 18 inches thick.

The Eg horizon has hue of 10YR, value of 4 to 7, and chroma of 2. Texture is sand or fine sand. It is 10 to 24 inches thick.

The Btg horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2; or it has hue of 5Y, value of 5 to 7, chroma of 1, and mottles in shades of yellow, olive, brown and red. Texture is sandy loam or sandy clay loam.

Tooles Series

The Tooles series consists of poorly drained soils on low flatwoods and flood plains and very poorly drained soils in depressions. The soils formed in loamy and sandy marine sediments overlying limestone bedrock. These soils are loamy, siliceous, thermic Arenic Albaqualfs.

Tooles soils are geographically associated with Chaires, Leon, and Surrency soils. Chaires and Leon soils have a spodic horizon. Leon soils do not have an argillic horizon. Chaires and Leon soils are on similar landforms. Surrency soils are very poorly drained. They are in depressions and on flood plains.

Typical pedon of Tooles fine sand, about 200 feet south of a graded road and 400 feet east of Florida Highway 51, and about 2,200 feet south and 200 feet east of the northwest corner of sec. 34, T. 7 S., R. 10 E.

A—0 to 6 inches; very dark brown (10YR 2/2) fine sand; single grained; loose; few fine and very fine roots; very strongly acid; clear smooth boundary.

E—6 to 14 inches; light brownish gray (10YR 6/2) fine sand; single grained; loose; common very dark gray (10YR 3/1) streaks; common and few roots; neutral; clear wavy boundary.

Bw1—14 to 25 inches; yellowish brown (10YR 5/4) fine sand; single grained; loose; few fine roots; neutral; clear wavy boundary.

Bw2—25 to 35 inches; light yellowish brown (10YR 6/4) fine sand; single grained; loose; neutral; abrupt irregular boundary.

Btg—35 to 50 inches; light brownish gray (10YR 6/2) sandy clay loam; weak medium subangular blocky structure; friable; mildly alkaline; abrupt irregular boundary.

2R—50 inches; fractured limestone bedrock.

The thickness of the solum and the depth to limestone are 41 to 60 inches. Reaction ranges from very strongly acid to neutral in the A and E horizons and from neutral to moderately alkaline in the Btg horizon.

The A horizon has hue of 10YR, value of 2 or 3, and chroma of 1 or 2. It ranges from 3 to 7 inches thick.

The E horizon has hue of 10YR, value of 4 to 7, and chroma of 1 to 3. Some pedons have mottles in shades of gray and brown. Texture is fine sand or sand. The horizon ranges from 8 to 37 inches thick.

If it occurs, the Bw horizon has hue of 10YR, value of 4 to 7, and chroma of 3 to 8.

The Btg horizon has hue of 10YR to 5GY, value of 4 to 7, and chroma of 1 or 2. Some pedons have mottles in shades of red, yellow, brown, gray, or white. Texture is sandy clay loam or clay loam.

Wampee Series

The Wampee series consists of somewhat poorly drained soils on low uplands. Slopes range from 0 to 5 percent. The soils formed in thick beds of sandy and loamy marine sediments. These soils are loamy, siliceous, thermic Aquic Arenic Hapludalfs.

Wampee soils are geographically associated with Albany, Chaires, and Plummer soils. Albany and Plummer soils have an argillic horizon at a depth of 40 inches or more. Chaires soils have a Bh horizon, and they are poorly drained. Albany and Plummer soils have a base saturation of less than 35 percent throughout the profile.

Typical pedon of Wampee fine sand, 0 to 5 slopes, about 2,500 feet south of a trail road and 200 feet east of a trail road, and about 1,500 feet south and 1,000 feet east of the northwest corner of sec. 22, T. 6 S., R. 12 E.

Ap—0 to 6 inches; very dark gray (10YR 3/1) fine sand; weak fine granular structure; very friable; moderately acid; clear wavy boundary.

AE—6 to 12 inches; dark grayish brown (10YR 4/2) fine sand; single grained; loose; few fine roots; few charcoal fragments; strongly acid; gradual wavy boundary.

E1—12 to 21 inches; brown (10YR 5/3) fine sand; few fine distinct yellowish brown (10YR 5/6) mottles; single grained; loose; strongly acid; gradual wavy boundary.

E2—21 to 32 inches; light brownish gray (10YR 6/2) sand; common medium prominent dark yellowish brown (10YR 4/6) mottles; single grained; loose; few fine roots; about 5 percent, by volume, ironstone nodules and weathered phosphatic limestone fragments; strongly acid; clear wavy boundary.

Btg1—32 to 55 inches; gray (10YR 6/1) sandy clay loam; many coarse prominent dark yellowish brown (10YR 4/6) mottles; moderate medium subangular blocky structure; friable; few fine roots; about 10 percent, by volume, ironstone nodules and weathered phosphatic limestone fragments; strongly acid; gradual wavy boundary.

Btg2—55 to 80 inches; light gray (10YR 7/2) sandy clay loam; many coarse prominent brownish yellow (10YR 6/6) and common coarse prominent brown (7.5YR 5/4) mottles; moderate medium subangular blocky structure; firm; strongly acid.

The solum ranges from 50 to 80 inches thick. Reaction is very strongly acid to neutral in the A and AE horizons and is very strongly acid to slightly acid in the E, BE, Btg, and Cg horizons.

The A horizon has hue of 10YR, value of 2 to 4, and chroma of 1 or 2. The content of coarse fragments, mainly ironstone nodules, quartz gravel, or weathered phosphatic limestone, ranges from 0 to 10 percent, by volume. The horizon ranges from 3 to 7 inches thick.

The AE horizon, if it occurs, has hue of 10YR, value of 4, and chroma of 1 to 4 or has value of 5 and chroma of 3. Texture is sand or fine sand. The content of coarse fragments, mainly ironstone nodules, quartz gravel, or weathered phosphatic limestone, ranges from 0 to 10 percent, by volume. The horizon ranges from 0 to 7 inches thick.

The E horizon has hue of 10YR, value of 4 to 7, and chroma of 1 to 6. Some pedons have mottles in shades of yellow or brown. Texture is sand or fine sand. The content of coarse fragments, mainly ironstone nodules, quartz gravel, or weathered phosphatic limestone, ranges from 2 to 30 percent, by volume, in some parts of the E horizon.

The upper part of the Btg or Bt horizon has hue of 10YR, value of 5 to 8, and chroma of 0 to 4 or is neutral in hue. It has few to common mottles in shades of gray, yellow, or brown. Texture is sandy clay loam or the gravelly analogs of this texture. The content of coarse fragments, mainly ironstone nodules, quartz gravel, or weathered phosphatic limestone, ranges from 2 to 30 percent, by volume.

The lower part of the Btg horizon has hue of 10YR, value of 5 to 8, chroma of 0 to 2 or is neutral in hue. Some pedons have mottles in shades of gray, yellow, red, or brown. Texture is sandy loam or sandy clay loam.

Some pedons have a Cg horizon that has colors similar to those of the lower part of the Btg horizon. Texture ranges from loamy sand to clay.

Wekiva Series

The Wekiva series consists of poorly drained soils on low ridges on the flood plains. Slopes range from 0 to 2 percent. The soils formed in shallow to moderately deep, sandy and loamy marine sediments overlying limestone. These soils are fine-loamy, siliceous, thermic, shallow Aeric Endoaqualfs.

Wekiva soils are geographically associated with Chaires, Meadowbrook, Leon, Rawhide, and Tooles soils. Chaires and Leon soils have a spodic horizon. Leon soils do not have an argillic horizon. Chaires and Leon soils are on similar landforms. Meadowbrook soils have a sandy texture to a depth of more than 40 inches. They have a loamy subsoil. Rawhide soils are very poorly drained. They are very deep over limestone bedrock. Tooles soils have a sandy texture to a depth of more than 20 inches, and they have a loamy subsoil. Tooles soils have limestone bedrock at a depth of 41 to 60 inches.

Typical pedon of Wekiva fine sand, in an area of Wekiva-Rawhide-Tooles complex, occasionally flooded; about 1,500 feet north of a graded road and 200 feet west of a trail road, and about 4,200 feet north and 4,300 feet east of the southwest corner of sec. 34, T. 7 S., R. 10 E.

A—0 to 6 inches; very dark gray (10YR 3/1) fine sand; single grained; loose; few fine and very fine roots; slightly acid; clear wavy boundary.

E—6 to 14 inches; grayish brown (10YR 5/2) fine sand; single grained; loose; common very dark gray (10YR 3/1) streaks; common and few roots; slightly acid; clear wavy boundary.

Bt—14 to 26 inches; brown (10YR 5/3) sandy clay loam; many medium distinct brownish yellow (10YR 6/6 and 6/8) mottles; weak medium granular structure; friable; slightly acid; abrupt irregular boundary.

2R—26 inches; hard limestone rock that has an irregular surface; depth to rock is 15 to 30 inches within a four-foot radius.

The thickness of the solum and the depth to limestone or dolomitic bedrock range from 10 to 30 inches. The combined thickness of the A, E and EB horizons ranges from 7 to 19 inches. Reaction ranges from slightly acid to neutral throughout the solum.

The A horizon has hue of 10YR, value of 2 to 4, and chroma of 2 or less. It ranges from 3 to 7 inches thick.

The E horizon, if it occurs, has hue of 10YR, value of 5 or 6, and chroma of 1 or has value of 6 and chroma of 1 or 2. Texture is fine sand or sand. It ranges from 0 to 12 inches thick.

The Bt horizon has hue of 10YR, value of 4, and chroma of 3 or 4 or has value of 5 or 6 and chroma of 3 to 8. A Btg horizon underlies the Bt horizon in some pedons. If it occurs, the Btg horizon has hue of 10YR, value of 5 or 6, and chroma of 2 or less. It is mottled in shades of yellow, brown, and gray. Texture of the Bt and Btg horizons is fine sandy loam or sandy clay loam.

Some pedons have a Cr horizon below a depth of 20 inches or in solution holes. If it occurs, the Cr horizon is white or very pale brown, soft, cobbly or gravelly limestone that can be dug with a spade. The thickness of the horizon is generally less than 10 inches.

Wesconnett Series

The Wesconnett series consists of very poorly drained soils in depressions. Slopes range from 0 to 1 percent. The soils formed in sandy marine deposits. These soils are sandy, siliceous, thermic Typic Alaquods.

Wesconnett soils are geographically associated with Hurricane, Leon, Lynn Haven, Pamlico, and Ridgewood soils. Hurricane, Leon, and Lynn Haven soils have a continuous E horizon. Hurricane soils have a Bh horizon at a depth of more than 50 inches. They are somewhat poorly drained. Pamlico soils have a muck surface layer that is 16 to 38 inches thick. Ridgewood soils do not have a Bh horizon, and they are somewhat poorly drained.

Typical pedon of Wesconnett mucky fine sand, in an area of Wesconnett and Lynn Haven soils, depressional; about 400 feet north of a trail road and 500 feet east of a trail road, and about 3,000 feet south and 1,000 feet west of the northeast corner of sec. 24, T. 7 S., R. 12 E.

A—0 to 14 inches; black (10YR 2/1) mucky fine sand; moderate fine granular structure; very friable; sand grains coated with organic matter; very strongly acid; gradual wavy boundary.

Bh1—14 to 21 inches; very dark gray (10YR 3/1) fine sand; weak medium subangular blocky structure; friable; sand grains coated with organic matter; very strongly acid; gradual wavy boundary.

Bh2—21 to 28 inches; dark brown (7.5YR 3/2) fine sand; weak fine subangular blocky structure; friable; sand grains are coated with organic matter; moderately acid; clear wavy boundary.

E—28 to 45 inches; pale brown (10YR 6/3) fine sand; single grained; loose; very strongly acid; clear smooth boundary.

B'h—45 to 61 inches; very dark gray (10YR 3/1) fine sand; weak fine granular structure; friable; sand grains coated with organic matter; very strongly acid; gradual wavy boundary.

C—61 to 80 inches; light gray (10YR 7/1) fine sand; single grained; loose; very strongly acid.

The solum is 60 to 80 inches or more thick. Reaction is extremely acid to slightly acid in all horizons.

The A horizon has hue of 10YR, value of 2 or 3, and chroma of 1 or 2. It 6 to 14 inches thick.

The Bh horizon has hue of 5YR to 10YR, value of 2 to 3, and chroma of 3 or less. The sand grains are well coated with organic matter and are weakly cemented in parts. Texture is sand or fine sand. The thickness of the Bh horizon ranges from 15 to 23 inches.

The E horizon has hue of 10YR, value of 4 to 7, and chroma of 2 or 3. Texture is sand or fine sand. The horizon is 10 to 32 inches thick.

The B'h horizon has the same range for colors and textures as the Bh horizon.

The C horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2. Texture is sand or fine sand.

Formation of the Soils

In this section the factors of soil formation are related to the soils in Lafayette County. In addition, the processes of horizon differentiation are explained.

Factors of Soil Formation

Soils form through weathering and other processes that act on deposited or accumulated geologic material. The kind of soil that forms depends on the type of parent material; the climate under which soil material has existed since accumulation; the plant and animal life in and on the soil; the relief, or lay of the land, and the length of time that the forces of soil formation have acted on the soil material *(13)*.

The five soil-forming factors are interdependent; each modifies the effects of the others. Any one of the factors can have more influence than the others on the formation of a soil and can account for most of its properties. For example, if the parent material is only quartz sand, the soil generally has only weakly expressed horizons. In some areas the effect of the parent material is modified greatly by the effects of climate, relief, and plants and animals in and on the soil. As a soil forms, it is influenced by all five factors, but in places one factor can have a dominant effect. A modification or variation in any of these factors results in a different kind of soil.

Parent Material

The soils in Lafayette County formed mainly in marine deposits. These deposits were mostly quartz sand with varying amounts of clay and shell fragments. Clay is more abundant in soils that formed in the sediment on marine terraces and in lagoons, and it is virtually absent on shoreline ridges where most of the deposits are sandy eolian material. The parent material was transported by ocean current. The ocean covered the survey area a number of times during the Pleistocene age.

The various kinds of parent material in Lafayette County differ somewhat from one another in mineral and chemical composition and in physical structure. The main physical differences, such as those between sand, silt, and clay, can be observed in the field. Other differences, such as mineral and chemical composition, are important to soil formation and affect the present physical and chemical characteristics of the soils. Many differences among soils in the county reflect original differences in the parent material as it was laid down.

Some organic soils are throughout the county. They formed in the partially decayed remains of wetland vegetation.

Climate

Precipitation, temperature, humidity, and wind are the climatic forces that act on the parent material of the soils in Lafayette County. These forces have direct impact on the soil and also influence soil formation indirectly through their effect on plant and animal life.

The climate of Lafayette County is warm and humid. The Gulf of Mexico and the Atlantic Ocean have a moderating effect on temperatures. Inland lakes moderate temperatures to a lesser extent. Summer temperatures vary only slightly. In winter, temperatures fluctuate widely, sometimes daily or for several days; however, temperatures are not below freezing long enough to freeze the soil. Rainfall averages about 60 inches per year. It often occurs as brief, heavy thunderstorms during the summer and more moderate, lengthy rainfall with the passage of cold fronts in the winter.

Because of the warm climate and abundant rainfall, chemical and biological activity is high. Rainfall leaches many plant nutrients and thus lowers the fertility level of the soil. This process over time also accounts for the translocation of clay and organic matter, resulting in a sandy surface layer and the formation of a spodic horizon, an argillic horizon, or both deeper in the soil profile.

Plants and Animals

Plant life generally is the principal biological factor affecting soil formation in Lafayette County. Animals, insects, bacteria, and fungi are also important. Plant and animal life furnishes organic matter. Through biological processes, such as leaf drop and death, plants recycle nutrients from varying depths within the soil and deposit nutrients along with organic matter on the surface. Animals also process nutrients and organic matter deposited on the surface.

Soil structure, porosity, and reaction are affected by plants and animals. Tree roots, crayfish, earthworms, and other burrowing organisms commonly improve soil structure and porosity. The breakdown of plant materials often influences soil reaction. Pine trees reduce alkalinity in many areas in the county.

Microorganisms, such as bacteria and fungi, help to weather and break down minerals and recycle organic matter by breaking it down into more basic components and nutrients. These microorganisms generally are more numerous in the surface layer, and their numbers and types decrease with increasing depth. Earthworms and other burrowing or tunneling organisms mix soil material and influence its chemical composition.

Humans have influenced the formation of soils by altering the vegetative community; by cultivating, draining, irrigating, mixing, removing, covering, and compacting the soil; by discharging wastes and chemicals; and by applying pesticides. Some of the effects of these activities, such as erosion and improved drainage, are readily apparent, whereas others become apparent only after a long time.

Relief

Relief influences soil formation through its effects on drainage, erosion, temperature, and plant and animal life.

Lafayette County has four general topographic areas. These are the scattered large swamps, marshes, and depressions in the northern part of the county; the seasonally wet flatwoods throughout the entire county, except for the southern and southwestern parts; the long, narrow flood plains along the southern, eastern, and western boundaries; and the low, rolling areas along the southern and southwestern boundaries.

The soils in the swamps, marshes, and depressions are covered with water for long periods. The soils in the flatwoods have a water table near the surface during periods of moderate or heavy rainfall. The soils on the flood plains are periodically submerged for brief periods when major drainageways flood. The soils in the low, rolling areas generally do not have a water table near the surface. They generally are extremely dry only during extended periods of low rainfall. These soils are more susceptible to erosion than the soils in the other topographic areas.

Elevations range from more than 165 feet above sea level near Palestine Lake to less than 45 feet near the junction of the Santa Fe River and Olustee Creek. Internal soil drainage generally is not related to elevation. Even in the low, rolling areas, a higher elevation does not necessarily mean better drainage.

Microrelief plays an important part in soil formation. Small rises in depressions and flatwoods and low areas in the uplands commonly support vegetation that differs from that in the surrounding areas. Also, the depth to a seasonal high water table differs.

Time

Most factors that influence soil formation require a long time to change the makeup of soils. Some geologic components are more resistant to breakdown and change than others. In Lafayette County, the dominant geologic material is highly resistant to weathering. The sand, the dominant component in most soils, is almost pure quartz.

Relatively little geologic time has elapsed since the material in which the soils in Lafayette County formed emerged from the seas and was laid down. The loamy and clayey horizons formed in place through the process of clay translocation, were deposited by rivers and streams, or were deposited in beds and layers by the sea.

Processes of Horizon Differentiation

The processes involved in the formation of soils and the development of horizons are the deposition and translocation of organic matter; the translocation of iron and aluminum; the deposition of silts and clays; leaching of calcium carbonates, other bases, and silts; the reduction and transfer of iron and aluminum; and the accumulation of organic matter on the surface.

The deposition and translocation of organic matter in the soil profile can result in the formation of a spodic horizon. This process is caused dominantly by water. Rainfall leaches organic material that has been deposited on the surface into the soil profile.

Iron and aluminum also are leached into the soil profile. They adhere to sand grains, generally in a fluctuating zone of the water table. These materials coat individual sand grains. As development continues, individually coated sand grains begin to adhere to each other. The result is the formation of increasingly hard bodies. As development further continues, the movement of water is restricted, reducing permeability rates within the spodic horizon. In Lafayette County, organic matter generally is the dominant translocated material, resulting in the black or dark brown color in most spodic horizons. Over time, changes in the water table can result in the formation of spodic horizons at varying depths within the soil profile.

The translocation and deposition of silts and clays are caused by water. Rainfall moving through the soil translocates these soil particles downward through the profile. The material is deposited, forming an argillic horizon. Sand grains become coated and bridged. As the argillic horizon continues to form, permeability is eventually so restricted that water can be perched above the horizon.

Leaching of carbonates, bases, and silts has occurred in nearly all of the soils in the county. Rainfall and water movement in the soils cause these elements to be moved downward through the soils and then out of the profile. As a result, most of the soils in Lafayette County, except for the soils along the major drainageways, are naturally acid.

Gleying, or the chemical reduction of iron, has occurred in the soils. The parts of a soil profile that are saturated for long periods commonly are gleyed with dull gray, yellow, or white colors or with mottles of varying colors. Many of the better drained soils that are not mottled have brighter colors in shades of yellow to red, indicating iron in the oxidized state. These soils are seldom saturated for extended periods.

The accumulation of organic material in or above the mineral surface layer occurs in all of the soils in Lafayette County. The content of organic matter and thickness of the surface layer depend on drainage and vegetation. In droughty soils with sparse vegetation, the content of organic matter generally is low because of rapid oxidation of limited organic deposition. The surface layer of these soils is thin and lighted colored. The wetter soils support more vegetation. The organic matter in these soils is less oxidized, and the amount of available organic material is increased. As a result, the surface layer is thicker and darker. In very wet soils, where water stands above the surface for long periods, oxidation is greatly restricted. As a result, organic matter accumulates above and in the mineral surface layer, forming a very thick, dark mineral surface layer or an organic surface layer (muck). Plowing often mixes the dark surface layer with an underlying horizon, resulting in a thicker dark surface layer in some soils.

The formation of concretions or nodules occurs on a limited basis in Lafayette County. These concretions are iron or phosphatic. They occur in a few soils and generally are moderately deep in the profile. Iron concretions or ironstone can result from the accumulation of translocated iron that adheres to form soft to hard, generally gravel-sized fragments. Phosphatic concretions may be the intermediate result of the weathering of soft limestone-phosphatic bedrock from which most of the carbonates have already been leached. These dominantly gravel-sized concretions are soft to firm.

The soil-forming processes have resulted in a succession of layers, or horizons, in the soil. Variations in the kinds of geologic material, in the soil-forming factors, and in the length of time that the soil-forming processes have been active have resulted in the formation of different soils and their associated properties. Soil formation is an ongoing process, and changes can occur in short or long periods of geologic time, depending on the soil-forming processes.

References

(1) American Association of State Highway and Transportation Officials. 1986. Standard specifications for highway materials and methods of sampling and testing. Ed. 14, 2 vol.

(2) American Society for Testing and Materials. 1993. Standard classification of soils for engineering purposes. ASTM Stand. D 2487.

(3) Applin, P.L. 1951. Preliminary report on buried pre-Mesozoic rocks in Florida and adjacent states. U.S. Geol. Surv. Circ. 91.

(4) Barr, G.L. 1987. Potentiometric surface of the Upper Floridan aquifer in Florida, May 1985. Fla. Geol. Surv. Map Ser. 119.

(5) Bell, O.G. 1924. A preliminary report on clays of Florida. Fla. Geol. Surv. Fifteenth Ann. Rep.

(6) Burnson, T., 1982. Hydrogeologic overview of Suwannee River Water Management District. Suwannee River Water Management District Tech. Rep. 82-3.

(7) Cooke, C.W., and W.C. Mansfield. 1936. Suwannee Limestone of Florida. Geol. Soc. of Amer. Proc.

(8) Dall, W.H., and G.D. Harris. 1892. Correlation papers—Neocene. U.S. Geol. Surv. Bull. 84.

(9) Davis, J.H. 1946. The peat deposits of Florida—their occurence, development and uses. Fla. Geol. Surv. Bull. 30.

(10) Doolittle, J.A. 1946. Characterizing soil map units with the ground-penetrating radar. Soil Sci. Soc. Am., Soil Surv. Horiz. 23.

(11) Griffin, G., C.C. Wieland, L.Q. Hood, R.W. Goode, R.K. Sawyer, and D.F. McNeill. 1982. Assessment of the peat resources of Florida, with a detailed survey of the northern Everglades. State of Fla., Governor's Energy Off.

(12) Healy, H.G. 1975. Terraces and shorelines of Florida. Fla. Bur. Geol. Map Ser. 71.

(13) Jenny, Hans. 1941. Factors of soil formation.

(14) Johnson, R.W., R. Glaccum, and R. Wojtasinski. 1979. Application of ground-penetrating radar to soil survey. Proc. Soil and Crop Sci. Soc. of Fla. 39.

(15) Knapp, M.S., 1978. Environmental Geology Series, Gainesville sheet. Fla. Geol. Surv. Map Ser. 79.

(16) Lloyd, J.M. and K.M. Campbell. 1986. (Unpublished) Geologic map of Lafayette County, *in* Geologic map of Florida, Fla. Geol. Surv. Map Ser. (in preparation).

(17) Miller, J.A. 1986. Hydrogeologic framework of the Floridan aquifer system in Florida and parts of Georgia, Alabama, and South Carolina. U.S. Geol. Surv. Prof. Pap. 1403-B.

(18) Poland, J.F., B.E. Lofgren, and F.S. Riley. 1972. Glossary of selected terms useful in studies of the mechanics of aquifer systems and land subsidence due to fluid withdrawl. U.S. Geol. Surv. Water-Supply Pap. 2025.

(19) Puri, H.S., J.W. Yon, Jr., and W.R. Oglesby. 1967. Geology of Dixie and Gilchrist Counties, Florida. Fla. Geol. Surv. Bull. 49.

(20) Rosenau, J.C., G.L. Faulkner, C.W. Hendry, Jr., and R.W. Hull. 1977. Springs of Florida. Fla. Geol. Surv. Bull. 31.

(21) Schmidt, W., R.W. Hoenstine, M.S. Knapp, E. Lane, G.M. Ogden, and T.M. Scott. 1979. The limestone, dolomite, and coquina resources of Florida. Fla. Bur. of Geol. Rep. of Invest. No. 88.

(22) Scott, T.M., 1988. The lithostratigraphy of the Hawthorn Group (Miocene) of Florida. Fla. Geol. Surv. Bull. 59.

(23) Southeastern Geological Society Ad Hoc Committee on Florida hydrostratigrahic unit definition. 1986. Hydrogeological units of Florida. Fla. Geol. Survey Spec. Public. 28.

(24) Spencer, S.M. 1989. The industrial mineral industry directory of Florida, part 1. Geol. Surv. Infor. Circ. 105.

(25) United States Department of Agriculture. 1975. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. Soil Conserv. Serv., U.S. Dep. Agric. Handb. 436.

(26) United States Department of Agriculture. 1988 (rev.). Procedures for collecting soil samples and methods of analysis for soil survey. Soil Surv. Invest. Rep. 1.

(27) United States Department of Agriculture. 1993. Soil survey manual. U.S. Dep. Agric. Handb. 18.

(28) White, W.A. 1970. The geomorphology of the Florida peninsula. Fla. Bur. of Geol. Bull. 51.

Glossary

ABC soil. A soil having an A, a B, and a C horizon.

AC soil. A soil having only an A and a C horizon. Commonly, such soil formed in recent alluvium or on steep, rocky slopes.

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	more than 12

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

Bedding. A method of controlling excess water in areas of soils used for tree crops and cultivated crops. The surface soil is plowed into regularly spaced, elevated beds, and the crops are planted on the beds to drain the excess water.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bench terrace. A raised, level or nearly level strip of earth constructed on or nearly on the contour, supported by a barrier of rocks or similar material, and designed to make the soil suitable for tillage and to prevent accelerated erosion.

Bisequum. Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

Bottom land. The normal flood plain of a stream, subject to flooding.

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Climax vegetation. The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Coarse fragments. If round, mineral or rock particles 2 millimeters to 25 centimeters (10 inches) in diameter; if flat, mineral or rock particles (flagstone) 15 to 38 centimeters (6 to 15 inches) long.

Coarse textured soil. Sand or loamy sand.

Cobblestone (or cobble). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Colluvium. Soil material, rock fragments, or both moved by creep, slide, or local wash and deposited at the base of steep slopes.

Complex, soil. A map unit of two or more kinds of soil in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils are somewhat similar in all areas.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrated compounds or cemented soil grains. The composition of most concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are common compounds in concretions.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are:

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by mod erate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—When wet, adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Cemented.—Hard; little affected by moistening.

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Decreasers. The most heavily grazed climax range plants. Because they are the most palatable, they are the first to be destroyed by overgrazing.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Depression. An area that is lower in elevation than the surrounding areas and is ponded for several months or more during most years.

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:

Excessively drained.—Water is removed from the soil very rapidly. Excessively drained soils are commonly very coarse textured, rocky, or shallow. Some are steep. All are free of the mottling related to wetness.

Somewhat excessively drained.—Water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy and rapidly pervious. Some are shallow. Some are so steep that much of the water they receive is lost as runoff. All are free of the mottling related to wetness.

Well drained.—Water is removed from the soil readily, but not rapidly. It is available to plants throughout most of the growing season, and wetness does not inhibit growth of roots for significant periods during most growing seasons. Well drained soils are commonly medium textured. They are mainly free of mottling.

Moderately well drained.—Water is removed from the soil somewhat slowly during some periods. Moderately well drained soils are wet for only a short time during the growing season, but periodically they are wet long enough that most mesophytic crops are affected. They commonly have a slowly pervious layer within or directly below the solum or periodically receive high rainfall, or both.

Somewhat poorly drained.—Water is removed slowly enough that the soil is wet for significant periods during the growing season. Wetness markedly restricts the growth of mesophytic crops unless artificial drainage is provided. Somewhat poorly drained soils commonly have a slowly pervious layer, a high water table, additional water from seepage, nearly continuous rainfall, or a combination of these.

Poorly drained.—Water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Free water is commonly at or near the surface for long enough during the growing season that most mesophytic crops cannot be grown unless the soil is artificially drained. The soil is not continuously saturated in layers directly below plow depth. Poor drainage results from a high water table, a slowly pervious layer within the profile, seepage, nearly continuous rainfall, or a combination of these.

Very poorly drained.—Water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. Unless the soil is artificially drained, most mesophytic crops cannot be grown. Very poorly drained soils are commonly level or depressed and are frequently ponded. Yet, where rainfall is high and nearly continuous, they can have moderate or high slope gradients.

Drainage, surface. Runoff, or surface flow of water, from an area.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Eolian soil material. Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic)—Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated)—Erosion much more rapid than geologic erosion, mainly as a result of the human or animal activities or of a catastrophe in nature, such as 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.

Fast intake (in tables). The movement of water into the soil is rapid.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fibric soil material (peat). The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity.*

Fine textured soil. Sandy clay, silty clay, or clay.

Flatwoods. Broad, nearly level areas of poorly drained soils that have a characteristic vegetation of open pine forest and an understory of saw palmetto and gallberry.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Foot slope. The inclined surface at the base of a hill.

Forb. Any herbaceous plant that is 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.

Graded stripcropping. Growing crops in strips that grade toward a protected waterway.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock up to 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that is 15 to 50 percent, by volume, rounded or angular rock fragments, not prominently flattened, up to 3 inches (7.6 centimeters) in diameter.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water (geology). Water filling all the unblocked pores of the material below the water table.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

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.

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric and the more decomposed sapric material.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue at the surface of a mineral soil.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an O, A, or E horizon. The B horizon is, in part, a layer of transition from the overlying horizon to the underlying C horizon. The B horizon also has distinctive characteristics, such as accumulation of clay, sesquioxides, humus, or a combination of these; prismatic or blocky structure; redder or browner colors than those in the A horizon; or 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, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Consolidated rock (unweathered bedrock) beneath the soil. The bedrock commonly underlies a C horizon but can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff-producing characteristics. The chief consideration is the inherent capacity of soil bare of vegetation to permit infiltration. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff. Soils are assigned to four groups. In group A are soils having a high infiltration rate when thoroughly wet and having a low runoff potential. They are mainly deep, well drained, and sandy or gravelly. In group D, at the other extreme, are soils having a very slow infiltration rate and thus a high runoff potential. They have a claypan or clay layer at or near the surface, have a permanent high water table, or are shallow over nearly impervious bedrock or other material. A soil is assigned to two hydrologic groups if part of the acreage is artificially drained and part is undrained.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Increasers. Species in the climax vegetation that increase in amount as the more desirable plants are reduced by close grazing. Increasers commonly are the shorter plants and the plants that are the less palatable to livestock.

Infiltration. The downward entry of water into the immediate surface of soil or other material. This contrasts 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:

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

Karst (topography). The relief of an area underlain by limestone that dissolves in differing degrees, thus forming numerous depressions or small basins.

Knoll. A natural mound.

Landform. A discernible natural landscape, such as flatwoods, flood plains, depressions, or low ridges.

Landscape. All the natural features, such as fields, hills, forests, and water that distinguish one part of the earth's surface from another part; usually that portion of land or territory which the eye can comprehend in a single view, including all of its natural characteristics.

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.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, or 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).

Mounding. Filling the area for the septic tank absorption field with suitable soil material to the level above the high water table to meet local and state requirements.

Muck. Dark, 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 with hue of 10YR, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value between 6.6 and 7.3. (See Reaction, soil.)

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Peat. Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

Percs slowly (in tables). The slow movement of water through the soil adversely affects the specified use.

Permeability. The quality of the soil that enables water to move through the profile. Permeability is measured as the number of inches per hour that water moves through the saturated soil. Terms describing permeability are:

Very slow	less than 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and thickness.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Subsurface tunnels or pipelike cavities are formed 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.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poor filter (in tables). Because of rapid permeability, the soil may not adequately filter effluent from a waste disposal system.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Range condition. The present composition of the plant community on a range site in relation to the potential natural plant community for that site. Range condition is expressed as excellent, good, fair, or poor on the basis of how much the present plant community has departed from the potential.

Reaction, soil. A measure of the acidity or alkalinity of a soil expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Extremely acid	below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly 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.

Ridge. An area that is higher in elevation than the surrounding landforms and is generally long and narrow.

Rill. A steep-sided channel resulting from accelerated erosion. A rill is generally a few inches deep and not wide enough to be an obstacle to farm machinery.

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 adversely affects the specified use.

Sequum. A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer or of the 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.

Similar soils. Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

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.

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the 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 that provide vegetative barriers to wind erosion 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 erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Breaking up a compact subsoil by pulling a special chisel through the soil.

Substratum. The part of the soil below the solum.

Subsurface layer. Technically, the E horizon. Generally refers to a leached horizon lighter in color and lower in organic matter content than the overlying surface layer.

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."

Surface soil. The A, E, AB, and EB horizons. It includes all subdivisions of these horizons.

Terrace. An embankment, or ridge, constructed on the contour or at a slight angle to the contour across sloping soils. The terrace intercepts surface runoff, so that water soaks into the soil or flows slowly to a prepared outlet.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Thin layer (in tables). An otherwise suitable soil material that is too thin for the specified use.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toe slope. The outermost inclined surface at the base of a hill; part of a foot slope.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Trace elements. Chemical elements, such as zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Weathering. All physical and chemical changes produced by atmospheric agents in rocks or other deposits at or near the earth's surface. These changes result in disintegration and decomposition of the material.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Tables

TABLE 1.--TEMPERATURE AND PRECIPITATION

(Recorded in the period 1957-87 at Perry, Florida)

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average daily	2 years in 10 will have-- Maximum temperature higher than--	2 years in 10 will have-- Minimum temperature lower than--	Average number of growing degree days*	Average	2 years in 10 will have-- Less than--	2 years in 10 will have-- More than--	Average number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January-----	65.4	40.8	53.1	81	15	197	4.13	1.98	5.99	7	0.0
February----	68.5	42.6	55.6	83	22	212	4.50	2.51	6.26	7	0.1
March-------	74.8	48.7	61.8	87	27	372	5.12	2.22	7.58	6	0.0
April-------	81.5	54.5	68.0	92	36	540	3.92	0.94	6.28	4	0.0
May---------	87.4	61.9	74.7	96	45	766	4.48	1.75	6.76	6	0.0
June--------	91.1	68.3	79.7	99	57	891	6.53	3.83	8.93	9	0.0
July--------	92.0	70.8	81.4	99	64	973	8.56	4.72	11.94	12	0.0
August------	91.8	70.4	81.1	98	64	964	8.69	4.65	12.24	12	0.0
September---	89.7	67.5	78.6	97	52	858	5.81	2.66	8.51	7	0.0
October-----	83.1	57.2	70.2	93	35	626	2.62	0.46	4.29	4	0.0
November----	75.7	48.9	62.3	87	25	379	2.83	1.19	4.21	5	0.0
December----	68.6	42.7	55.7	82	17	230	3.57	1.66	5.20	5	0.0
Yearly:											
Average---	80.8	56.2	68.5	---	---	---	---	---	---	---	---
Extreme---	---	---	---	100	15	---	---	---	---	---	___
Total-----	---	---	---	---	---	7,008	60.76	50.46	70.62	84	0.1

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50 degrees F).

TABLE 2.--FREEZE DATES IN SPRING AND FALL

(Recorded in the period 1957-87 at Perry, Florida)

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	Feb. 23	Mar. 14	Mar. 29
2 years in 10 later than--	Feb. 14	Mar. 8	Mar. 24
5 years in 10 later than--	Jan. 29	Feb. 22	Mar. 14
First freezing temperature in fall:			
1 year in 10 earlier than--	Nov. 21	Nov. 6	Oct. 25
2 years in 10 earlier than--	Nov. 30	Nov. 15	Nov. 2
5 years in 10 earlier than--	Dec. 17	Dec. 3	Nov. 16

TABLE 3.--GROWING SEASON

(Recorded in the period 1957-87 at Perry, Florida)

Probability	Daily minimum temperature during growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
9 years in 10	290	252	223
8 years in 10	299	263	231
5 years in 10	317	283	247
2 years in 10	357	304	262
1 year in 10	>365	314	271

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
2	Penney sand, 0 to 5 percent slopes	27,320	7.8
4	Blanton-Ortega complex, 0 to 5 percent slopes	8,708	2.5
5	Otela-Penney complex, 0 to 5 percent slopes	36,193	10.3
6	Oaky-Rawhide, depressional, complex	8,590	2.4
7	Chaires-Chaires, depressional, complex	37,244	10.6
9	Sapelo-Chaires, depressional, complex	6,827	2.0
10	Pamlico and Dorovan soils, frequently flooded	447	0.1
11	Pamlico and Dorovan soils, depressional	39,863	11.4
13	Meadowbrook-Chaires complex	2,639	0.8
14	Leon fine sand	38,842	11.1
15	Wesconnett and Lynn Haven soils, depressional	34,311	9.8
16	Tooles fine sand	2,194	0.6
18	Surrency, Plummer, and Clara soils, depressional	5,414	1.5
20	Plummer fine sand	324	0.1
24	Rawhide and Harbeson soils, depressional	11,510	3.3
26	Ridgewood-Hurricane complex, 0 to 5 percent slopes	11,416	3.3
27	Albany-Ridgewood complex, 0 to 5 percent slopes	7,283	2.1
28	Clara and Meadowbrook soils, frequently flooded	14,816	4.2
29	Fluvaquents, frequently flooded	5,750	1.7
31	Chaires, low-Meadowbrook complex	8,705	2.5
32	Chaires and Meadowbrook soils, depressional	2,138	0.6
33	Tooles-Meadowbrook, limestone substratum-Rawhide complex, frequently flooded	2,574	0.7
34	Ortega fine sand, 0 to 5 percent slopes	4,540	1.3
36	Wampee fine sand, 0 to 5 percent slopes	1,550	0.4
37	Pantego and Surrency soils, depressional	1,242	0.4
38	Pantego and Surrency soils, frequently flooded	1,074	0.3
39	Eunola fine sand, 0 to 5 percent slopes	341	0.1
41	Meadowbrook and Harbeson soils, depressional	3,685	1.1
42	Sapelo, low-Clara-Surrency, depressional, complex	3,763	1.1
43	Garcon-Albany-Meadowbrook complex, 0 to 5 percent slopes, occasionally flooded	4,077	1.2
44	Albany-Ousley-Meadowbrook complex, 0 to 5 percent slopes, occasionally flooded	6,266	1.8
45	Wekiva-Rawhide-Tooles complex, occasionally flooded	1,941	0.6
46	Tooles-Rawhide complex, frequently flooded	1,565	0.5
48	Otela, limestone substratum-Shadeville-Penney complex, 0 to 5 percent slopes	1,339	0.4
52	Mandarin fine sand	1,357	0.4
53	Penney sand, 5 to 8 percent slopes	1,278	0.4
54	Garcon-Eunola complex, 2 to 5 percent slopes, occasionally flooded	554	0.2
	Areas of water less than 40 acres in size	138	*
	Areas of water more than 40 acres in size	1,264	0.4
	Total	348,928	100.0

* Less than 0.1 percent.

TABLE 5.--YIELDS PER ACRE OF CROPS AND PASTURE

(Yields in the N columns are for nonirrigated soils; those in the I columns are for irrigated soils. Yields are those that can be expected under a high level of managment. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)

Soil name and map symbol	Corn		Tobacco		Peas, dry	Watermelons		Peanuts		Bahiagrass	Improved bermudagrass hay	
	N	I	N	I	N	N	I	N	I		N	I
	Bu	Bu	Lbs	Lbs	Bu	Tons	Tons	Lbs	Lbs	AUM	Tons	Tons
2--------------- Penney	40	80	2,000	3,400	10			2,500		7.0	7.0	10.0
4--------------- Blanton-Ortega	50	125	2,000	3,400	10	11	18	2,500		7.2	7.0	10.0
5--------------- Otela-Penney	50	125	2,000	3,400	10	11	18	2,500		8.0	7.0	10.0
26-------------- Ridgewood-Hurricane	50	125	2,000	3,400	10	10	15	2,500		8.0	7.0	10.0
27-------------- Albany-Ridgewood	50	125	2,100	3,400	10	11	18	2,500		7.2	6.0	10.0
34-------------- Ortega	50	125	2,100	3,400	10	11	18	2,500		7.2	7.0	10.0
39-------------- Eunola	60	150	3,200		12	11	18	2,500		8.5	10.0	12.0
48-------------- Otela-Shadeville	50	125	3,200		10	11	18	2,500		8.0	7.0	10.0

TABLE 6.--WOODLAND MANAGEMENT AND PRODUCTIVITY

(Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available)

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
2------------------ Penney	8S	Slight	Moderate	Moderate	Slight	Moderate	Slash pine----------	70	8	Sand pine, slash pine, longleaf pine.
							Longleaf pine-------	60	4	
							Sand pine-----------	75	4	
							Turkey oak----------	---	---	
							Bluejack oak--------	---	---	
							Post oak------------	---	---	
							Live oak------------	---	---	
4**:										
Blanton------------	11S	Slight	Moderate	Moderate	Slight	Slight	Slash pine----------	90	11	Slash pine, loblolly pine, longleaf pine.
							Loblolly pine-------	85	8	
							Longleaf pine-------	70	6	
							Bluejack oak--------	---	---	
							Turkey oak----------	---	---	
							Southern red oak----	---	---	
							Live oak------------	---	---	
Ortega-------------	10S	Slight	Moderate	Moderate	Slight	Moderate	Slash pine----------	80	10	Slash pine, loblolly pine, longleaf pine.
							Longleaf pine-------	70	6	
							Loblolly pine-------	80	8	
							Bluejack oak--------	---	---	
							Post oak------------	---	---	
							Turkey oak----------	---	---	
5**:										
Otela--------------	10S	Slight	Moderate	Severe	Slight	Moderate	Slash pine----------	80	10	Slash pine, longleaf pine, loblolly pine.
							Longleaf pine-------	80	7	
							Loblolly pine-------	70	6	
							Live oak------------	---	---	
							Black cherry--------	---	---	
							Southern redcedar---	---	---	
							Turkey oak----------	---	---	
Penney-------------	8S	Slight	Moderate	Moderate	Slight	Moderate	Slash pine----------	70	8	Slash pine, longleaf pine, loblolly pine.
							Longleaf pine-------	60	4	
							Sand pine-----------	75	4	
							Turkey oak----------	---	---	
							Bluejack oak--------	---	---	
							Post oak------------	---	---	
							Live oak------------	---	---	

See footnote at end of table.

TABLE 6.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	
6**:										
Oaky	13W	Slight	Severe	Severe	Severe	Severe	Slash pine	100	13	Slash pine, loblolly pine.
							Loblolly pine	100	11	
							Longleaf pine	75	6	
							Water oak	---	---	
							Live oak	---	---	
							Sweetgum	---	---	
							Laurel oak	---	---	
							Red maple	---	---	
							Magnolia	---	---	
Rawhide	2W	Slight	Severe	Severe	Moderate	Severe	Pondcypress	75	2	***
							Baldcypress	---	---	
							Pond pine	---	---	
							Red maple	---	---	
							Laurel oak	---	---	
							Water oak	---	---	
							Sweetbay	---	---	
7**:										
Chaires	10W	Slight	Moderate	Moderate	Slight	Moderate	Slash pine	80	10	Slash pine, loblolly pine.
							Longleaf pine	70	6	
							Loblolly pine	80	8	
							Water oak	---	---	
							Laurel oak	---	---	
							Live oak	---	---	
Chaires	2W	Slight	Severe	Severe	Moderate	Severe	Pondcypress	75	2	***
							Red maple	---	---	
							Sweetbay	---	---	
							Baldcypress	---	---	
							Blackgum	---	---	
							Pond pine	---	---	
9**:										
Sapelo	10W	Slight	Moderate	Moderate	Slight	Moderate	Slash pine	80	10	Loblolly pine, slash pine.
							Loblolly pine	77	7	
							Longleaf pine	65	5	
							Water oak	---	---	
							Live oak	---	---	
							Laurel oak	---	---	

See footnote at end of table.

TABLE 6.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
9**:										
Chaires	2W	Slight	Severe	Severe	Moderate	Severe	Pondcypress	75	2	***
							Red maple	---	---	
							Sweetbay	---	---	
							Baldcypress	---	---	
							Blackgum	---	---	
							Pond pine	---	---	
10**:										
Pamlico	2W	Slight	Severe	Severe	Severe	Severe	Pond cypress	75	2	***
							Blackgum	---	---	
							Sweetbay	---	---	
							Baldcypress	---	---	
							Carolina ash	---	---	
							Red maple	---	---	
Dorovan	2W	Slight	Severe	Severe	Severe	Severe	Pond cypress	75	2	***
							Blackgum	---	---	
							Sweetbay	---	---	
							Baldcypress	---	---	
							Carolina ash	---	---	
							Red maple	---	---	
11**:										
Pamlico	2W	Slight	Severe	Severe	Severe	Severe	Pond cypress	75	2	***
							Blackgum	---	---	
							Sweetbay	---	---	
							Baldcypress	---	---	
							Carolina ash	---	---	
							Red maple	---	---	
Dorovan	2W	Slight	Severe	Severe	--------	--------	Pond cypress	75	2	***
							Blackgum	---	---	
							Sweetbay	---	---	
							Baldcypress	---	---	
							Carolina ash	---	---	
							Red maple	---	---	
13**:										
Meadowbrook	11W	Slight	Severe	Severe	Slight	Severe	Slash pine	88	11	Loblolly pine, slash pine.
							Loblolly pine	91	9	
							Longleaf pine	70	6	
							Live oak	---	---	
							Water oak	---	---	
							Sweetgum	---	---	
							Blackgum	---	---	

See footnote at end of table.

TABLE 6.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Potential productivity: Common trees	Site index	Productivity class*	Trees to plant
13**:										
Chaires	10W	Slight	Moderate	Moderate	Slight	Moderate	Slash pine	80	10	Slash pine, loblolly pine.
							Longleaf pine	70	6	
							Loblolly pine	80	8	
							Water oak	---	---	
							Laurel oak	---	---	
14 Leon	10W	Slight	Moderate	Moderate	Slight	Moderate	Slash pine	80	10	Slash pine, longleaf pine.
							Longleaf pine	70	6	
							Loblolly pine	75	7	
							Water oak	---	---	
							Post oak	---	---	
15**:										
Wesconnett	2W	Slight	Severe	Severe	Slight	Severe	Pondcypress	75	2	***
							Baldcypress	---	---	
							Sweetbay	---	---	
							Blackgum	---	---	
							Carolina ash	---	---	
							Red maple	---	---	
							Pond pine	---	---	
							Water oak	---	---	
Lynn Haven	2W	Slight	Severe	Severe	Slight	Severe	Pondcypress	75	2	***
							Baldcypress	---	---	
							Sweetbay	---	---	
							Blackgum	---	---	
							Carolina ash	---	---	
							Red maple	---	---	
							Pond pine	---	---	
							Water oak	---	---	
16 Tooles	11W	Slight	Severe	Moderate	Moderate	Severe	Slash pine	85	11	Slash pine, loblolly pine, longleaf pine.
							Loblolly pine	95	10	
							Cabbage-palm	---	---	
							Laurel oak	---	---	
							Sweetgum	---	---	
							Sweetbay	---	---	
							American elm	---	---	
							Live oak	---	---	

See footnote at end of table.

TABLE 6.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
18**:										
Surrency	2W	Slight	Severe	Severe	Slight	Severe	Pondcypress	75	2	***
							Pond pine	---	---	
							Red maple	---	---	
							Blackgum	---	---	
							Water oak	---	---	
							Baldcypress	---	---	
							Sweetbay	---	---	
Plummer	2W	Slight	Severe	Severe	Slight	Severe	Pondcypress	75	2	***
							Pond pine	---	---	
							Red maple	---	---	
							Blackgum	---	---	
							Water oak	---	---	
							Baldcypress	---	---	
							Sweetbay	---	---	
Clara	2W	Slight	Severe	Severe	Moderate	Severe	Pondcypress	75	2	***
							Pond pine	---	---	
							Red maple	---	---	
							Blackgum	---	---	
							Water oak	---	---	
							Baldcypress	---	---	
							Sweetbay	---	---	
20 Plummer	11W	Slight	Severe	Severe	Slight	Severe	Slash pine	88	11	Loblolly pine, slash pine, longleaf pine.
							Loblolly pine	91	9	
							Longleaf pine	70	6	
							Water oak	---	---	
							Laurel oak	---	---	
							Live oak	---	---	
24**:										
Rawhide	2W	Slight	Severe	Severe	Moderate	Severe	Pondcypress	75	2	***
							Baldcypress	---	---	
							Pond pine	---	---	
							Red maple	---	---	
							Laurel oak	---	---	
							Water oak	---	---	
							Sweetbay	---	---	

See footnote at end of table.

TABLE 6.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Potential productivity: Common trees	Site index	Productivity class*	Trees to plant
24**:										
Harbeson	2W	Slight	Severe	Severe	Slight	Severe	Pondcypress	75	2	***
							Baldcypress	---	---	
							Atlantic white-cedar	---	---	
							Blackgum	---	---	
							Sweetgum	---	---	
							Sweetbay	---	---	
26**:										
Ridgewood	10W	Slight	Moderate	Moderate	Slight	Moderate	Slash pine	80	10	Slash pine, longleaf pine.
							Longleaf pine	65	5	
							Laurel oak	---	---	
							Live oak	---	---	
							Water oak	---	---	
							Turkey oak	---	---	
Hurricane	11W	Slight	Moderate	Moderate	Slight	Moderate	Slash pine	85	11	Slash pine, longleaf pine.
							Longleaf pine	75	6	
							Loblolly pine	90	9	
							Blackjack oak	---	---	
							Post oak	---	---	
							Turkey oak	---	---	
27**:										
Albany	11W	Slight	Moderate	Moderate	Slight	Moderate	Slash pine	85	11	Loblolly pine, slash pine, longleaf pine.
							Loblolly pine	95	10	
							Longleaf pine	80	7	
							Live oak	---	---	
							Laurel oak	---	---	
							Post oak	---	---	
							Water oak	---	---	
Ridgewood	10W	Slight	Moderate	Moderate	Slight	Moderate	Slash pine	80	10	Slash pine, longleaf pine.
							Longleaf pine	65	5	
							Laurel oak	---	---	
							Live oak	---	---	
							Water oak	---	---	
							Turkey oak	---	---	

See footnote at end of table.

TABLE 6.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
28**:										
Clara	11W	Slight	Severe	Severe	Slight	Severe	Slash pine	88	11	****
							Baldcypress	108	7	
							Pond pine	---	---	
							Sweetgum	---	---	
							Cabbage-palm	---	---	
							Water oak	---	---	
							Blackgum	---	---	
Meadowbrook	7W	Slight	Severe	Severe	Slight	Severe	Baldcypress	108	7	***
							Pond pine	---	---	
							Sweetgum	---	---	
							Pondcypress	75	2	
							Red maple	---	---	
							Blackgum	---	---	
29 Fluvaquents	7W	Slight	Severe	Severe	Moderate	Severe	Baldcypress	108	7	***
							Blackgum	---	---	
							Laurel oak	---	---	
							Red maple	---	---	
							Sweetbay	---	---	
							Sweetgum	---	---	
							Water oak	---	---	
31**:										
Chaires	10W	Slight	Moderate	Moderate	Slight	Moderate	Slash pine	80	10	Slash pine, loblolly pine.
							Longleaf pine	70	6	
							Loblolly pine	80	8	
							Water oak	---	---	
							Laurel oak	---	---	
							Sweetgum	---	---	
Meadowbrook	11W	Slight	Severe	Severe	Slight	Severe	Slash pine	88	11	Slash pine, loblolly pine.
							Loblolly pine	91	9	
							Longleaf pine	70	6	
							Live oak	---	---	
							Water oak	---	---	
							Sweetgum	---	---	
							Red maple	---	---	

See footnote at end of table.

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Potential productivity: Common trees	Site index	Productivity class*	Trees to plant
32**:										
Chaires	2W	Slight	Severe	Severe	Moderate	Severe	Pondcypress	75	2	***
							Red maple	---	---	
							Sweetbay	---	---	
							Baldcypress	---	---	
							Blackgum	---	---	
							Pond pine	---	---	
Meadowbrook	2W	Slight	Severe	Severe	Slight	Severe	Pondcypress	75	2	***
							Red maple	---	---	
							Sweetbay	---	---	
							Baldcypress	---	---	
							Blackgum	---	---	
							Pond pine	---	---	
33**:										
Tooles	11W	Slight	Severe	Severe	Moderate	Severe	Slash pine	85	11	Slash pine****.
							Loblolly pine	80	8	
							Longleaf pine	70	6	
							Water oak	---	---	
							Live oak	---	---	
							Laurel oak	---	---	
							Sweetgum	---	---	
							Blackgum	---	---	
Meadowbrook	11W	Slight	Severe	Severe	Moderate	Severe	Slash pine	85	11	Slash pine****.
							Loblolly pine	80	8	
							Longleaf pine	70	6	
							Water oak	---	---	
							Live oak	---	---	
							Laurel oak	---	---	
							Sweetgum	---	---	
							Blackgum	---	---	
Rawhide	2W	Slight	Severe	Severe	Moderate	Severe	Pondcypress	75	2	***
							Baldcypress	---	---	
							Pond pine	---	---	
							Red maple	---	---	
							Laurel oak	---	---	
							Water oak	---	---	
							Sweetbay	---	---	

See footnote at end of table.

TABLE 6.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
34----------------- Ortega	10S	Slight	Moderate	Moderate	Slight	Moderate	Slash pine----------	80	10	Slash pine, loblolly pine, longleaf pine.
							Longleaf pine-------	70	6	
							Loblolly pine-------	80	8	
							Bluejack oak--------	---	---	
							Post oak------------	---	---	
							Turkey oak----------	---	---	
36----------------- Wampee	11W	Slight	Moderate	Slight	Moderate	Moderate	Slash pine----------	90	11	Slash pine, loblolly pine.
							Sweetgum------------	---	---	
							Red maple-----------	---	---	
							American holly------	---	---	
							Laurel oak----------	---	---	
37**:										
Pantego-----------	2W	Slight	Severe	Severe	Slight	Severe	Pondcypress---------	75	2	***
							Pond pine-----------	---	---	
							Water tupelo--------	---	---	
							Water oak-----------	---	---	
							Red maple-----------	---	---	
							Sweetbay------------	---	---	
							Blackgum------------	---	---	
							Baldcypress---------	---	---	
Surrency----------	2W	Slight	Severe	Severe	Slight	Severe	Pondcypress---------	75	2	***
							Pond pine-----------	---	---	
							Water tupelo--------	---	---	
							Water oak-----------	---	---	
							Red maple-----------	---	---	
							Sweetbay------------	---	---	
							Blackgum------------	---	---	
							Baldcypress---------	---	---	
38**:										
Pantego-----------	7W	Slight	Severe	Severe	Severe	Severe	Baldcypress---------	108	7	***
							Sweetgum------------	---	---	
							Pond pine-----------	---	---	
							Water oak-----------	---	---	
							Blackgum------------	---	---	
							Red maple-----------	---	---	
							Pondcypress---------	---	---	
							Loblolly bay--------	---	---	
							Sweetbay------------	---	---	

See footnote at end of table.

TABLE 6.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
38**:										
Surrency	7W	Slight	Severe	Severe	Slight	Severe	Baldcypress	108	7	***
							Sweetgum	---	---	
							Pond pine	---	---	
							Water oak	---	---	
							Blackgum	---	---	
							Red maple	---	---	
							Pondcypress	---	---	
							Loblolly bay	---	---	
							Sweetbay	---	---	
39 Eunola	11W	Slight	Moderate	Moderate	Slight	Moderate	Slash pine	90	11	Loblolly pine, slash pine.
							Loblolly pine	85	8	
							Longleaf pine	77	7	
							Water oak	---	---	
							Sweetgum	---	---	
							Southern red oak	---	---	
							Hickory	---	---	
41**:										
Meadowbrook	2W	Slight	Severe	Severe	Slight	Severe	Pondcypress	75	2	***
							Pond pine	---	---	
							Sweetgum	---	---	
							Baldcypress	---	---	
							Water oak	---	---	
							Blackgum	---	---	
							Sweetbay	---	---	
							Red maple	---	---	
Harbeson	2W	Slight	Severe	Severe	Slight	Severe	Pondcypress	75	2	***
							Pond pine	---	---	
							Sweetgum	---	---	
							Baldcypress	---	---	
							Water oak	---	---	
							Blackgum	---	---	
							Sweetbay	---	---	
							Red maple	---	---	
42**:										
Sapelo	10W	Slight	Moderate	Moderate	Slight	Severe	Slash pine	77	10	Slash pine****.
							Loblolly pine	77	7	
							Water oak	---	---	

See footnote at end of table.

TABLE 6.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Potential productivity: Common trees	Site index	Productivity class*	Trees to plant
42**:										
Clara	11W	Slight	Severe	Severe	Slight	Severe	Slash pine	88	11	Slash pine****.
							Loblolly pine	91	9	
							Water oak	---	---	
Surrency	2W	Slight	Severe	Severe	Slight	Severe	Pondcypress	75	2	***
							Baldcypress	---	---	
							Pond pine	---	---	
							Red maple	---	---	
							Water oak	---	---	
43**:										
Garcon	10W	Slight	Slight	Moderate	Slight	Moderate	Slash pine	80	10	Slash pine.
							Longleaf pine	70	6	
							Loblolly pine	80	8	
							Live oak	---	---	
							Laurel oak	---	---	
							Water oak	---	---	
Albany	11W	Slight	Moderate	Moderate	Slight	Moderate	Slash pine	85	11	Loblolly pine, slash pine.
							Loblolly pine	95	10	
							Longleaf pine	80	7	
							Live oak	---	---	
							Water oak	---	---	
							Laurel oak	---	---	
Meadowbrook	7W	Slight	Severe	Severe	Slight	Severe	Baldcypress	108	7	***
							Pond pine	---	---	
							Sweetgum	---	---	
							Pondcypress	75	2	
44**:										
Albany	11W	Slight	Moderate	Moderate	Slight	Moderate	Slash pine	85	11	Loblolly pine, slash pine, longleaf pine.
							Loblolly pine	95	10	
							Longleaf pine	80	7	
							Live oak	---	---	
							Laurel oak	---	---	
							Water oak	---	---	
Ousley	10W	Slight	Moderate	Moderate	Slight	Moderate	Slash pine	80	10	Slash pine, loblolly pine, longleaf pine.
							Loblolly pine	80	8	
							Longleaf pine	70	6	
							Live oak	---	---	
							Laurel oak	---	---	
							Water oak	---	---	

See footnote at end of table.

TABLE 6.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
44**:										
Meadowbrook	7W	Slight	Severe	Severe	Slight	Severe	Baldcypress	108	7	***
							Pondcypress	75	2	
							Sweetgum	---	---	
45**:										
Wekiva	8W	Slight	Severe	Severe	Severe	Severe	Slash pine	65	8	Slash pine, loblolly pine.
							Loblolly pine	65	6	
							Laurel oak	---	---	
							Southern redcedar	---	---	
							Sweetgum	---	---	
							Magnolia	---	---	
Rawhide	2W	Slight	Severe	Severe	Moderate	Severe	Pondcypress	75	2	***
							Baldcypress	---	---	
							Pond pine	---	---	
							Red maple	---	---	
							Laurel oak	---	---	
							Water oak	---	---	
							Sweetbay	---	---	
Tooles	10W	Slight	Severe	Moderate	Moderate	Severe	Slash pine	80	10	Slash pine.
							Loblolly pine	80	8	
							Water oak	---	---	
							Sweetgum	---	---	
46**:										
Tooles	10W	Slight	Severe	Severe	Moderate	Severe	Slash pine	80	10	****
							Loblolly pine	80	8	
							Laurel oak	---	---	
							Sweetgum	---	---	
							Water oak	---	---	
							Southern red cedar	---	---	
							Magnolia	---	---	
Rawhide	2W	Slight	Severe	Severe	Moderate	Severe	Pondcypress	75	2	***
							Baldcypress	---	---	
							Pond pine	---	---	
							Red maple	---	---	
							Sweetbay	---	---	

See footnote at end of table.

TABLE 6.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
48**:										
Otela	10S	Slight	Moderate	Severe	Slight	Moderate	Slash pine	80	10	Slash pine, longleaf pine.
							Longleaf pine	80	7	
							Loblolly pine	70	6	
							Live oak	---	---	
							Black cherry	---	---	
							Southern redcedar	---	---	
							Laurel oak	---	---	
Shadeville	11S	Slight	Moderate	Moderate	Slight	Moderate	Slash pine	85	11	Slash pine, longleaf pine.
							Loblolly pine	90	9	
							Longleaf pine	65	5	
							Live oak	---	---	
							Black cherry	---	---	
Penney	8S	Slight	Moderate	Moderate	Slight	Moderate	Slash pine	70	8	Slash pine, longleaf pine.
							Longleaf pine	60	4	
							Turkey oak	---	---	
							Bluejack oak	---	---	
							Post oak	---	---	
							Live oak	---	---	
52 Mandarin	8S	Slight	Moderate	Severe	Slight	Moderate	Slash pine	70	8	Slash pine, longleaf pine.
							Longleaf pine	60	4	
							Live oak	---	---	
							Laurel oak	---	---	
53 Penney	8S	Slight	Moderate	Moderate	Slight	Moderate	Slash pine	70	8	Sand pine, slash pine, longleaf pine.
							Longleaf pine	60	4	
							Sand pine	75	4	
							Turkey oak	---	---	
							Bluejack oak	---	---	
							Post oak	---	---	
							Live oak	---	---	
54**:										
Garcon	10W	Slight	Slight	Moderate	Slight	Moderate	Slash pine	80	10	Slash pine.
							Longleaf pine	70	6	
							Loblolly pine	80	8	
							Live oak	---	---	
							Water oak	---	---	
							Laurel oak	---	---	

See footnote at end of table.

TABLE 6.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Potential productivity: Common trees	Site index	Productivity class*	Trees to plant
54**:										
Eunola	11W	Slight	Moderate	Slight	Slight	Moderate	Slash pine	90	11	Loblolly pine, slash pine.
							Loblolly pine	90	9	
							Sweetgum	90	7	
							Hickory	---	---	
							Live oak	---	---	
							Water oak	---	---	
							Laurel oak	---	---	

* Productivity class is the yield in cubic meters per hectare per year calculated at the age of culmination of mean annual increment for fully stocked natural stands.

** See description of the map unit for composition and behavior characteristics of the map unit.

*** Reforestation generally is accomplished by natural regeneration because of severe management restrictions. Planting is generally not recommended.

**** Adequate surface drainage or bedding is necessary to regenerate the forest stand by planting trees and to obtain the potential productivity of the stand.

TABLE 7.--RECREATIONAL DEVELOPMENT

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated)

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
2: Penney	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
4*:					
Blanton	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
Ortega	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
5*:					
Otela	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty.
Penney	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
6*:					
Oaky	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness.
Rawhide	Severe: ponding, percs slowly.	Severe: ponding, too sandy, percs slowly.	Severe: too sandy, ponding.	Severe: ponding, too sandy.	Severe: ponding.
7*:					
Chaires	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness.
Chaires	Severe: ponding, too sandy.	Severe: ponding, too sandy.	Severe: too sandy, ponding.	Severe: ponding, too sandy.	Severe: ponding.
9*:					
Sapelo	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness, droughty.
Chaires	Severe: ponding, too sandy.	Severe: ponding, too sandy.	Severe: too sandy, ponding.	Severe: ponding, too sandy.	Severe: ponding.
10*:					
Pamlico	Severe: flooding, ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding, flooding.	Severe: ponding, excess humus.	Severe: ponding, flooding, 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.

See footnote at end of table.

TABLE 7.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
11*:					
Pamlico	Severe: flooding, ponding, excess humus.	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
Dorovan	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
13*:					
Meadowbrook	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness, droughty.
Chaires	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness.
14 Leon	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness.
15*:					
Wesconnett	Severe: ponding, too sandy.	Severe: ponding, too sandy.	Severe: too sandy, ponding.	Severe: ponding, too sandy.	Severe: ponding.
Lynn Haven	Severe: ponding, too sandy.	Severe: ponding, too sandy.	Severe: too sandy, ponding.	Severe: ponding, too sandy.	Severe: ponding.
16 Tooles	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness.
18*:					
Surrency	Severe: ponding, too sandy.	Severe: ponding, too sandy.	Severe: too sandy, ponding.	Severe: ponding, too sandy.	Severe: ponding.
Plummer	Severe: ponding, too sandy.	Severe: ponding, too sandy.	Severe: too sandy, ponding.	Severe: ponding, too sandy.	Severe: ponding, droughty.
Clara	Severe: ponding, too sandy.	Severe: ponding, too sandy.	Severe: too sandy, ponding.	Severe: ponding, too sandy.	Severe: ponding.
20 Plummer	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness, droughty.
24*:					
Rawhide	Severe: ponding, percs slowly.	Severe: ponding, too sandy, percs slowly.	Severe: too sandy, ponding.	Severe: ponding, too sandy.	Severe: ponding.

See footnote at end of table.

TABLE 7.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
24*:					
Harbeson	Severe: ponding, too sandy.	Severe: ponding, too sandy.	Severe: too sandy, ponding.	Severe: ponding, too sandy.	Severe: ponding.
26*:					
Ridgewood	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
Hurricane	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
27*:					
Albany	Severe: wetness, too sandy.	Severe: too sandy.	Severe: too sandy, wetness.	Severe: too sandy.	Severe: droughty.
Ridgewood	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
28*:					
Clara	Severe: flooding, wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness, flooding.	Severe: wetness, too sandy.	Severe: wetness, flooding.
Meadowbrook	Severe: flooding, ponding, too sandy.	Severe: ponding, too sandy.	Severe: too sandy, ponding, flooding.	Severe: ponding, too sandy.	Severe: flooding, ponding.
29 Fluvaquents	Severe: flooding, wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
31*:					
Chaires	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness.
Meadowbrook	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness, droughty.
32*:					
Chaires	Severe: ponding, too sandy.	Severe: ponding, too sandy.	Severe: too sandy, ponding.	Severe: ponding, too sandy.	Severe: ponding.
Meadowbrook	Severe: ponding, too sandy.	Severe: ponding, too sandy.	Severe: too sandy, ponding.	Severe: ponding, too sandy.	Severe: ponding.
33*:					
Tooles	Severe: flooding, wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness, flooding.	Severe: wetness, too sandy.	Severe: wetness, flooding.

See footnote at end of table.

TABLE 7.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
33*:					
Meadowbrook	Severe: flooding, wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness, flooding.	Severe: wetness, too sandy.	Severe: wetness, flooding.
Rawhide	Severe: flooding, ponding, percs slowly.	Severe: ponding, too sandy, percs slowly.	Severe: too sandy, ponding, flooding.	Severe: ponding, too sandy.	Severe: ponding, flooding.
34: Ortega	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
36: Wampee	Severe: wetness, too sandy.	Severe: too sandy.	Severe: too sandy, wetness.	Severe: too sandy.	Severe: droughty.
37*:					
Pantego	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
Surrency	Severe: ponding, too sandy.	Severe: ponding, too sandy.	Severe: too sandy, ponding.	Severe: ponding, too sandy.	Severe: ponding.
38*:					
Pantego	Severe: flooding, too sandy, wetness.	Severe: too sandy, wetness.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness.
Surrency	Severe: flooding, too sandy, wetness.	Severe: too sandy, wetness.	Severe: too sandy, flooding.	Severe: wetness, too sandy.	Severe: flooding, wetness.
39: Eunola	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: wetness, droughty, too sandy.
41*:					
Meadowbrook	Severe: ponding, too sandy.	Severe: ponding, too sandy.	Severe: too sandy, ponding.	Severe: ponding, too sandy.	Severe: ponding.
Harbeson	Severe: ponding, too sandy.	Severe: ponding, too sandy.	Severe: too sandy, ponding.	Severe: ponding, too sandy.	Severe: ponding.
42*:					
Sapelo	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness, droughty.
Clara	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness.

See footnote at end of table.

TABLE 7.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
42*:					
Surrency	Severe: ponding, too sandy.	Severe: ponding, too sandy.	Severe: too sandy, ponding.	Severe: ponding, too sandy.	Severe: ponding.
43*:					
Garcon	Severe: flooding, too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: wetness, droughty, flooding.
Albany	Severe: flooding, wetness, too sandy.	Severe: too sandy.	Severe: too sandy, wetness.	Severe: too sandy.	Severe: droughty.
Meadowbrook	Severe: flooding, ponding, too sandy.	Severe: ponding, too sandy.	Severe: too sandy, ponding.	Severe: ponding, too sandy.	Severe: ponding, droughty.
44*:					
Albany	Severe: flooding, wetness, too sandy.	Severe: too sandy.	Severe: too sandy, wetness.	Severe: too sandy.	Severe: droughty.
Ousley	Severe: flooding, too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
Meadowbrook	Severe: flooding, ponding, too sandy.	Severe: ponding, too sandy.	Severe: too sandy, ponding.	Severe: ponding, too sandy.	Severe: ponding, droughty.
45*:					
Wekiva	Severe: flooding, wetness, too sandy.	Severe: wetness, too sandy, depth to rock.	Severe: too sandy, wetness, depth to rock.	Severe: wetness, too sandy.	Severe: wetness, depth to rock.
Rawhide	Severe: flooding, ponding, percs slowly.	Severe: ponding, too sandy, percs slowly.	Severe: too sandy, ponding.	Severe: ponding, too sandy.	Severe: ponding.
Tooles	Severe: flooding, wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness.
46*:					
Tooles	Severe: flooding, wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness, flooding.	Severe: wetness, too sandy.	Severe: wetness, flooding.

See footnote at end of table.

TABLE 7.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
46*:					
Rawhide	Severe: flooding, ponding, percs slowly.	Severe: ponding, too sandy, percs slowly.	Severe: too sandy, ponding, flooding.	Severe: ponding, too sandy.	Severe: ponding, flooding.
48*:					
Otela	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty.
Shadeville	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty.
Penney	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
52 Mandarin	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: wetness, droughty.
53 Penney	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Severe: droughty.
54*:					
Garcon	Severe: flooding, too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: wetness, droughty, flooding.
Eunola	Severe: flooding, too sandy.	Severe: too sandy.	Moderate: slope, wetness, flooding.	Severe: too sandy.	Moderate: wetness, flooding.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 8.--WILDLIFE HABITAT

(See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated)

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
2 Penney	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
4*:										
Blanton	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Ortega	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
5*:										
Otela	Poor	Fair	Good	Fair	Fair	Poor	Poor	Fair	Fair	Very poor.
Penney	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
6*:										
Oaky	Poor	Fair	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair.
Rawhide	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Good	Good	Very poor.	Poor	Good.
7*:										
Chaires	Poor	Fair	Fair	Poor	Fair	Poor	Fair	Fair	Fair	Poor.
Chaires	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Fair	Good	Very poor.	Very poor.	Good.
9*:										
Sapelo	Poor	Fair	Fair	Poor	Fair	Fair	Fair	Fair	Fair	Fair.
Chaires	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Fair	Good	Very poor.	Very poor.	Good.
10*:										
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.
11*:										
Pamlico	Very poor.	Very poor.	Poor	Poor	Poor	Good	Good	Very poor.	Poor	Good.
Dorovan	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good.
13*:										
Meadowbrook	Poor	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair.
Chaires	Poor	Fair	Fair	Poor	Fair	Poor	Fair	Fair	Fair	Poor.
14 Leon	Poor	Fair	Fair	Poor	Fair	Poor	Fair	Fair	Fair	Poor.

See footnote at end of table.

TABLE 8.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba-ceous plants	Hardwood trees	Conif-erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
15*:										
Wesconnett	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Fair	Good	Very poor.	Very poor.	Good.
Lynn Haven	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Fair	Good	Very poor.	Very poor.	Good.
16 Tooles	Poor	Fair	Fair	Fair	Fair	Fair	Good	Poor	Fair	Fair.
18*:										
Surrency	Poor	Poor	Poor	Poor	Poor	Fair	Good	Poor	Poor	Fair.
Plummer	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Clara	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Fair	Fair	Very poor.	Very poor.	Fair.
20 Plummer	Poor	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair.
24*:										
Rawhide	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Good	Good	Very poor.	Poor	Good.
Harbeson	Very poor.	Very poor.	Poor	Poor	Poor	Fair	Fair	Poor	Poor	Fair.
26*:										
Ridgewood	Poor	Poor	Fair	Fair	Fair	Poor	Poor	Poor	Fair	Poor.
Hurricane	Poor	Poor	Fair	Fair	Fair	Poor	Very poor.	Poor	Fair	Very poor.
27*:										
Albany	Fair	Fair	Fair	Fair	Fair	Fair	Poor	Fair	Fair	Poor.
Ridgewood	Poor	Poor	Fair	Fair	Fair	Poor	Poor	Poor	Fair	Poor.
28*:										
Clara	Very poor.	Very poor.	Poor	Fair	Poor	Fair	Fair	Very poor.	Poor	Fair.
Meadowbrook	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Fair	Good	Very poor.	Very poor.	Good.
29 Fluvaquents	Poor	Poor	Fair	Fair	Poor	Fair	Fair	Poor	Fair	Fair.
31*:										
Chaires	Poor	Fair	Fair	Poor	Fair	Poor	Fair	Fair	Fair	Poor.
Meadowbrook.										
32*:										
Chaires	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Fair	Good	Very poor.	Very poor.	Good.

See footnote at end of table.

TABLE 8.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
32*:										
Meadowbrook	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Fair	Good	Very poor.	Very poor.	Good.
33*:										
Tooles	Very poor.	Poor	Poor	Poor	Poor	Fair	Good	Very poor.	Poor	Fair.
Meadowbrook	Poor	Fair	Fair	Fair	Fair	Fair	Good	Poor	Fair	Fair.
Rawhide	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Good	Good	Very poor.	Poor	Good.
34 Ortega	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
36 Wampee	Fair	Fair	Good	Good	Good	Fair	Poor	Fair	Good	Fair.
37*:										
Pantego	Very poor.	Very poor.	Very poor.	Fair	Poor	Good	Good	Very poor.	Poor	Good.
Surrency	Poor	Poor	Poor	Poor	Poor	Fair	Good	Poor	Poor	Fair.
38*:										
Pantego.										
Surrency	Poor	Poor	Poor	Poor	Poor	Fair	Good	Poor	Poor	Fair.
39 Eunola	Fair	Fair	Good	Fair	Good	Fair	Fair	Fair	Good	Fair.
41*:										
Meadowbrook	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Fair	Good	Very poor.	Very poor.	Good.
Harbeson	Very poor.	Very poor.	Poor	Poor	Poor	Fair	Fair	Poor	Poor	Fair.
42*:										
Sapelo	Poor	Fair	Fair	Poor	Fair	Fair	Fair	Fair	Fair	Fair.
Clara	Poor	Poor	Fair	Poor	Fair	Fair	Fair	Poor	Poor	Fair.
Surrency	Poor	Poor	Poor	Poor	Poor	Fair	Good	Poor	Poor	Fair.
43*:										
Garcon	Poor	Fair	Good	Poor	Fair	Poor	Poor	Fair	Fair	Poor.
Albany	Fair	Fair	Fair	Fair	Fair	Fair	Poor	Fair	Fair	Poor.
Meadowbrook	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Fair	Good	Very poor.	Very poor.	Good.
44*:										
Albany	Fair	Fair	Fair	Fair	Fair	Fair	Poor	Fair	Fair	Poor.
Ousley	Poor	Fair	Good	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.

See footnote at end of table.

TABLE 8.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
44*:										
Meadowbrook	Very poor.	Very poor.	Very poor.	Very poor.	Fair	Good	Very poor.	Very poor.	Very poor.	Good.
45*:										
Wekiva	Poor	Poor	Fair	Fair	Fair	Fair	Fair	Poor	Fair	Fair.
Rawhide	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Good	Good	Very poor.	Poor	Good.
Tooles	Poor	Poor	Fair	Fair	Fair	Fair	Good	Poor	Fair	Fair.
46*:										
Tooles	Very poor.	Poor	Poor	Poor	Poor	Fair	Good	Very poor.	Poor	Fair.
Rawhide	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Good	Good	Very poor.	Poor	Good.
48*:										
Otela	Poor	Fair	Good	Fair	Fair	Poor	Poor	Fair	Fair	Very poor.
Shadeville	Fair	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Penney	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
52 Mandarin	Very poor.	Poor	Poor	Poor	Fair	Very poor.	Very poor.	Poor	Poor	Very poor.
53 Penney	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
54*:										
Garcon	Poor	Fair	Good	Poor	Fair	Poor	Poor	Fair	Fair	Poor.
Eunola	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 9.--BUILDING SITE DEVELOPMENT

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
2: Penney	Severe: cutbanks cave.	Slight	Slight	Slight	Slight	Severe: droughty.
4*:						
Blanton	Severe: cutbanks cave.	Slight	Moderate: wetness.	Slight	Slight	Severe: droughty.
Ortega	Severe: cutbanks cave.	Slight	Moderate: wetness.	Slight	Slight	Severe: droughty.
5*:						
Otela	Severe: cutbanks cave.	Slight	Moderate: wetness.	Slight	Slight	Moderate: droughty.
Penney	Severe: cutbanks cave.	Slight	Slight	Slight	Slight	Severe: droughty.
6*:						
Oaky	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Rawhide	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
7*:						
Chaires	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Chaires	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
9*:						
Sapelo	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, droughty.
Chaires	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
10*:						
Pamlico	Severe: cutbanks cave, excess humus, ponding.	Severe: flooding, ponding, low strength.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: low strength, flooding, ponding.	Severe: ponding, flooding, excess humus.
Dorovan	Severe: excess humus, ponding.	Severe: subsides, flooding, ponding.	Severe: subsides, flooding, ponding.	Severe: subsides, flooding, ponding.	Severe: subsides, ponding, flooding.	Severe: ponding, flooding, excess humus.

See footnote at end of table.

TABLE 9.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
11*:						
Pamlico----------	Severe: cutbanks cave, excess humus, ponding.	Severe: flooding, ponding, low strength.	Severe: flooding, ponding.	Severe: flooding, ponding, low strength.	Severe: low strength, ponding.	Severe: ponding, excess humus.
Dorovan----------	Severe: excess humus, ponding.	Severe: subsides, ponding.	Severe: subsides, ponding.	Severe: subsides, ponding.	Severe: subsides, ponding.	Severe: ponding, excess humus.
13*:						
Meadowbrook------	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, droughty.
Chaires----------	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
14--------------- Leon	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
15*:						
Wesconnett-------	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
Lynn Haven-------	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
16--------------- Tooles	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
18*:						
Surrency---------	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
Plummer----------	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding, droughty.
Clara------------	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
20--------------- Plummer	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, droughty.
24*:						
Rawhide----------	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
Harbeson---------	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.

See footnote at end of table.

TABLE 9.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
26*:						
Ridgewood	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Severe: droughty.
Hurricane	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Severe: droughty.
27*:						
Albany	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Severe: droughty.
Ridgewood	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Severe: droughty.
28*:						
Clara	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.
Meadowbrook	Severe: cutbanks cave, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.
29 Fluvaquents	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: wetness, flooding.
31*:						
Chaires	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Meadowbrook	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness. droughty.
32*:						
Chaires	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
Meadowbrook	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
33*:						
Tooles	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: wetness, flooding.
Meadowbrook	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: wetness, flooding.
Rawhide	Severe: ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: ponding, flooding.	Severe: ponding, flooding.

See footnote at end of table.

TABLE 9.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
34 Ortega	Severe: cutbanks cave.	Slight	Moderate: wetness.	Slight	Slight	Severe: droughty.
36 Wampee	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Severe: droughty.
37*:						
Pantego	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
Surrency	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
38*:						
Pantego	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.
Surrency	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.
39 Eunola	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, droughty, too sandy.
41*:						
Meadowbrook	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
Harbeson	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
42*:						
Sapelo	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, droughty.
Clara	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Surrency	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
43*:						
Garcon	Severe: cutbanks cave, wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding.	Moderate: wetness, droughty, flooding.
Albany	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding.	Severe: droughty.

See footnote at end of table.

TABLE 9.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
43*:						
Meadowbrook------	Severe: cutbanks cave, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: ponding, flooding.	Severe: ponding, droughty.
44*:						
Albany-----------	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding.	Severe: droughty.
Ousley-----------	Severe: cutbanks cave, wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding.	Severe: droughty.
Meadowbrook------	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: wetness, droughty.
45*:						
Wekiva-----------	Severe: depth to rock, wetness.	Severe: flooding, wetness, depth to rock.	Severe: flooding, wetness, depth to rock.	Severe: flooding, wetness, depth to rock.	Severe: depth to rock, wetness, flooding.	Severe: wetness, depth to rock.
Rawhide----------	Severe: ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: ponding, flooding.	Severe: ponding.
Tooles-----------	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: wetness.
46*:						
Tooles-----------	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: wetness, flooding.
Rawhide----------	Severe: ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: ponding, flooding.	Severe: ponding, flooding.
48*:						
Otela------------	Severe: cutbanks cave.	Slight---------	Moderate: wetness.	Slight---------	Slight---------	Moderate: droughty.
Shadeville-------	Severe: cutbanks cave.	Slight---------	Moderate: wetness.	Slight---------	Slight---------	Moderate: droughty.
Penney-----------	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Slight---------	Severe: droughty.
52--------------- Mandarin	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness, droughty.
53--------------- Penney	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Slight---------	Severe: droughty.

See footnote at end of table.

TABLE 9.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
54*:						
Garcon----------	Severe: cutbanks cave, wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding.	Moderate: wetness, droughty, flooding.
Eunola----------	Severe: cutbanks cave, wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding.	Moderate: wetness, flooding.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 10.--SANITARY FACILITIES

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "good," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
2 Penney	Slight	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
4*:					
Blanton	Moderate: wetness.	Severe: seepage.	Severe: too sandy.	Severe: seepage.	Poor: too sandy.
Ortega	Moderate: wetness.	Severe: seepage.	Severe: seepage, wetness, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
5*:					
Otela	Severe: percs slowly, poor filter.	Severe: seepage.	Severe: too sandy.	Severe: seepage.	Poor: seepage, too sandy.
Penney	Slight	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
6*:					
Oaky	Severe: wetness, percs slowly.	Severe: seepage.	Severe: seepage, wetness.	Severe: wetness.	Poor: wetness.
Rawhide	Severe: ponding, percs slowly.	Severe: ponding.	Severe: seepage, ponding.	Severe: ponding.	Poor: ponding.
7*:					
Chaires	Severe: wetness, percs slowly, poor filter.	Severe: seepage, wetness.	Severe: wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
Chaires	Severe: ponding, percs slowly, poor filter.	Severe: seepage, ponding.	Severe: ponding, too sandy.	Severe: seepage, ponding.	Poor: seepage, too sandy, ponding.
9*:					
Sapelo	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
Chaires	Severe: ponding, percs slowly, poor filter.	Severe: seepage, ponding.	Severe: ponding, too sandy.	Severe: seepage, ponding.	Poor: seepage, too sandy, ponding.

See footnote at end of table.

TABLE 10.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
10*:					
Pamlico-----------	Severe: flooding, ponding, poor filter.	Severe: seepage, flooding, excess humus.	Severe: flooding, seepage, ponding.	Severe: flooding, seepage, ponding.	Poor: seepage, excess humus, ponding.
Dorovan-----------	Severe: subsides, flooding, ponding.	Severe: flooding, excess humus, ponding.	Severe: flooding, seepage, ponding.	Severe: flooding, ponding.	Poor: ponding, excess humus.
11*:					
Pamlico-----------	Severe: ponding, poor filter.	Severe: seepage, flooding, excess humus.	Severe: seepage, ponding, too sandy.	Severe: seepage, ponding.	Poor: seepage, too sandy, ponding.
Dorovan-----------	Severe: subsides, ponding.	Severe: excess humus, ponding.	Severe: seepage, ponding.	Severe: ponding.	Poor: ponding, excess humus.
13*:					
Meadowbrook-------	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
Chaires-----------	Severe: wetness, percs slowly, poor filter.	Severe: seepage, wetness.	Severe: wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
14---------------- Leon	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
15*:					
Wesconnett--------	Severe: ponding, poor filter.	Severe: seepage, ponding.	Severe: seepage, ponding, too sandy.	Severe: seepage, ponding.	Poor: seepage, too sandy, ponding.
Lynn Haven--------	Severe: ponding, poor filter.	Severe: seepage, ponding.	Severe: seepage, ponding, too sandy.	Severe: seepage, ponding.	Poor: seepage, too sandy, ponding.
16---------------- Tooles	Severe: wetness, percs slowly, poor filter.	Severe: seepage, wetness.	Severe: depth to rock, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
18*:					
Surrency----------	Severe: ponding.	Severe: seepage, ponding.	Severe: ponding, too sandy.	Severe: seepage, ponding.	Poor: too sandy, ponding.

See footnote at end of table.

TABLE 10.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
18*:					
Plummer	Severe: ponding, poor filter.	Severe: seepage, ponding.	Severe: ponding, too sandy.	Severe: seepage, ponding.	Poor: seepage, too sandy, ponding.
Clara	Severe: ponding, poor filter.	Severe: seepage, ponding.	Severe: seepage, ponding, too sandy.	Severe: seepage, ponding.	Poor: seepage, too sandy, ponding.
20 Plummer	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: wetness, too sandy.	Severe: seepage, wetness.	Poor: too sandy, wetness.
24*:					
Rawhide	Severe: ponding, percs slowly.	Severe: ponding.	Severe: seepage, ponding.	Severe: ponding.	Poor: ponding.
Harbeson	Severe: ponding, poor filter.	Severe: seepage, ponding.	Severe: ponding, too sandy.	Severe: seepage, ponding.	Poor: seepage, too sandy, ponding.
26*:					
Ridgewood	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy.
Hurricane	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy.
27*:					
Albany	Severe: wetness.	Severe: seepage, wetness.	Severe: wetness, too sandy.	Severe: seepage, wetness.	Poor: too sandy, wetness.
Ridgewood	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy.
28*:					
Clara	Severe: flooding, wetness, poor filter.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: seepage, too sandy, wetness.
Meadowbrook	Severe: flooding, ponding, poor filter.	Severe: seepage, flooding, ponding.	Severe: flooding, ponding, too sandy.	Severe: flooding, seepage, ponding.	Poor: seepage, too sandy, ponding.
29 Fluvaquents	Severe: flooding, wetness, percs slowly.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: seepage, too sandy, wetness.

See footnote at end of table.

TABLE 10.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
31*:					
Chaires	Severe: wetness, percs slowly, poor filter.	Severe: seepage, wetness.	Severe: wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
Meadowbrook	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
32*:					
Chaires	Severe: ponding, percs slowly, poor filter.	Severe: seepage, ponding.	Severe: ponding, too sandy.	Severe: seepage, ponding.	Poor: seepage, too sandy, ponding.
Meadowbrook	Severe: ponding, percs slowly.	Severe: seepage, ponding.	Severe: ponding, too sandy.	Severe: seepage, ponding.	Poor: seepage, too sandy, ponding.
33*:					
Tooles	Severe: flooding, wetness, percs slowly.	Severe: seepage, flooding, wetness.	Severe: flooding, depth to rock, wetness.	Severe: flooding, seepage, wetness.	Poor: seepage, too sandy, wetness.
Meadowbrook	Severe: flooding, wetness, poor filter.	Severe: seepage, flooding, wetness.	Severe: flooding, depth to rock, wetness.	Severe: flooding, seepage, wetness.	Poor: seepage, too sandy, wetness.
Rawhide	Severe: flooding, ponding, percs slowly.	Severe: flooding, ponding.	Severe: flooding, seepage, ponding.	Severe: flooding, ponding.	Poor: ponding.
34 Ortega	Moderate: wetness.	Severe: seepage.	Severe: seepage, wetness, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
36 Wampee	Severe: wetness, percs slowly, poor filter.	Severe: seepage, wetness.	Severe: wetness.	Severe: seepage, wetness.	Poor: wetness.
37*:					
Pantego	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Poor: ponding.
Surrency	Severe: ponding.	Severe: seepage, ponding.	Severe: ponding, too sandy.	Severe: seepage, ponding.	Poor: too sandy, ponding.
38*:					
Pantego	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.

See footnote at end of table.

TABLE 10.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
38*:					
Surrency	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, wetness, too sandy.	Severe: flooding, seepage, wetness.	Poor: too sandy, wetness.
39 Eunola	Severe: wetness.	Severe: seepage, wetness.	Severe: wetness.	Severe: seepage, wetness.	Fair: wetness.
41*:					
Meadowbrook	Severe: ponding, percs slowly.	Severe: seepage, ponding.	Severe: ponding, too sandy.	Severe: seepage, ponding.	Poor: seepage, too sandy, ponding.
Harbeson	Severe: ponding, poor filter.	Severe: seepage, ponding.	Severe: ponding, too sandy.	Severe: seepage, ponding.	Poor: seepage, too sandy, ponding.
42*:					
Sapelo	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
Clara	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
Surrency	Severe: ponding.	Severe: seepage, ponding.	Severe: ponding, too sandy.	Severe: seepage, ponding.	Poor: too sandy, ponding.
43*:					
Garcon	Severe: flooding, wetness, poor filter.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: thin layer.
Albany	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, wetness, too sandy.	Severe: flooding, seepage, wetness.	Poor: too sandy, wetness.
Meadowbrook	Severe: flooding, ponding, percs slowly.	Severe: seepage, flooding, ponding.	Severe: flooding, ponding, too sandy.	Severe: flooding, seepage, ponding.	Poor: seepage, too sandy, ponding.
44*:					
Albany	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, wetness, too sandy.	Severe: flooding, seepage, wetness.	Poor: too sandy, wetness.

See footnote at end of table.

TABLE 10.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
44*:					
Ousley	Severe: flooding, wetness, poor filter.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: seepage, too sandy.
Meadowbrook	Severe: flooding, ponding, percs slowly.	Severe: seepage, flooding, ponding.	Severe: flooding, ponding, too sandy.	Severe: flooding, seepage, ponding.	Poor: seepage, too sandy, ponding.
45*:					
Wekiva	Severe: flooding, depth to rock, wetness.	Severe: depth to rock, flooding, wetness.	Severe: flooding, depth to rock, wetness.	Severe: flooding, depth to rock, wetness.	Poor: depth to rock, wetness.
Rawhide	Severe: flooding, ponding, percs slowly.	Severe: flooding, ponding.	Severe: flooding, seepage, ponding.	Severe: flooding, ponding.	Poor: ponding.
Tooles	Severe: flooding, wetness, percs slowly.	Severe: seepage, flooding, wetness.	Severe: flooding, depth to rock, wetness.	Severe: flooding, seepage, wetness.	Poor: seepage, too sandy, wetness.
46*:					
Tooles	Severe: flooding, wetness, percs slowly.	Severe: seepage, flooding, wetness.	Severe: flooding, depth to rock, wetness.	Severe: flooding, seepage, wetness.	Poor: seepage, too sandy, wetness.
Rawhide	Severe: flooding, ponding, percs slowly.	Severe: flooding, ponding.	Severe: flooding, seepage, ponding.	Severe: flooding, ponding.	Poor: ponding.
48*:					
Otela	Moderate: depth to rock, wetness, percs slowly.	Severe: seepage.	Severe: depth to rock, wetness, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
Shadeville	Moderate: wetness, percs slowly.	Severe: seepage.	Severe: depth to rock, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
Penney	Slight	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
52 Mandarin	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: wetness, too sandy.	Severe: wetness, seepage.	Poor: seepage, too sandy.
53 Penney	Slight	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.

See footnote at end of table.

TABLE 10.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
54*:					
Garcon	Severe: flooding, wetness, poor filter.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: thin layer.
Eunola	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, wetness.	Fair: too clayey, wetness, thin layer.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 11.--CONSTRUCTION MATERIALS

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
2 Penney	Good	Probable	Improbable: too sandy.	Poor: too sandy.
4*:				
Blanton	Good	Probable	Improbable: too sandy.	Poor: too sandy.
Ortega	Good	Probable	Improbable: too sandy.	Poor: too sandy.
5*:				
Otela	Good	Probable	Improbable: too sandy.	Poor: too sandy.
Penney	Good	Probable	Improbable: too sandy.	Poor: too sandy.
6*:				
Oaky	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer, wetness.
Rawhide	Poor: wetness.	Probable	Improbable: too sandy.	Poor: wetness.
7*:				
Chaires	Poor: wetness.	Improbable: thin layer.	Improbable: too sandy.	Poor: too sandy, wetness.
Chaires	Poor: wetness.	Improbable: thin layer.	Improbable: too sandy.	Poor: too sandy, wetness.
9*:				
Sapelo	Poor: wetness.	Improbable: excess fines.	Improbable: too sandy.	Poor: too sandy, wetness.
Chaires	Poor: wetness.	Improbable: thin layer.	Improbable: too sandy.	Poor: too sandy, wetness.
10*, 11*:				
Pamlico	Poor: low strength, wetness.	Probable	Improbable: too sandy.	Poor: excess humus, wetness.
Dorovan	Poor: wetness.	Probable	Improbable: too sandy.	Poor: excess humus, wetness.

See footnote at end of table.

TABLE 11.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
13*:				
Meadowbrook	Poor: wetness.	Improbable: thin layer.	Improbable: too sandy.	Poor: too sandy, wetness.
Chaires	Poor: wetness.	Improbable: thin layer.	Improbable: too sandy.	Poor: too sandy, wetness.
14 Leon	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness.
15*:				
Wesconnett	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness.
Lynn Haven	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness.
16 Tooles	Poor: wetness.	Improbable: thin layer.	Improbable: too sandy.	Poor: too sandy, wetness.
18*:				
Surrency	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy, wetness.
Plummer	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness.
Clara	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness.
20 Plummer	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness.
24*:				
Rawhide	Poor: wetness.	Probable	Improbable: too sandy.	Poor: wetness.
Harbeson	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness.
26*:				
Ridgewood	Fair: wetness.	Probable	Improbable: too sandy.	Poor: too sandy.
Hurricane	Fair: wetness.	Probable	Improbable: too sandy.	Poor: too sandy.
27*:				
Albany	Fair: wetness.	Probable	Improbable: too sandy.	Poor: too sandy.

See footnote at end of table.

TABLE 11.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
27*:				
Ridgewood	Fair: wetness.	Probable	Improbable: too sandy.	Poor: too sandy.
28*:				
Clara	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness.
Meadowbrook	Poor: wetness.	Improbable: thin layer.	Improbable: too sandy.	Poor: too sandy, wetness.
29 Fluvaquents	Poor: wetness.	Probable	Improbable: too sandy.	Poor: thin layer, wetness.
31*, 32*:				
Chaires	Poor: wetness.	Improbable: thin layer.	Improbable: too sandy.	Poor: too sandy, wetness.
Meadowbrook	Poor: wetness.	Improbable: thin layer.	Improbable: too sandy.	Poor: too sandy, wetness.
33*:				
Tooles	Poor: wetness.	Improbable: thin layer.	Improbable: too sandy.	Poor: too sandy, wetness.
Meadowbrook	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness.
Rawhide	Poor: wetness.	Probable	Improbable: too sandy.	Poor: wetness.
34 Ortega	Good	Probable	Improbable: too sandy.	Poor: too sandy.
36 Wampee	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy, small stones.
37*, 38*:				
Pantego	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Surrency	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy, wetness.
39 Eunola	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy.
41*:				
Meadowbrook	Poor: wetness.	Improbable: thin layer.	Improbable: too sandy.	Poor: too sandy, wetness.

See footnote at end of table.

TABLE 11.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
41*:				
Harbeson	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness.
42*:				
Sapelo	Poor: wetness.	Improbable: excess fines.	Improbable: too sandy.	Poor: too sandy, wetness.
Clara	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness.
Surrency	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy, wetness.
43*:				
Garcon	Fair: wetness.	Probable	Improbable: too sandy.	Poor: too sandy.
Albany	Fair: wetness.	Probable	Improbable: too sandy.	Poor: too sandy.
Meadowbrook	Poor: wetness.	Improbable: thin layer.	Improbable: too sandy.	Poor: too sandy, wetness.
44*:				
Albany	Fair: wetness.	Probable	Improbable: too sandy.	Poor: too sandy.
Ousley	Fair: wetness.	Probable	Improbable: too sandy.	Poor: too sandy.
Meadowbrook	Poor: wetness.	Improbable: thin layer.	Improbable: too sandy.	Poor: too sandy, wetness.
45*:				
Wekiva	Poor: depth to rock, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, wetness.
Rawhide	Poor: wetness.	Probable	Improbable: too sandy.	Poor: wetness.
Tooles	Poor: wetness.	Improbable: thin layer.	Improbable: too sandy.	Poor: too sandy, wetness.
46*:				
Tooles	Poor: wetness.	Improbable: thin layer.	Improbable: too sandy.	Poor: too sandy, wetness.
Rawhide	Poor: wetness.	Probable	Improbable: too sandy.	Poor: wetness.

See footnote at end of table.

TABLE 11.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
48*:				
Otela	Good	Probable	Improbable: too sandy.	Poor: too sandy.
Shadeville	Fair: depth to rock.	Improbable: thin layer.	Improbable: too sandy.	Poor: too sandy.
Penney	Good	Probable	Improbable: too sandy.	Poor: too sandy.
52 Mandarin	Fair: wetness.	Probable	Improbable: too sandy.	Poor: too sandy.
53 Penney	Good	Probable	Improbable: too sandy.	Poor: too sandy.
54*:				
Garcon	Fair: wetness.	Probable	Improbable: too sandy.	Poor: too sandy.
Eunola	Fair: wetness.	Probable	Improbable: too sandy.	Fair: too clayey, small stones, thin layer.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 12.--WATER MANAGEMENT

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not evaluated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
2 Penney	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake.	Too sandy, soil blowing.	Droughty.
4*:							
Blanton	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake.	Too sandy, soil blowing.	Droughty.
Ortega	Severe: seepage.	Severe: seepage, piping.	Severe: cutbanks cave.	Deep to water	Droughty, fast intake.	Too sandy, soil blowing.	Droughty.
5*:							
Otela	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake.	Too sandy, soil blowing.	Droughty.
Penney	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake.	Too sandy, soil blowing.	Droughty.
6*:							
Oaky	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: slow refill, cutbanks cave.	Percs slowly	Wetness, droughty, fast intake.	Wetness, percs slowly, soil blowing.	Wetness, droughty, percs slowly.
Rawhide	Slight	Severe: ponding.	Severe: slow refill, cutbanks cave.	Ponding, percs slowly.	Ponding, fast intake, percs slowly.	Ponding, percs slowly.	Wetness, percs slowly.
7*:							
Chaires	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: slow refill, cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Wetness, droughty.
Chaires	Severe: seepage.	Severe: seepage, piping, ponding.	Severe: slow refill, cutbanks cave.	Ponding, cutbanks cave.	Ponding, droughty, fast intake.	Ponding, too sandy.	Wetness, droughty.

See footnote at end of table.

TABLE 12.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
9*:							
Sapelo	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Wetness, droughty.
Chaires	Severe: seepage.	Severe: seepage, piping, ponding.	Severe: slow refill, cutbanks cave.	Ponding, cutbanks cave.	Ponding, droughty, fast intake.	Ponding, too sandy.	Wetness, droughty.
10*:							
Pamlico	Severe: seepage.	Severe: seepage, piping, ponding.	Severe: cutbanks cave.	Ponding, flooding, subsides.	Ponding, flooding.	Ponding, too sandy.	Wetness.
Dorovan	Moderate: seepage.	Severe: excess humus, ponding.	Severe: cutbanks cave.	Ponding, flooding, subsides.	Ponding, soil blowing, flooding.	Ponding	Wetness.
11*:							
Pamlico	Severe: seepage.	Severe: seepage, piping, ponding.	Severe: cutbanks cave.	Ponding, subsides, cutbanks cave.	Ponding, soil blowing.	Ponding, too sandy.	Wetness.
Dorovan	Moderate: seepage.	Severe: excess humus, ponding.	Severe: cutbanks cave.	Ponding, subsides.	Ponding, soil blowing.	Ponding	Wetness.
13*:							
Meadowbrook	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: slow refill, cutbanks cave.	Cutbanks cave	Wetness, droughty.	Wetness, too sandy, soil blowing.	Wetness, droughty.
Chaires	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: slow refill, cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Wetness, droughty.
14 Leon	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty.	Wetness, too sandy, soil blowing.	Wetness, droughty.

See footnote at end of table.

TABLE 12.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
15*:							
Wesconnett	Severe: seepage.	Severe: seepage, piping, ponding.	Severe: cutbanks cave.	Ponding, cutbanks cave.	Ponding, droughty, fast intake.	Ponding, too sandy.	Wetness, droughty.
Lynn Haven	Severe: seepage.	Severe: seepage, piping, ponding.	Severe: cutbanks cave.	Ponding, cutbanks cave.	Ponding, fast intake.	Ponding, too sandy.	Wetness.
16 Tooles	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: slow refill, cutbanks cave.	Percs slowly, cutbanks cave.	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Wetness, droughty, percs slowly.
18*:							
Surrency	Severe: seepage.	Severe: seepage, piping, ponding.	Severe: cutbanks cave.	Ponding, cutbanks cave.	Ponding, droughty, fast intake.	Ponding, too sandy.	Wetness, droughty, rooting depth.
Plummer	Severe: seepage.	Severe: seepage, piping, ponding.	Severe: cutbanks cave.	Ponding, cutbanks cave.	Ponding, droughty, fast intake.	Ponding, too sandy.	Wetness, droughty.
Clara	Severe: seepage.	Severe: seepage, piping, ponding.	Severe: cutbanks cave.	Ponding, cutbanks cave.	Ponding, droughty, fast intake.	Ponding, too sandy.	Wetness, droughty.
20 Plummer	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Wetness, droughty.
24*:							
Rawhide	Slight	Severe: ponding.	Severe: slow refill, cutbanks cave.	Ponding, percs slowly.	Ponding, fast intake, percs slowly.	Ponding, percs slowly.	Wetness, percs slowly.
Harbeson	Severe: seepage.	Severe: seepage, piping, ponding.	Severe: slow refill, cutbanks cave.	Ponding, subsides, cutbanks cave.	Ponding, fast intake.	Ponding, too sandy.	Wetness, rooting depth.

See footnote at end of table.

TABLE 12.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
26*:							
Ridgewood	Severe: seepage.	Severe: seepage, piping.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty.	Wetness, too sandy, soil blowing.	Droughty.
Hurricane	Severe: seepage.	Severe: seepage, piping.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty.	Wetness, too sandy, soil blowing.	Droughty.
27*:							
Albany	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: slow refill, cutbanks cave.	Severe: slow refill, cutbanks cave.	Wetness, droughty.	Wetness, too sandy, soil blowing.	Wetness, droughty.
Ridgewood	Severe: seepage.	Severe: seepage, piping.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty.	Wetness, too sandy, soil blowing.	Droughty.
28*:							
Clara	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Flooding, cutbanks cave.	Wetness, droughty, fast intake.	Wetness, too sandy.	Wetness, droughty.
Meadowbrook	Severe: seepage.	Severe: seepage, piping, ponding.	Severe: slow refill, cutbanks cave.	Ponding, flooding, cutbanks cave.	Ponding, droughty, fast intake.	Ponding, too sandy.	Wetness, droughty.
29 Fluvaquents	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: slow refill, cutbanks cave.	Percs slowly, flooding, cutbanks cave.	Wetness, droughty, fast intake.	Erodes easily, wetness, too sandy.	Wetness, erodes easily, droughty.
31*:							
Chaires	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: slow refill, cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Wetness, droughty.
Meadowbrook	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: slow refill, cutbanks cave.	Cutbanks cave	Wetness, droughty.	Wetness, too sandy, soil blowing.	Wetness, droughty.

See footnote at end of table.

TABLE 12.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
32*:							
Chaires	Severe: seepage.	Severe: seepage, piping, ponding.	Severe: slow refill, cutbanks cave.	Ponding, cutbanks cave.	Ponding, droughty, fast intake.	Ponding, too sandy.	Wetness, droughty.
Meadowbrook	Severe: seepage.	Severe: seepage, piping, ponding.	Severe: slow refill, cutbanks cave.	Ponding, cutbanks cave.	Ponding, droughty, fast intake.	Ponding, too sandy.	Wetness, droughty.
33*:							
Tooles	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: slow refill, cutbanks cave.	Percs slowly, flooding, cutbanks cave.	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Wetness, droughty, percs slowly.
Meadowbrook	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: slow refill, cutbanks cave.	Flooding, cutbanks cave.	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Wetness, droughty.
Rawhide	Slight	Severe: ponding.	Severe: slow refill, cutbanks cave.	Ponding, percs slowly, flooding.	Ponding, fast intake, percs slowly.	Ponding, percs slowly.	Wetness, percs slowly.
34 Ortega	Severe: seepage.	Severe: seepage, piping.	Severe: cutbanks cave.	Deep to water	Droughty, fast intake.	Too sandy, soil blowing.	Droughty.
36 Wampee	Severe: seepage.	Severe: wetness.	Severe: slow refill, cutbanks cave.	Favorable	Wetness, droughty.	Wetness, soil blowing.	Wetness, droughty.
37*:							
Pantego	Moderate: seepage.	Severe: ponding.	Severe: slow refill.	Ponding	Ponding, fast intake.	Ponding	Wetness.
Surrency	Severe: seepage.	Severe: seepage, piping, ponding.	Severe: cutbanks cave.	Ponding, cutbanks cave.	Ponding, droughty, fast intake.	Ponding, too sandy.	Wetness, droughty, rooting depth.
38*:							
Pantego	Moderate: seepage.	Severe: wetness, piping.	Severe: cutbanks cave	Favorable	Wetness, fast intake.	Wetness, soil blowing.	Wetness.

See footnote at end of table.

TABLE 12.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
38*:							
Surrency	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Flooding, cutbanks cave.	Droughty, fast intake, wetness.	Too sandy, wetness.	Wetness, droughty, rooting depth.
39 Eunola	Severe: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Favorable	Wetness, droughty, fast intake.	Wetness	Droughty.
41*:							
Meadowbrook	Severe: seepage.	Severe: seepage, piping, ponding.	Severe: slow refill, cutbanks cave.	Ponding, cutbanks cave.	Ponding, droughty, fast intake.	Ponding, too sandy.	Wetness, droughty.
Harbeson	Severe: seepage.	Severe: seepage, piping, ponding.	Severe: slow refill, cutbanks cave.	Ponding, subsides, cutbanks cave.	Ponding, fast intake.	Ponding, too sandy, soil blowing.	Wetness, rooting depth.
42*:							
Sapelo	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy.	Wetness, droughty.
Clara	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Wetness, droughty.
Surrency	Severe: seepage.	Severe: seepage, piping, ponding.	Severe: cutbanks cave.	Ponding, cutbanks cave.	Ponding, droughty, fast intake.	Ponding, too sandy.	Wetness, droughty, rooting depth.
43*:							
Garcon	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Flooding	Wetness, droughty.	Wetness, soil blowing.	Droughty.
Albany	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: slow refill, cutbanks cave.	Flooding, cutbanks cave.	Wetness, droughty.	Wetness, too sandy, soil blowing.	Wetness, droughty.

See footnote at end of table.

TABLE 12.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
43*:							
Meadowbrook	Severe: seepage.	Severe: seepage, piping, ponding.	Severe: slow refill, cutbanks cave.	Ponding, flooding, cutbanks cave.	Ponding, droughty, fast intake.	Ponding, too sandy.	Wetness, droughty.
44*:							
Albany	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: slow refill, cutbanks cave.	Flooding, cutbanks cave.	Wetness, droughty.	Wetness, too sandy, soil blowing.	Wetness, droughty.
Ousley	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Flooding, cutbanks cave.	Wetness, droughty.	Wetness, too sandy, soil blowing.	Droughty.
Meadowbrook	Severe: seepage.	Severe: seepage, piping, ponding.	Severe: slow refill, cutbanks cave.	Ponding, flooding, cutbanks cave.	Ponding, droughty, fast intake.	Ponding, too sandy.	Wetness, droughty.
45*:							
Wekiva	Severe: depth to rock.	Severe: piping, wetness.	Severe: slow refill, depth to rock.	Depth to rock, flooding.	Wetness, droughty, fast intake.	Depth to rock, wetness, soil blowing.	Wetness, droughty, depth to rock.
Rawhide	Slight	Severe: ponding.	Severe: slow refill, cutbanks cave.	Ponding, percs slowly, flooding.	Ponding, fast intake, percs slowly.	Ponding, percs slowly.	Wetness, percs slowly.
Tooles	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: slow refill, cutbanks cave.	Percs slowly, flooding, cutbanks cave.	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Wetness, droughty, percs slowly.
46*:							
Tooles	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: slow refill, cutbanks cave.	Percs slowly, flooding, cutbanks cave.	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Wetness, droughty, percs slowly.
Rawhide	Slight	Severe: ponding.	Severe: slow refill, cutbanks cave.	Ponding, percs slowly, flooding.	Ponding, fast intake, percs slowly.	Ponding, percs slowly.	Wetness, percs slowly.

See footnote at end of table.

TABLE 12.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
48*:							
Otela	Severe: seepage.	Severe: seepage, piping.	Severe: slow refill, cutbanks cave.	Deep to water	Droughty, fast intake.	Too sandy, soil blowing.	Droughty.
Shadeville	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake.	Too sandy, soil blowing.	Droughty.
Penney	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake.	Too sandy, soil blowing.	Droughty.
52 Mandarin	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Too sandy, soil blowing, wetness.	Droughty.
53 Penney	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Too sandy, soil blowing.	Droughty.
54*:							
Garcon	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Flooding, slope.	Slope, wetness, droughty.	Wetness, soil blowing.	Droughty.
Eunola	Severe: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Flooding, slope.	Slope, wetness, fast intake.	Wetness	Favorable.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 13.--ENGINEERING INDEX PROPERTIES

(The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated)

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In								Pct	
2---------------- Penney	0-7	Sand------------	SP, SP-SM	A-3	100	95-100	75-100	2-8	---	NP
	7-55	Sand, fine sand	SP, SP-SM	A-3	100	95-100	75-100	2-8	---	NP
	55-80	Sand, fine sand	SP-SM	A-3, A-2-4	100	95-100	75-100	5-12	---	NP
4*:										
Blanton---------	0-44	Fine sand--------	SP-SM, SM	A-3, A-2-4	100	90-100	65-100	5-20	---	NP
	44-80	Sandy clay loam, sandy loam, sandy clay.	SC, SC-SM, SM	A-4, A-2-4, A-2-6, A-6	100	95-100	69-100	25-50	12-45	3-22
Ortega----------	0-6	Fine sand--------	SP, SP-SM	A-3	100	100	90-100	3-8	---	NP
	6-80	Fine sand, sand	SP, SP-SM	A-3	100	100	90-100	2-7	---	NP
5*:										
Otela-----------	0-60	Fine sand--------	SP-SM, SM	A-3, A-2-4	97-100	95-100	75-100	5-15	---	NP
	60-75	Sandy clay loam, sandy loam.	SC, SC-SM, SM	A-2-6, A-2-4, A-4, A-6	97-100	95-100	75-100	20-50	<40	NP-15
	75-80	Sandy clay loam, sandy clay, clay.	SC, CL, CH	A-6, A-7	97-100	95-100	75-100	45-95	35-65	20-39
Penney----------	0-7	Fine sand--------	SP, SP-SM	A-3	100	95-100	75-100	2-8	---	NP
	7-60	Sand, fine sand	SP, SP-SM	A-3	100	95-100	75-100	2-8	---	NP
	60-80	Sand, fine sand	SP-SM	A-3, A-2-4	100	95-100	75-100	5-12	---	NP
6*:										
Oaky------------	0-6	Fine sand--------	SP-SM, SP	A-2	100	100	75-90	4-10	---	NP
	6-13	Sand, fine sand	SP-SM, SP	A-2	100	100	75-90	4-10	---	NP
	13-51	Sandy loam, fine sandy loam, sandy clay loam.	SM, SC-SM, SC	A-2-4, A-2-6	100	100	94-100	12-40	<40	NP-17
	51-80	Loamy fine sand, sandy loam, sandy clay loam.	SM, SC-SM, SC	A-2-4, A-2-6, A-6	100	100	85-100	12-35	<30	NP-10
Rawhide---------	0-6	Mucky fine sand	SM, SP-SM	A-3, A-2-4	100	100	85-100	5-20	---	NP
	6-65	Sandy loam, fine sandy loam, sandy clay loam.	SC	A-2-4, A-2-6	100	100	85-100	20-45	23-38	7-15
	65-80	Fine sand, loamy sand, sandy clay loam.	SP-SM, SM, SC	A-2-4, A-2-6	100	100	80-100	12-25	<40	NP-10
7*:										
Chaires---------	0-24	Fine sand--------	SP, SP-SM	A-3, A-2-4	100	100	85-100	2-12	---	NP
	24-46	Sand, fine sand, loamy fine sand.	SP-SM, SM	A-3, A-2-4	100	100	85-100	5-20	---	NP
	46-72	Sandy loam, fine sandy loam, sandy clay loam.	SM, SC-SM, SC	A-2-4, A-2-6	100	100	85-100	20-35	<40	NP-20

See footnote at end of table.

TABLE 13.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	4	10	40	200		
	In								Pct	
7*:										
Chaires	0-3	Mucky fine sand	SM, SP, SP-SM	A-2-4, A-3	100	100	80-100	4-15	---	NP
	3-24	Sand, fine sand	SP, SP-SM	A-3, A-2-4	100	100	80-100	2-12	---	NP
	24-50	Sand, fine sand, loamy fine sand.	SP-SM, SM	A-3, A-2-4	100	100	85-100	5-20	---	NP
	50-80	Sandy loam, fine sandy loam, sandy clay loam.	SM, SC-SM, SC	A-2-4, A-2-6	100	100	85-100	20-35	<40	NP-20
9*:										
Sapelo	0-28	Fine sand	SM, SP, SP-SM	A-2, A-3	100	100	85-100	4-20	---	NP
	28-34	Fine sand, sand, loamy fine sand.	SM, SP-SM	A-2, A-3	100	100	80-100	8-20	---	NP
	34-60	Fine sand, sand, loamy fine sand.	SM, SP, SP-SM	A-2, A-3	100	100	75-100	4-20	---	NP
	60-80	Sandy loam, sandy clay loam, fine sandy loam.	SM, SC, SC-SM	A-2, A-4, A-6	100	100	80-100	20-50	<40	NP-20
Chaires	0-6	Mucky fine sand	SM, SP, SP-SM	A-2-4, A-3	100	100	80-100	4-15	---	NP
	6-25	Sand, fine sand	SP, SP-SM	A-3, A-2-4	100	100	80-100	2-12	---	NP
	25-65	Sand, fine sand, loamy fine sand.	SP-SM, SM	A-3, A-2-4	100	100	85-100	5-20	---	NP
	65-80	Sandy loam, fine sandy loam, sandy clay loam.	SM, SC-SM, SC	A-2-4, A-2-6	100	100	85-100	20-35	<40	NP-20
10*:										
Pamlico	0-31	Muck	PT	---	---	---	---	---	---	---
	31-80	Loamy sand, sand, loamy fine sand.	SM, SP-SM	A-2, A-3	100	100	70-95	5-20	---	NP
Dorovan	0-62	Muck	PT	---	---	---	---	---	---	---
	62-80	Sand, loamy sand, loam.	SP-SM, SC-SM, SM	A-1, A-3, A-4, A-2-4	100	100	5-70	5-49	<20	NP-7
11*:										
Pamlico	0-22	Muck	PT	---	---	---	---	---	---	---
	22-80	Sand, fine sand, loamy sand.	SM, SP-SM	A-2, A-3	100	100	70-95	5-20	---	NP
Dorovan	0-57	Muck	PT	---	---	---	---	---	---	---
	57-80	Sand, loamy sand, loam.	SP-SM, SC-SM, SM	A-1, A-3, A-4, A-2-4	100	100	5-70	5-49	<20	NP-7
13*:										
Meadowbrook	0-8	Fine sand	SP, SP-SM	A-3	100	95-100	70-95	2-10	---	NP
	8-64	Sand, fine sand	SP, SP-SM	A-3	100	95-100	70-95	2-10	---	NP
	64-80	Sandy loam, fine sandy loam, sandy clay loam.	SM, SC-SM, SC	A-2-4, A-2-6	100	95-100	70-99	13-35	<35	NP-20

See footnote at end of table.

TABLE 13.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In								Pct	
13*:										
Chaires	0-5	Fine sand	SP, SP-SM	A-3, A-2-4	100	100	85-100	2-12	---	NP
	5-24	Sand, fine sand	SP, SP-SM	A-3, A-2-4	100	100	80-100	2-12	---	NP
	24-60	Sand, fine sand, loamy fine sand.	SP-SM, SM	A-3, A-2-4	100	100	85-100	5-20	---	NP
	60-80	Sandy clay loam, fine sandy loam, sandy loam.	SC, SC-SM, SM	A-2-4, A-2-6,	100	100	85-100	20-35	<40	NP-20
14 Leon	0-4	Fine sand	SP, SP-SM	A-3, A-2-4	100	100	80-100	2-12	---	NP
	4-10	Sand, fine sand	SP, SP-SM	A-3, A-2-4	100	100	80-100	2-12	---	NP
	10-17	Sand, fine sand, loamy sand.	SM, SP-SM, SP	A-3, A-2-4	100	100	80-100	3-20	---	NP
	17-63	Sand, fine sand	SP, SP-SM	A-3, A-2-4	100	100	80-100	2-12	---	NP
	63-80	Sand, fine sand, loamy sand.	SM, SP-SM, SP	A-3, A-2-4	100	100	80-100	3-20	---	NP
15*:										
Wesconnett	0-14	Mucky fine sand	SP-SM	A-3, A-2-4	100	100	80-100	5-12	---	NP
	14-28	Fine sand, sand	SP-SM, SM	A-3, A-2-4	100	100	80-100	5-15	---	NP
	28-45	Fine sand, sand	SP-SM	A-3, A-2-4	100	100	80-100	5-12	---	NP
	45-61	Fine sand, sand	SP-SM, SM	A-3, A-2-4	100	100	80-100	5-15	---	NP
	61-80	Fine sand, sand	SP-SM	A-3, A-2-4	100	100	80-100	5-12	---	NP
Lynn Haven	0-13	Mucky fine sand	SM, SP, SP-SM	A-2-4, A-3	100	100	80-100	4-15	---	NP
	13-19	Sand, fine sand	SP-SM, SP	A-3	100	100	80-100	2-10	---	NP
	19-80	Sand, fine sand, loamy fine sand.	SP-SM, SM	A-3, A-2-4	100	100	80-100	5-20	---	NP
16 Tooles	0-35	Sand, fine sand	SP-SM, SM	A-3, A-2-4	100	100	85-95	5-15	---	NP
	35-50	Sandy clay loam, clay loam.	SC, CL	A-6	100	100	85-95	36-55	25-30	11-15
	50	Unweathered bedrock.	---	---	---	---	---	---	---	---
18*:										
Surrency	0-10	Mucky fine sand	SP-SM, SM, SC-SM	A-3, A-2-4	100	95-100	50-100	5-20	<20	NP-5
	10-28	Loamy sand, sand, fine sand.	SP-SM, SM	A-2-4	100	95-100	50-100	10-26	---	NP
	28-45	Sandy loam, sandy clay loam.	SM, SC-SM, SC	A-2	100	95-100	75-100	22-35	<30	NP-10
	45-80	Sandy clay loam	SM, SC, SC-SM	A-2, A-4, A-6	100	95-100	80-100	30-44	<35	NP-15
Plummer	0-8	Fine sand	SM, SP-SM	A-2-4, A-3	100	100	75-90	5-20	---	NP
	8-50	Sand, fine sand, loamy fine sand.	SM, SP-SM	A-2-4, A-3	100	100	75-96	5-26	---	NP
	50-72	Sandy loam, sandy clay loam, fine sandy loam.	SM, SC, SC-SM	A-2-4, A-4	100	96-100	76-96	20-48	<30	NP-10
Clara	0-9	Mucky fine sand	SP, SP-SM	A-3	100	100	85-100	1-5	---	NP
	9-29	Sand, fine sand	SP, SP-SM	A-3, A-2-4	100	100	85-100	2-12	---	NP
	29-46	Sand, fine sand	SP, SP-SM	A-3, A-2-4	100	100	85-100	2-12	---	NP
	46-80	Sand, fine sand, loamy fine sand.	SP, SP-SM, SM	A-3, A-2-4	100	100	85-100	2-16	---	NP

See footnote at end of table.

TABLE 13.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	4	10	40	200		
	In								Pct	
20---------------- Plummer	0-7	Fine sand--------	SM, SP-SM	A-2-4, A-3	100	100	75-90	5-20	---	NP
	7-55	Fine sand, sand, loamy fine sand.	SM, SP-SM	A-2-4, A-3	100	100	75-96	5-26	---	NP
	55-80	Sandy loam, sandy clay loam, fine sandy loam.	SM, SC, SC-SM	A-2-4, A-4	100	96-100	76-96	20-48	<30	NP-10
24*:										
Rawhide----------	0-6	Mucky fine sand	SM, SP-SM	A-3, A-2-4	100	100	85-100	5-20	---	NP
	6-40	Sandy loam, fine sandy loam, sandy clay loam.	SC	A-2-4, A-2-6	100	100	85-100	20-45	23-38	7-15
	40-80	Loamy fine sand, sandy clay loam, sandy loam.	SP-SM, SM, SC	A-2-4, A-2-6	100	100	80-100	12-25	<40	NP-10
Harbeson---------	0-18	Mucky fine sand	SM, SP-SM	A-2	100	98-100	75-95	10-25	---	NP
	18-55	Loamy fine sand, fine sand, sand	SM, SP-SM	A-3, A-2-4	100	98-100	70-95	5-25	---	NP
	55-80	Sandy loam, fine sandy loam, sandy clay loam.	SM, SC-SM, SC	A-2-4, A-2-6	100	98-100	75-100	15-45	<40	3-20
26*:										
Ridgewood--------	0-6	Fine sand--------	SP-SM	A-3, A-2-4	100	100	90-100	5-12	---	NP
	6-80	Fine sand, sand	SP-SM, SP	A-3, A-2-4	100	100	90-100	2-12	---	NP
Hurricane--------	0-5	Fine sand--------	SP, SP-SM	A-3	100	100	78-100	4-8	---	NP
	5-51	Sand, fine sand	SP, SP-SM	A-3	100	100	78-100	4-8	---	NP
	51-80	Sand, fine sand, loamy fine sand.	SP-SM, SM	A-3, A-2-4	100	100	80-100	5-15	---	NP
27*:										
Albany-----------	0-64	Fine sand--------	SM, SP-SM	A-2	100	100	75-90	10-20	---	NP
	64-80	Sandy clay loam, sandy loam, fine sandy loam.	SC, SM, SC-SM	A-2, A-4, A-6	97-100	95-100	70-100	20-50	<40	NP-17
Ridgewood--------	0-6	Fine sand--------	SP-SM	A-3, A-2-4	100	100	90-100	5-12	---	NP
	6-80	Fine sand, sand	SP-SM, SP	A-3, A-2-4	100	100	90-100	2-12	---	NP
28*:										
Clara------------	0-6	Mucky fine sand	SP, SP-SM	A-3	100	100	85-100	1-5	---	NP
	6-18	Sand, fine sand	SP, SP-SM	A-3, A-2-4	100	100	85-100	2-12	---	NP
	18-48	Sand, fine sand	SP, SP-SM	A-3, A-2-4	100	100	85-100	2-12	---	NP
	48-80	Sand, fine sand, loamy fine sand.	SP, SP-SM, SM	A-3, A-2-4	100	100	85-100	2-16	---	NP
Meadowbrook------	0-6	Mucky fine sand	SM, SP, SP-SM	A-2-4, A-3	100	95-100	70-100	4-15	---	NP
	6-45	Sand, fine sand	SP, SP-SM	A-3	100	95-100	70-95	2-10	---	NP
	45-80	Sandy loam, fine sandy loam, sandy clay loam.	SM	A-2-4	100	95-100	70-99	13-35	<35	NP-10
29---------------- Fluvaquents	0-3	Mucky fine sand	SM, SP, SP-SM	A-2-4, A-3	100	100	80-100	4-15	---	NP
	3-40	Loamy fine sand, fine sandy loam, sandy clay loam.	SM, SC-SM, SC	A-2-4, A-2-6	100	100	50-70	15-35	<35	NP-13

See footnote at end of table.

TABLE 13.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	4	10	40	200		
	In								Pct	
31*:										
Chaires	0-6	Fine sand	SM, SP, SP-SM	A-2-4, A-3	100	100	80-100	4-15	---	NP
	6-23	Sand, fine sand	SP, SP-SM	A-3, A-2-4	100	100	80-100	2-12	---	NP
	23-46	Sand, fine sand, loamy fine sand.	SP-SM, SM	A-3, A-2-4	100	100	85-100	5-20	---	NP
	46-80	Sandy loam, fine sandy loam, sandy clay loam.	SM, SC-SM, SC	A-2-4, A-2-6	100	100	85-100	20-35	<40	NP-20
Meadowbrook	0-7	Fine sand	SP, SP-SM	A-3	100	95-100	70-95	2-10	---	NP
	7-45	Sand, fine sand	SP, SP-SM	A-3	100	95-100	70-95	2-10	---	NP
	45-70	Loamy sand, sandy loam, fine sandy loam.	SM, SC-SM	A-2-4	100	95-100	70-99	15-30	<25	NP-7
	70-80	Sandy loam, fine sandy loam, sandy clay loam.	SM, SC-SM, SC	A-2-4, A-2-6	100	95-100	70-99	13-35	<35	NP-20
32*:										
Chaires	0-6	Mucky fine sand	SM, SP, SP-SM	A-2-4, A-3	100	100	80-100	4-15	---	NP
	6-24	Sand, fine sand	SP, SP-SM	A-3, A-2-4	100	100	80-100	2-12	---	NP
	24-52	Sand, fine sand, loamy fine sand.	SP-SM, SM	A-3, A-2-4	100	100	85-100	5-20	---	NP
	52-80	Sandy loam, fine sandy loam, sandy clay loam.	SM, SC-SM, SC	A-2-4, A-2-6	100	100	85-100	20-35	<40	NP-20
Meadowbrook	0-4	Mucky fine sand	SM, SP, SP-SM	A-2-4, A-3	100	100	70-100	4-15	---	NP
	4-42	Sand, fine sand	SP, SP-SM	A-3	100	95-100	70-95	2-10	---	NP
	42-65	Loamy sand, sandy loam, fine sandy loam.	SM, SC-SM	A-2-4	100	95-100	70-99	15-30	<25	NP-7
	65-80	Sandy loam, fine sandy loam, sandy clay loam.	SM	A-2-4	100	95-100	70-99	13-35	<35	NP-10
33*:										
Tooles	0-5	Fine sand	SP-SM, SM	A-3, A-2-4	100	100	85-95	5-15	---	NP
	5-25	Sand, fine sand	SP-SM, SM	A-3, A-2-4	100	100	85-95	5-15	---	NP
	25-42	Sandy clay loam, clay loam.	SC, CL	A-6	100	100	85-95	36-55	25-30	11-15
	42	Unweathered bedrock.	---	---	---	---	---	---	---	---
Meadowbrook	0-6	Fine sand	SP-SM	A-3	100	100	95-100	5-10	---	NP
	6-42	Sand, fine sand	SP, SP-SM	A-3	100	100	95-100	3-8	---	NP
	42-55	Sandy loam, fine sandy loam, sandy clay loam.	SM, SC-SM, SC	A-2, A-4, A-6	100	100	95-100	15-40	<40	3-20
	55	Unweathered bedrock.	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 13.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In								Pct	
33*:										
Rawhide---------	0-10	Mucky fine sand	SM, SP-SM	A-3, A-2-4	100	100	85-100	5-20	---	NP
	10-45	Sandy loam, fine sandy loam, sandy clay loam.	SC	A-2-4, A-2-6	100	100	85-100	20-45	23-38	7-15
	45-80	Fine sand, loamy sand, sandy clay loam.	SP-SM, SM, SC	A-2-4, A-2-6	100	100	80-100	12-25	<40	NP-10
34--------------- Ortega	0-6	Fine sand--------	SP, SP-SM	A-3	100	100	90-100	3-8	---	NP
	6-80	Fine sand, sand	SP, SP-SM	A-3	100	100	90-100	2-7	---	NP
36--------------- Wampee	0-6	Fine sand--------	SP-SM	A-3, A-2	90-100	80-100	70-98	5-12	---	NP
	6-32	Loamy fine sand, gravelly fine sand, loamy sand, sand, fine sand.	SM, SP-SM	A-3, A-2	80-100	68-98	65-95	5-30	---	NP
	32-80	Sandy clay loam, gravelly sandy clay loam, sandy loam.	SC-SM, SC	A-2, A-4, A-6	80-100	68-98	65-95	25-50	16-40	4-20
37*:										
Pantego----------	0-10	Mucky loamy sand	SM, SP-SM	A-2	100	95-100	60-100	12-30	---	NP
	10-45	Sandy loam, sandy clay loam, clay loam.	SC, SM, CL, ML	A-2, A-4, A-6	100	95-100	65-100	30-80	20-40	4-16
	45-80	Clay loam, sandy clay loam, sandy clay.	CL, SC	A-6, A-7	100	95-100	80-100	36-80	25-49	11-24
Surrency--------	0-8	Mucky fine sand	SP-SM, SM, SC-SM	A-3, A-2-4	100	95-100	50-100	5-20	<20	NP-5
	8-32	Loamy sand, sand, fine sand.	SP-SM, SM	A-2-4	100	95-100	50-100	10-26	---	NP
	32-60	Sandy loam, sandy clay loam.	SM, SC-SM, SC	A-2	100	95-100	75-100	22-35	<30	NP-10
	60-80	Sandy clay loam	SM, SC, SC-SM	A-2, A-4, A-6	100	95-100	80-100	30-44	<35	NP-15
38*:										
Pantego----------	0-8	Mucky loamy sand	SM, SP-SM	A-2	100	95-100	60-95	12-30	<35	NP
	8-19	Sandy clay loam, sandy loam, clay loam.	SC, CL, SC-SM, CL-ML	A-4, A-6, A-2	100	95-100	65-100	30-80	20-40	4-16
	19-80	Clay loam, sandy clay, sandy clay loam.	CL, SC	A-6, A-7	100	95-100	80-100	36-80	25-49	11-24
Surrency--------	0-6	Mucky fine sand	SP-SM, SM, SC-SM	A-3, A-2-4	100	95-100	50-100	5-20	<20	NP-5
	6-32	Loamy sand, sand, fine sand.	SP-SM, SM	A-2-4	100	95-100	50-100	10-26	---	NP
	32-60	Sandy loam, sandy clay loam.	SM, SC-SM, SC	A-2	100	95-100	75-100	22-35	<30	NP-10
	60-80	Sandy clay loam	SM, SC, SC-SM	A-2, A-4, A-6	100	95-100	80-100	30-44	<35	NP-15

See footnote at end of table.

TABLE 13.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In								Pct	
39 Eunola	0-18	Fine sand	SM, SP-SM	A-2, A-3	100	95-100	70-100	8-35	---	NP
	18-58	Sandy clay loam, sandy clay, sandy loam.	SC, CL	A-4, A-6, A-7	100	95-100	80-100	36-60	20-45	7-20
	58-80	Sand, loamy sand, fine sand.	SM, SP-SM	A-2, A-3	100	98-100	50-75	5-30	---	NP
41*:										
Meadowbrook	0-6	Mucky fine sand	SM, SP, SP-SM	A-2-4, A-3	100	100	70-100	4-15	---	NP
	6-45	Sand, fine sand	SP, SP-SM	A-3	100	95-100	70-95	2-10	---	NP
	45-80	Sandy loam, fine sandy loam, sandy clay loam.	SM	A-2-4	100	95-100	70-99	13-35	<35	NP-10
Harbeson	0-12	Mucky fine sand	SM, SP-SM	A-2	100	98-100	75-95	10-25	---	NP
	12-63	Loamy fine sand, sand, fine sand.	SM, SP-SM	A-3, A-2-4	100	98-100	70-95	5-25	---	NP
	63-80	Sandy loam, fine sandy loam, sandy clay loam.	SM, SC-SM, SC	A-2-4, A-2-6	100	98-100	75-100	15-45	<40	3-20
42*:										
Sapelo	0-18	Fine sand	SM, SP, SP-SM	A-2, A-3	100	100	85-100	4-20	---	NP
	18-40	Fine sand, sand, loamy fine sand.	SM, SP-SM	A-2, A-3	100	100	80-100	8-20	---	NP
	40-56	Fine sand, sand, loamy fine sand.	SM, SP, SP-SM	A-2, A-3	100	100	75-100	4-20	---	NP
	56-80	Sandy loam, sandy clay loam, fine sandy loam.	SM, SC, SC-SM	A-2, A-4, A-6	100	100	80-100	20-50	<40	NP-20
Clara	0-4	Fine sand	SP, SP-SM	A-3	100	100	85-100	1-5	---	NP
	4-15	Sand, fine sand	SP, SP-SM	A-3, A-2-4	100	100	85-100	2-12	---	NP
	15-80	Sand, fine sand	SP, SP-SM	A-3, A-2-4	100	100	85-100	2-12	---	NP
Surrency	0-7	Mucky fine sand	SP-SM, SM, SC-SM	A-3, A-2-4	100	95-100	50-100	5-20	<20	NP-5
	7-32	Loamy sand, sand, fine sand.	SP-SM, SM	A-2-4	100	95-100	50-100	10-26	---	NP
	32-80	Sandy loam, sandy clay loam.	SM, SC-SM, SC	A-2	100	95-100	75-100	22-35	<30	NP-10
43*:										
Garcon	0-7	Fine sand	SP-SM, SM	A-3, A-2-4	100	95-100	80-95	8-20	---	NP
	7-26	Loamy fine sand, fine sand.	SP-SM, SM	A-2-4, A-3	100	95-100	80-95	8-20	---	NP
	26-51	Sandy loam, fine sandy loam, sandy clay loam.	SM, SC-SM	A-2-4	100	85-100	80-95	18-35	<25	NP-7
	51-80	Fine sand, sand, loamy fine sand.	SP-SM, SP	A-3, A-2-4	100	98-100	75-95	4-12	---	NP
Albany	0-63	Fine sand	SM, SP-SM	A-2	100	100	75-90	10-20	---	NP
	63-80	Sandy clay loam, sandy loam, fine sandy loam.	SC, SM, SC-SM	A-2, A-4, A-6	97-100	95-100	70-100	20-50	<40	NP-17

See footnote at end of table.

TABLE 13.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	4	10	40	200		
	In								Pct	
43*:										
Meadowbrook-----	0-6	Fine sand--------	SP, SP-SM	A-3	100	95-100	70-95	2-10	---	NP
	6-45	Sand, fine sand	SP, SP-SM	A-3	100	95-100	70-95	2-10	---	NP
	45-80	Sandy loam, fine sandy loam, sandy clay loam.	SM	A-2-4	100	95-100	70-99	13-35	<35	NP-10
44*:										
Albany----------	0-53	Fine sand--------	SM, SP-SM	A-2	100	100	75-90	10-20	---	NP
	53-80	Sandy clay loam, sandy loam, fine sandy loam.	SC, SM, SC-SM	A-2, A-4, A-6	97-100	95-100	70-100	20-50	<40	NP-17
Ousley----------	0-4	Fine sand--------	SP-SM, SM	A-2, A-3	100	100	70-100	5-25	---	NP
	4-80	Sand, fine sand.	SP-SM, SM, SP	A-1, A-2, A-3	100	95-100	36-99	2-15	---	NP
Meadowbrook-----	0-6	Fine sand--------	SP, SP-SM	A-3	100	95-100	70-95	2-10	---	NP
	6-45	Sand, fine sand	SP, SP-SM	A-3	100	95-100	70-95	2-10	---	NP
	45-80	Sandy loam, fine sandy loam, sandy clay loam.	SM, SC-SM, SC	A-2-4, A-2-6	100	95-100	70-99	13-35	<35	NP-20
45*:										
Wekiva----------	0-6	Fine sand--------	SM, SP-SM	A-3, A-2-4	98-100	98-100	98-100	6-18	---	NP
	6-14	Fine sand, loamy fine sand.	SM, SP-SM	A-3, A-2-4	98-100	98-100	98-100	6-18	---	NP
	14-26	Fine sandy loam, sandy clay loam.	SC, SC-SM, SM	A-6, A-2-4, A-4, A-2-6	98-100	98-100	97-100	25-45	<40	NP-24
	26	Unweathered bedrock.	---	---	---	---	---	---	---	---
Rawhide---------	0-8	Mucky fine sand	SM, SP-SM	A-3, A-2-4	100	100	85-100	5-20	---	NP
	8-68	Sandy loam, fine sandy loam, sandy clay loam.	SC	A-2-4, A-2-6	100	100	85-100	20-45	23-38	7-15
	68-80	Fine sand, loamy sand, sandy clay loam.	SP-SM, SM, SC	A-2-4, A-2-6	100	100	80-100	12-25	<40	NP-10
Tooles----------	0-6	Fine sand--------	SP-SM, SM	A-3, A-2-4	100	100	85-95	5-15	---	NP
	6-32	Sand, fine sand	SP-SM, SM	A-3, A-2-4	100	100	85-95	5-15	---	NP
	32-45	Sandy clay loam, clay loam.	SC, CL	A-6	100	100	85-95	36-55	25-30	11-15
	45	Unweathered bedrock.	---	---	---	---	---	---	---	---
46*:										
Tooles----------	0-8	Fine sand--------	SP-SM, SM	A-3, A-2-4	100	100	85-95	5-15	---	NP
	8-28	Sand, fine sand	SP-SM, SM	A-3, A-2-4	100	100	85-95	5-15	---	NP
	28-43	Sandy clay loam, clay loam.	SC, CL	A-6	100	100	85-95	36-55	25-30	11-15
	43	Unweathered bedrock.	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 13.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In								Pct	
46*:										
Rawhide----------	0-18	Mucky fine sand	SM, SP-SM	A-3, A-2-4	100	100	85-100	5-20	---	NP
	18-40	Sandy loam, fine sandy loam, sandy clay loam.	SC	A-2-4, A-2-6	100	100	85-100	20-45	23-38	7-15
	40-80	Loamy fine sand, sandy loam, sandy clay loam.	SP-SM, SM, SC	A-2-4, A-2-6	100	100	80-100	12-25	<40	NP-10
48*:										
Otela-----------	0-58	Fine sand--------	SP-SM, SM	A-3, A-2-4	97-100	95-100	75-95	5-15	---	NP
	58-72	Sandy loam, sandy clay loam.	SC, SC-SM, SM	A-4, A-6, A-2-4, A-2-6	97-100	95-100	75-95	20-50	<40	NP-15
	72	Unweathered bedrock.	---	---	---	---	---	---	---	---
Shadeville------	0-8	Fine sand--------	SP-SM, SM	A-3, A-2-4	100	100	85-100	5-15	---	NP
	8-28	Sand, fine sand	SP-SM, SM	A-3, A-2-4	100	100	85-100	5-15	---	NP
	28-55	Sandy loam, fine sandy loam, sandy clay loam.	SC-SM, SC, SM	A-2-4, A-2-6, A-4, A-6	100	100	85-100	20-45	<35	NP-20
	55	Weathered bedrock	---	---	---	---	---	---	---	---
Penney----------	0-7	Fine sand--------	SP, SP-SM	A-3	100	95-100	75-100	2-8	---	NP
	7-54	Sand, fine sand	SP, SP-SM	A-3	100	95-100	75-100	2-8	---	NP
	54-80	Sand, fine sand	SP-SM	A-3, A-2-4	100	95-100	75-100	5-12	---	NP
52--------------- Mandarin	0-25	Fine sand--------	SP, SP-SM	A-3	100	100	90-100	2-10	---	NP
	25-37	Fine sand, sand, loamy fine sand.	SP-SM, SM	A-3, A-2-4	100	100	90-100	5-15	---	NP
	37-80	Fine sand, sand	SP, SP-SM	A-3	100	100	90-100	2-7	---	NP
53--------------- Penney	0-4	Fine sand--------	SP, SP-SM	A-3	100	95-100	75-100	2-8	---	NP
	4-55	Sand, fine sand	SP, SP-SM	A-3	100	95-100	75-100	2-8	---	NP
	55-80	Sand, fine sand	SP-SM	A-3, A-2-4	100	95-100	75-100	5-12	---	NP
54*:										
Garcon----------	0-6	Fine sand--------	SP-SM, SM	A-3, A-2-4	100	95-100	80-95	8-20	---	NP
	6-23	Loamy fine sand, loamy sand, fine sand.	SP-SM, SM	A-2-4, A-3	100	95-100	80-95	8-20	---	NP
	23-58	Sandy loam, fine sandy loam, sandy clay loam.	SM, SC-SM	A-2-4	100	85-100	80-95	18-35	<25	NP-7
	58-80	Fine sand, sand	SP-SM, SP	A-3	100	98-100	75-95	4-10	---	NP
Eunola----------	0-15	Fine sand--------	SM, SP-SM	A-2, A-4, A-2-4	100	98-100	50-80	10-38	---	NP
	15-39	Sandy clay loam, clay loam, fine sandy loam.	SM, SC, SC-SM, CL	A-4, A-2, A-6	100	90-100	75-95	30-60	<36	NP-15
	39-55	Sandy loam, sandy clay loam.	SM, SC, SC-SM	A-2, A-4	100	98-100	60-70	30-40	<30	NP-10
	55-80	Sand, loamy sand, fine sand.	SM, SP-SM	A-2, A-3	100	98-100	50-75	5-30	---	NP

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 14.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS

(The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated)

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH					Pct
2: Penney	0-7	0-3	1.30-1.55	6.0-20	0.04-0.09	3.6-6.0	Low	0.10	5	1	0-2
	7-55	0-3	1.35-1.65	6.0-20	0.02-0.07	3.6-6.0	Low	0.10			
	55-80	2-6	1.50-1.65	6.0-20	0.05-0.08	3.6-6.0	Low	0.10			
4*:											
Blanton	0-44	1-7	1.30-1.60	6.0-20	0.03-0.07	4.5-6.0	Low	0.10	5	1	.5-1
	44-80	12-40	1.60-1.70	0.2-2.0	0.10-0.15	4.5-5.5	Low	0.20			
Ortega	0-6	1-3	1.20-1.45	6.0-20	0.05-0.08	3.6-6.5	Low	0.10	5	1	1-2
	6-80	1-3	1.35-1.60	6.0-20	0.03-0.06	3.6-6.5	Low	0.10			
5*:											
Otela	0-60	0-5	1.45-1.65	6.0-20	0.05-0.10	4.5-7.3	Low	0.10	5	1	<2
	60-75	8-35	1.55-1.75	0.2-2.0	0.06-0.15	3.6-7.8	Low	0.20			
	75-80	30-65	1.55-1.75	0.06-0.6	0.08-0.18	3.6-8.4	Moderate	0.24			
Penney	0-7	0-3	1.30-1.55	6.0-20	0.04-0.09	3.6-6.0	Low	0.10	5	1	0-2
	7-60	0-3	1.35-1.65	6.0-20	0.02-0.07	3.6-6.0	Low	0.10			
	60-80	2-6	1.50-1.65	6.0-20	0.05-0.08	3.6-6.0	Low	0.10			
6*:											
Oaky	0-6	<3	1.40-1.50	6.0-20	0.05-0.10	4.5-6.5	Low	0.10	5	1	1-2
	6-13	<3	1.45-1.60	6.0-20	0.02-0.05	4.5-6.5	Low	0.10			
	13-51	10-35	1.55-1.65	0.06-0.2	0.10-0.25	6.1-7.8	Low	0.20			
	51-80	10-30	1.40-1.65	2.0-6.0	0.10-0.15	6.1-7.8	Low	0.15			
Rawhide	0-6	2-8	1.10-1.35	6.0-20	0.15-0.25	5.6-6.5	Low	0.10	5	8	10-20
	6-65	18-35	1.40-1.60	<0.2	0.10-0.15	6.1-8.4	Low	0.20			
	65-80	3-30	1.45-1.70	2.0-6.0	0.05-0.15	6.1-8.4	Low	0.15			
7*:											
Chaires	0-24	1-3	1.10-1.45	6.0-20	0.05-0.15	3.6-5.5	Low	0.10	5	1	1-3
	24-46	2-13	1.45-1.60	0.6-2.0	0.15-0.20	3.6-5.5	Low	0.20			
	46-72	15-35	1.60-1.70	0.2-0.6	0.10-0.20	4.5-7.3	Low	0.24			
Chaires	0-3	2-5	1.10-1.35	6.0-20	0.15-0.20	3.6-5.5	Low	0.10	5	8	10-20
	3-24	0-3	1.35-1.45	6.0-20	0.02-0.05	3.6-6.5	Low	0.10			
	24-50	2-13	1.45-1.60	0.6-2.0	0.05-0.10	3.6-6.5	Low	0.20			
	50-80	15-35	1.60-1.70	0.2-0.6	0.10-0.15	4.5-7.3	Low	0.37			
9*:											
Sapelo	0-28	2-5	1.40-1.65	6.0-20	0.03-0.10	3.6-5.5	Low	0.10	5	1	1-3
	28-34	3-7	1.35-1.60	0.6-2.0	0.10-0.15	3.6-5.5	Low	0.15			
	34-60	3-6	1.50-1.70	6.0-20	0.03-0.15	3.6-5.7	Low	0.17			
	60-80	10-30	1.55-1.75	0.2-2.0	0.12-0.17	3.6-5.6	Low	0.24			
Chaires	0-6	2-5	1.10-1.35	6.0-20	0.15-0.20	3.6-5.5	Low	0.10	5	8	10-20
	6-25	0-3	1.35-1.45	6.0-20	0.02-0.05	3.6-6.5	Low	0.10			
	25-65	2-13	1.45-1.60	0.6-2.0	0.05-0.10	3.6-6.5	Low	0.20			
	65-80	15-35	1.60-1.70	0.2-0.6	0.10-0.15	4.5-7.3	Low	0.37			
10*:											
Pamlico	0-31	---	0.20-0.65	0.6-6.0	0.24-0.40	3.6-4.4	Low	----	---	8	20-60
	31-80	5-10	1.60-1.75	6.0-20	0.10-0.20	3.6-5.5	Low	0.10			

See footnote at end of table.

TABLE 14.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodi-bility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH					Pct
10*:											
Dorovan----------	0-62	---	0.25-0.40	0.6-2.0	0.20-0.25	3.6-4.4	-------------	----	---	8	20-80
	62-80	5-20	1.40-1.65	6.0-20	0.05-0.08	4.5-5.5	Low----------	----			
11*:											
Pamlico----------	0-22	---	0.20-0.65	0.6-6.0	0.24-0.40	3.6-4.4	Low----------	----	---	8	20-80
	22-80	5-10	1.60-1.75	6.0-20	0.02-0.10	3.6-5.5	Low----------	0.10			
Dorovan----------	0-57	---	0.25-0.40	0.6-2.0	0.20-0.25	3.6-4.4	-------------	----	---	8	20-80
	57-80	5-20	1.40-1.65	6.0-20	0.05-0.08	4.5-5.5	Low----------	----			
13*:											
Meadowbrook------	0-8	0-3	1.35-1.65	6.0-20	0.05-0.10	3.6-7.3	Low----------	0.10	5	1	1-3
	8-64	1-6	1.35-1.65	6.0-20	0.03-0.08	3.6-8.4	Low----------	0.10			
	64-80	11-22	1.50-1.80	0.2-2.0	0.10-0.15	4.5-8.4	Low----------	0.15			
Chaires----------	0-5	1-3	1.10-1.45	6.0-20	0.05-0.15	3.6-5.5	Low----------	0.10	5	1	1-3
	5-24	0-3	1.45-1.55	6.0-20	0.02-0.05	3.6-5.5	Low----------	0.10			
	24-60	2-13	1.45-1.60	0.6-2.0	0.15-0.20	3.6-5.5	Low----------	0.20			
	60-80	15-35	1.25-1.70	0.06-0.2	0.12-0.20	4.5-7.3	Moderate-----	0.32			
14--------------- Leon	0-4	1-5	1.30-1.45	6.0-20	0.05-0.15	3.6-6.5	Low----------	0.10	5	1	1-3
	4-10	<3	1.40-1.60	6.0-20	0.02-0.08	3.6-6.5	Low----------	0.10			
	10-17	2-8	1.25-1.65	0.6-6.0	0.15-0.30	3.6-6.5	Low----------	0.15			
	17-63	1-4	1.50-1.65	2.0-20	0.05-0.13	3.6-6.5	Low----------	0.10			
	63-80	2-8	1.50-1.70	0.6-6.0	0.15-0.30	3.6-6.5	Low----------	0.15			
15*:											
Wesconnett-------	0-14	2-7	1.10-1.30	6.0-20	0.15-0.30	3.6-6.5	Low----------	0.10	5	8	10-20
	14-28	3-8	1.30-1.55	0.6-6.0	0.10-0.15	3.6-6.5	Low----------	0.15			
	28-45	2-7	1.35-1.50	6.0-20	0.05-0.08	3.6-6.5	Low----------	0.10			
	45-61	2-8	1.40-1.65	0.6-6.0	0.10-0.15	3.6-6.5	Low----------	0.15			
	61-80	2-7	1.35-1.50	6.0-20	0.05-0.08	3.6-6.5	Low----------	0.10			
Lynn Haven-------	0-13	2-5	0.80-1.35	6.0-20	0.15-0.32	3.6-5.5	Low----------	0.10	5	8	10-20
	13-19	1-4	1.40-1.60	6.0-20	0.05-0.07	3.6-5.5	Low----------	0.10			
	19-80	2-8	1.50-1.65	0.6-6.0	0.15-0.30	3.6-5.5	Low----------	0.15			
16--------------- Tooles	0-35	2-5	1.35-1.60	6.0-20	0.05-0.10	4.5-7.3	Low----------	0.10	4	1	1-4
	35-50	20-35	1.40-1.70	0.06-0.2	0.15-0.20	6.6-8.4	Moderate-----	0.28			
	50	---	---	2.0-20	---	---	-------------	----			
18*:											
Surrency---------	0-10	2-8	0.80-1.25	6.0-20	0.15-0.30	3.6-5.5	Low----------	0.10	5	8	10-20
	10-28	<10	1.50-1.65	2.0-20	0.05-0.10	3.6-5.5	Low----------	0.10			
	28-45	10-23	1.60-1.85	0.6-6.0	0.06-0.10	3.6-5.5	Low----------	0.15			
	45-80	22-35	1.65-1.85	0.6-2.0	0.10-0.15	3.6-5.5	Low----------	0.15			
Plummer----------	0-8	1-7	1.33-1.65	6.0-20.0	0.03-0.20	3.6-5.5	Low----------	0.10	5	8	1-10
	8-50	1-7	1.35-1.65	2.0-20.0	0.03-0.08	3.6-5.5	Low----------	0.10			
	50-72	15-30	1.50-1.70	0.2-2.0	0.07-0.15	3.6-5.5	Low----------	0.15			
Clara------------	0-9	0-4	1.15-1.30	6.0-20	0.15-0.20	3.6-7.3	Low----------	0.10	5	8	9-20
	9-29	1-3	1.40-1.55	6.0-20	0.05-0.10	3.6-7.3	Low----------	0.10			
	29-46	1-6	1.40-1.65	6.0-20	0.10-0.15	3.6-7.3	Low----------	0.10			
	46-80	1-12	1.50-1.70	6.0-20	0.05-0.15	3.6-7.3	Low----------	0.10			
20--------------- Plummer	0-7	1-7	1.33-1.65	6.0-20.0	0.03-0.08	3.6-5.5	Low----------	0.10	5	1	1-3
	7-55	1-7	1.35-1.65	2.0-20.0	0.03-0.08	3.6-5.5	Low----------	0.10			
	55-80	15-30	1.50-1.70	0.2-2.0	0.07-0.15	3.6-5.5	Low----------	0.15			

See footnote at end of table.

TABLE 14.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodi-bility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH					Pct
24*:											
Rawhide----------	0-6	2-8	1.10-1.35	6.0-20	0.15-0.25	5.6-6.5	Low----------	0.10	5	8	10-20
	6-40	18-35	1.40-1.60	<0.2	0.10-0.15	6.1-8.4	Low----------	0.20			
	40-80	3-30	1.45-1.70	2.0-6.0	0.05-0.15	6.1-8.4	Low----------	0.15			
Harbeson---------	0-18	3-9	0.80-1.30	2.0-20	0.20-0.25	4.5-7.8	Low----------	0.10	5	8	9-20
	18-55	3-9	1.50-1.75	6.0-20	0.03-0.10	4.5-7.8	Low----------	0.10			
	55-80	10-30	1.60-1.85	0.2-2.0	0.10-0.20	5.6-8.4	Moderate-----	0.17			
26*:											
Ridgewood--------	0-6	1-3	1.35-1.55	6.0-20	0.05-0.15	4.5-7.3	Low----------	0.10	5	1	<2
	6-80	0-5	1.35-1.65	6.0-20	0.03-0.10	4.5-7.3	Low----------	0.10			
Hurricane--------	0-5	1-4	1.35-1.60	>6.0	0.03-0.15	3.6-7.3	Low----------	0.10	5	1	<2
	5-51	1-4	1.35-1.65	>6.0	0.03-0.12	3.6-7.3	Low----------	0.10			
	51-80	2-8	1.55-1.80	2.0-6.0	0.10-0.20	3.6-6.0	Low----------	0.15			
27*:											
Albany-----------	0-64	1-10	1.40-1.55	6.0-20	0.02-0.04	3.6-6.5	Low----------	0.10	5	1	1-2
	64-80	13-35	1.55-1.65	0.2-2.0	0.10-0.16	4.5-6.0	Low----------	0.24			
Ridgewood--------	0-6	1-3	1.23-1.55	6.0-20	0.05-0.15	4.5-7.3	Low----------	0.10	5	1	<2
	6-80	0-5	1.35-1.65	6.0-20	0.03-0.10	4.5-7.3	Low----------	0.10			
28*:											
Clara------------	0-6	0-4	1.15-1.30	6.0-20	0.15-0.20	3.6-7.3	Low----------	0.10	5	8	9-20
	6-18	1-3	1.40-1.55	6.0-20	0.05-0.10	3.6-7.3	Low----------	0.10			
	18-48	1-6	1.40-1.65	6.0-20	0.10-0.15	3.6-7.3	Low----------	0.10			
	48-80	1-12	1.50-1.70	6.0-20	0.05-0.15	3.6-7.3	Low----------	0.10			
Meadowbrook------	0-6	2-5	1.10-1.35	6.0-20	0.15-0.10	3.6-7.3	Low----------	0.10	5	8	10-20
	6-45	1-6	1.35-1.65	6.0-20	0.03-0.08	3.6-8.4	Low----------	0.10			
	45-80	11-32	1.50-1.65	0.2-2.0	0.10-0.15	4.5-8.4	Low----------	0.20			
29--------------- Fluvaquents	0-3	2-5	1.10-1.35	6.0-20	0.15-0.20	5.6-7.8	Low----------	0.10	5	8	10-20
	3-40	8-30	1.35-1.55	0.2-6.0	0.06-0.14	5.6-7.8	Low----------	0.24			
31*:											
Chaires----------	0-6	2-5	1.10-1.35	6.0-20	0.15-0.20	3.6-5.5	Low----------	0.10	5	1	10-20
	6-23	0-3	1.45-1.55	6.0-20	0.02-0.05	3.6-5.5	Low----------	0.10			
	23-46	2-13	1.45-1.60	0.6-2.0	0.15-0.20	3.6-5.5	Low----------	0.20			
	46-80	15-35	1.60-1.70	0.2-0.6	0.10-0.20	4.5-7.3	Low----------	0.24			
Meadowbrook------	0-7	0-3	1.35-1.65	6.0-20	0.05-0.10	3.6-7.3	Low----------	0.10	5	1	1-3
	7-45	1-6	1.35-1.65	6.0-20	0.03-0.08	3.6-8.4	Low----------	0.10			
	45-70	9-20	1.50-1.80	0.2-2.0	0.10-0.15	4.5-8.4	Low----------	0.15			
	70-80	11-22	1.50-1.80	0.2-2.0	0.10-0.15	4.5-8.4	Low----------	0.15			
32*:											
Chaires----------	0-6	2-5	1.10-1.35	6.0-20	0.15-0.20	3.6-5.5	Low----------	0.10	5	8	1-3
	6-24	0-3	1.35-1.45	6.0-20	0.02-0.05	3.6-6.5	Low----------	0.10			
	24-52	2-13	1.45-1.60	0.6-2.0	0.05-0.10	3.6-6.5	Low----------	0.20			
	52-80	15-35	1.60-1.70	0.2-0.6	0.10-0.15	4.5-7.3	Low----------	0.37			
Meadowbrook------	0-4	2-5	1.10-1.35	6.0-20	0.15-0.20	3.6-7.3	Low----------	0.10	5	8	10-20
	4-42	1-6	1.35-1.65	6.0-20	0.03-0.08	3.6-8.4	Low----------	0.10			
	42-65	9-20	1.50-1.70	0.2-2.0	0.10-0.15	4.5-8.4	Low----------	0.15			
	65-80	11-32	1.50-1.65	0.2-2.0	0.10-0.15	4.5-8.4	Low----------	0.20			

See footnote at end of table.

TABLE 14.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodi-bility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH					Pct
33*:											
Tooles----------	0-5	2-5	1.15-1.35	6.0-20	0.05-0.10	4.5-7.3	Low----------	0.10	4	1	1-4
	5-25	2-5	1.35-1.60	6.0-20	0.05-0.10	4.5-7.3	Low----------	0.10			
	25-42	20-35	1.40-1.70	0.06-0.2	0.15-0.20	6.6-8.4	Moderate-----	0.28			
	42	---	---	2.0-20	---	---	-------------	----			
Meadowbrook-----	0-6	2-5	1.30-1.50	6.0-20	0.05-0.15	4.5-6.5	Low----------	0.10	5	1	1-4
	6-42	1-5	1.45-1.60	6.0-20	0.05-0.10	4.5-7.8	Low----------	0.10			
	42-55	18-35	1.50-1.65	0.2-2.0	0.10-0.15	5.6-8.4	Moderate-----	0.17			
	55	---	---	2.0-20	---	---	-------------	----			
Rawhide---------	0-10	2-8	1.10-1.35	6.0-20	0.15-0.25	5.6-6.5	Low----------	0.10	5	8	10-20
	10-45	18-35	1.40-1.60	<0.2	0.10-0.15	6.1-8.4	Low----------	0.20			
	45-80	3-30	1.45-1.70	2.0-6.0	0.05-0.15	6.1-8.4	Low----------	0.15			
34--------------- Ortega	0-6	1-3	1.20-1.45	6.0-20	0.05-0.08	3.6-6.5	Low----------	0.10	5	1	1-2
	6-80	1-3	1.35-1.60	6.0-20	0.03-0.06	3.6-6.5	Low----------	0.10			
36--------------- Wampee	0-6	2-10	1.40-1.60	2.0-20	0.02-0.10	4.5-7.3	Low----------	0.10	5	1	1-4
	6-32	2-15	1.40-1.60	2.0-20	0.02-0.15	4.5-6.5	Low----------	0.15			
	32-80	10-30	1.30-1.75	0.6-2.0	0.10-0.20	4.5-6.5	Low----------	0.20			
37*:											
Pantego---------	0-10	4-10	1.25-1.45	2.0-6.0	0.18-0.28	3.6-5.5	Low----------	0.15	5	8	10-20
	10-45	18-35	1.30-1.50	0.6-2.0	0.12-0.20	3.6-5.5	Low----------	0.28			
	45-80	20-40	1.30-1.60	0.6-2.0	0.15-0.20	3.6-5.5	Low----------	0.28			
Surrency--------	0-8	2-8	0.80-1.25	6.0-20	0.15-0.30	3.6-5.5	Low----------	0.10	5	8	10-20
	8-32	<10	1.50-1.65	2.0-20	0.05-0.10	3.6-5.5	Low----------	0.10			
	32-60	10-23	1.60-1.85	0.6-6.0	0.06-0.10	3.6-5.5	Low----------	0.15			
	60-80	22-35	1.65-1.85	0.6-2.0	0.10-0.15	3.6-5.5	Low----------	0.15			
38*:											
Pantego---------	0-8	5-15	1.20-1.40	0.6-2.0	0.20-0.30	3.6-5.5	Low----------	0.10	5	8	10-20
	8-19	18-35	1.30-1.50	0.6-2.0	0.12-0.20	3.6-5.5	Low----------	0.28			
	19-80	20-40	1.30-1.60	0.6-2.0	0.15-0.20	3.6-5.5	Low----------	0.28			
Surrency--------	0-6	2-8	0.80-1.25	6.0-20	0.15-0.30	3.6-5.0	Low----------	0.10	5	8	10-20
	6-32	<10	1.50-1.65	2.0-20	0.05-0.10	3.6-5.0	Low----------	0.10			
	32-60	10-23	1.60-1.85	0.6-6.0	0.06-0.10	3.6-5.5	Low----------	0.15			
	60-80	22-35	1.65-1.85	0.6-2.0	0.10-0.15	3.6-5.5	Low----------	0.15			
39--------------- Eunola	0-18	3-10	1.45-1.65	2.0-20	0.05-0.07	4.5-5.5	Low----------	0.10	5	1	1-2
	18-58	15-40	1.55-1.70	0.2-2.0	0.09-0.12	4.5-5.5	Low----------	0.24			
	58-80	2-11	1.45-1.75	6.0-20	0.02-0.06	4.5-5.5	Low----------	0.20			
41*:											
Meadowbrook-----	0-6	2-5	1.10-1.35	6.0-20	0.15-0.20	3.6-7.3	Low----------	0.10	5	8	10-20
	6-45	1-6	1.35-1.65	6.0-20	0.03-0.08	3.6-8.4	Low----------	0.10			
	45-80	11-32	1.50-1.65	0.2-2.0	0.10-0.15	4.5-8.4	Low----------	0.20			
Harbeson--------	0-12	3-9	0.80-1.30	2.0-20	0.20-0.25	4.5-7.8	Low----------	0.10	5	8	9-20
	12-63	3-9	1.50-1.75	6.0-20	0.03-0.10	4.5-7.8	Low----------	0.10			
	63-80	10-30	1.60-1.85	0.2-2.0	0.10-0.20	5.6-8.4	Moderate-----	0.17			
42*:											
Sapelo----------	0-18	2-5	1.40-1.65	6.0-20	0.03-0.10	3.6-5.5	Low----------	0.10	5	1	1-3
	18-40	3-7	1.35-1.60	0.6-2.0	0.10-0.15	3.6-5.5	Low----------	0.15			
	40-56	3-6	1.50-1.70	6.0-20	0.03-0.15	3.6-6.7	Low----------	0.17			
	56-80	10-30	1.55-1.75	0.2-2.0	0.12-0.17	3.6-6.0	Low----------	0.24			

See footnote at end of table.

TABLE 14.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH					Pct
42*:											
Clara-----------	0-4	0-4	1.40-1.55	6.0-20	0.05-0.10	5.1-8.4	Low-----------	0.10	5	1	1-8
	4-15	1-3	1.40-1.55	6.0-20	0.05-0.10	5.1-8.4	Low-----------	0.10			
	15-80	1-6	1.40-1.65	6.0-20	0.10-0.15	5.1-8.4	Low-----------	0.10			
Surrency--------	0-7	2-8	0.80-1.25	6.0-20	0.15-0.30	3.6-5.5	Low-----------	0.10	5	8	10-20
	7-32	<10	1.50-1.65	2.0-20	0.05-0.10	3.6-5.5	Low-----------	0.10			
	32-80	10-23	1.60-1.85	0.6-6.0	0.06-0.10	3.6-5.5	Low-----------	0.15			
43*:											
Garcon----------	0-7	3-8	1.25-1.50	6.0-20	0.10-0.15	4.5-5.5	Low-----------	0.10	5	1	1-3
	7-26	3-8	1.40-1.65	6.0-20	0.05-0.10	4.5-5.5	Low-----------	0.10			
	26-51	12-30	1.55-1.70	0.6-2.0	0.10-0.15	4.5-5.5	Low-----------	0.24			
	51-80	3-10	1.50-1.70	6.0-20	0.05-0.08	4.5-5.5	Low-----------	0.10			
Albany----------	0-63	1-10	1.40-1.55	6.0-20	0.02-0.04	3.6-6.5	Low-----------	0.10	5	1	1-2
	63-80	13-35	1.55-1.65	0.2-2.0	0.10-0.16	4.5-6.0	Low-----------	0.24			
Meadowbrook-----	0-6	0-3	1.15-1.40	6.0-20	0.05-0.10	3.6-7.3	Low-----------	0.10	5	8	2-4
	6-45	1-6	1.35-1.65	6.0-20	0.03-0.08	3.6-8.4	Low-----------	0.10			
	45-80	11-32	1.50-1.65	0.2-2.0	0.10-0.15	4.5-8.4	Low-----------	0.20			
44*:											
Albany----------	0-53	1-10	1.40-1.55	6.0-20	0.02-0.04	3.6-6.5	Low-----------	0.10	5	1	1-2
	53-80	13-35	1.55-1.65	0.2-2.0	0.10-0.16	4.5-6.0	Low-----------	0.24			
Ousley----------	0-4	1-3	1.35-1.45	6.0-20	0.05-0.10	4.5-6.0	Low-----------	0.10	5	1	<.5
	4-80	1-2	1.45-1.60	6.0-20	0.02-0.06	4.5-6.0	Low-----------	0.15			
Meadowbrook-----	0-6	0-3	1.35-1.65	6.0-20	0.05-0.10	3.6-7.3	Low-----------	0.10	5	8	10-20
	6-45	1-6	1.35-1.65	6.0-20	0.03-0.08	3.6-8.4	Low-----------	0.10			
	45-80	11-22	1.50-1.80	0.2-2.0	0.10-0.15	4.5-8.4	Low-----------	0.15			
45*:											
Wekiva----------	0-6	2-6	1.30-1.50	6.0-20	0.05-0.15	6.1-7.3	Low-----------	0.10	2	1	2-5
	6-14	1-6	1.45-1.60	6.0-20	0.05-0.10	6.1-7.3	Low-----------	0.10			
	14-26	12-35	1.45-1.65	0.2-0.6	0.10-0.15	6.1-7.3	Low-----------	0.15			
	26	---	---	2.0-20.0	---	---	--------------	----			
Rawhide---------	0-8	2-8	1.10-1.35	6.0-20	0.15-0.25	5.6-6.5	Low-----------	0.10	5	8	10-20
	8-68	18-35	1.40-1.60	<0.2	0.10-0.15	6.1-8.4	Low-----------	0.20			
	68-80	3-30	1.45-1.70	2.0-6.0	0.05-0.15	6.1-8.4	Low-----------	0.15			
Tooles----------	0-6	2-5	1.15-1.35	6.0-20	0.05-0.10	4.5-7.3	Low-----------	0.10	4	1	1-4
	6-32	2-5	1.35-1.60	6.0-20	0.05-0.10	4.5-7.3	Low-----------	0.10			
	32-45	20-35	1.40-1.70	0.06-0.2	0.15-0.20	6.6-8.4	Moderate-----	0.28			
	45	---	---	2.0-20	---	---	--------------	----			
46*:											
Tooles----------	0-8	2-5	1.15-1.35	6.0-20	0.05-0.10	4.5-7.3	Low-----------	0.10	4	1	1-4
	8-28	2-5	1.35-1.60	6.0-20	0.05-0.10	4.5-7.3	Low-----------	0.10			
	28-43	20-35	1.40-1.70	0.06-0.2	0.15-0.20	6.6-8.4	Moderate-----	0.28			
	43	---	---	2.0-20	---	---	--------------	----			
Rawhide---------	0-18	2-8	1.10-1.35	6.0-20	0.15-0.25	5.6-6.5	Low-----------	0.10	5	8	10-20
	18-40	18-35	1.40-1.60	<0.2	0.10-0.15	6.1-8.4	Low-----------	0.20			
	40-80	3-30	1.45-1.70	2.0-6.0	0.05-0.15	6.1-8.4	Low-----------	0.15			

See footnote at end of table.

TABLE 14.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH					Pct
48*:											
Otela----------	0-58	2-5	1.45-1.65	6.0-20	0.05-0.10	4.5-6.0	Low----------	0.10	5	1	.5-2
	58-72	15-32	1.55-1.75	0.2-0.6	0.06-0.15	4.5-8.4	Low----------	0.24			
	72	---	---	2.0-20	---	---	-------------	----			
Shadeville------	0-8	2-10	1.40-1.60	6.0-20	0.05-0.10	4.5-7.3	Low----------	0.10	5	1	.5-2
	8-28	2-10	1.45-1.70	6.0-20	0.05-0.10	4.5-7.3	Low----------	0.10			
	28-55	14-35	1.45-1.70	0.6-2.0	0.10-0.15	4.5-8.4	Low----------	0.20			
	55	---	---	2.0-20.0	---	---	-------------	----			
Penney---------	0-7	0-3	1.30-1.55	6.0-20	0.04-0.09	3.6-6.0	Low----------	0.10	5	2	0-2
	7-54	0-3	1.35-1.65	6.0-20	0.02-0.07	3.6-6.0	Low----------	0.10			
	54-80	2-6	1.50-1.65	6.0-20	0.05-0.08	3.6-6.0	Low----------	0.10			
52--------------- Mandarin	0-25	0-3	1.35-1.45	6.0-20	0.03-0.07	3.6-6.0	Low----------	0.10	5	1	<3
	25-37	2-9	1.45-1.60	0.6-2.0	0.10-0.15	3.6-6.0	Low----------	0.15			
	37-80	0-3	1.35-1.45	6.0-20	0.03-0.07	3.6-7.3	Low----------	0.10			
53--------------- Penney	0-4	0-3	1.30-1.55	6.0-20	0.04-0.09	3.6-6.0	Low----------	0.10	5	1	0-2
	4-55	0-3	1.35-1.65	6.0-20	0.02-0.07	3.6-6.0	Low----------	0.10			
	55-80	2-6	1.50-1.65	6.0-20	0.05-0.08	3.6-6.0	Low----------	0.10			
54*:											
Garcon----------	0-6	3-8	1.25-1.50	6.0-20	0.10-0.15	4.5-5.5	Low----------	0.10	5	1	1-3
	6-23	3-8	1.40-1.65	6.0-20	0.05-0.10	4.5-5.5	Low----------	0.10			
	23-58	12-30	1.55-1.70	0.6-2.0	0.10-0.15	4.5-5.5	Low----------	0.24			
	58-80	3-10	1.50-1.70	6.0-20	0.05-0.08	4.5-5.5	Low----------	0.10			
Eunola----------	0-15	3-11	1.45-1.70	2.0-6.0	0.06-0.11	4.5-5.5	Low----------	0.15	5	1	.5-2
	15-39	18-35	1.35-1.65	0.6-2.0	0.12-0.17	4.5-5.5	Low----------	0.28			
	39-55	8-25	1.35-1.65	2.0-6.0	0.10-0.16	4.5-5.5	Low----------	0.24			
	55-80	2-11	1.45-1.75	6.0-20	0.02-0.06	4.5-5.5	Low----------	0.20			

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 15.--SOIL AND WATER FEATURES

("Flooding" and "water table" and terms such as "rare," "brief," "apparent," and "perched" are explained in the text. The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Soil name and map symbol	Hydro-logic group	Flooding		High water table		Depth to bedrock	Subsidence		Risk of corrosion	
		Frequency	Duration	Depth	Kind		Ini-tial	Total	Uncoated steel	Concrete
				Ft		In	In	In		
2----------------- Penney	A	None---------	---	>6.0	---	>60	---	---	Low------	High.
4*:										
Blanton----------	A	None---------	---	4.0-6.0	Perched	>60	---	---	High-----	High.
Ortega-----------	A	None---------	---	3.5-5.0	Apparent	>60	---	---	Low------	High.
5*:										
Otela------------	A	None---------	---	4.0-6.0	Perched	>60	---	---	Low------	Low.
Penney-----------	A	None---------	---	>6.0	---	>60	---	---	Low------	High.
6*:										
Oaky-------------	D	None---------	---	0.5-1.5	Apparent	>-60	---	---	High-----	Moderate.
Rawhide----------	D	None---------	---	+2-0	Apparent	>60	---	---	High-----	High.
7*:										
Chaires----------	B/D	None---------	---	0.5-1.5	Apparent	>60	---	---	High-----	High.
Chaires----------	D	None---------	---	+2-0	Apparent	>60	---	---	Moderate	High.
9*:										
Sapelo-----------	B/D	None---------	---	0.5-1.5	Apparent	>60	---	---	High-----	High.
Chaires----------	D	None---------	---	+2-0	Apparent	>60	---	---	Moderate	High.
10*:										
Pamlico----------	D	Frequent----	Brief to long.	+1-0.5	Apparent	>60	4-12	10-29	High-----	High.
Dorovan----------	D	Frequent----	Very long	+1-0.5	Apparent	>60	6-12	51-80	High-----	High.
11*:										
Pamlico----------	D	None---------	---	+2-0	Apparent	>60	4-20	10-36	High-----	High.
Dorovan----------	D	None---------	---	+2-0	Apparent	>60	6-12	51-80	High-----	High.
13*:										
Meadowbrook------	B/D	None---------	---	0-1.0	Apparent	>60	---	---	Moderate	High.
Chaires----------	B/D	None---------	---	0.5-1.5	Apparent	>60	---	---	High-----	High.
14---------------- Leon	B/D	None---------	---	0.5-1.5	Apparent	>60	---	---	High-----	High.
15*:										
Wesconnett-------	D	None---------	---	+2-0	Apparent	>60	---	---	Moderate	High.
Lynn Haven-------	D	None---------	---	+2-0	Apparent	>60	---	---	Moderate	High.
16---------------- Tooles	B/D	None---------	---	0.5-1.0	Apparent	40-60	---	---	High-----	Moderate.

See footnote at end of table.

TABLE 15.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic group	Flooding		High water table		Depth to bedrock	Subsidence		Risk of corrosion	
		Frequency	Duration	Depth	Kind		Ini-tial	Total	Uncoated steel	Concrete
				Ft		In	In	In		
18*:										
Surrency	D	None	---	+2-0	Apparent	>60	---	---	High	High.
Plummer	D	None	---	+2-0	Apparent	>60	---	---	Moderate	High.
Clara	D	None	---	+2-0	Apparent	>60	---	---	High	Moderate.
20 Plummer	B/D	None	---	0.5-1.5	Apparent	>60	---	---	Moderate	High.
24*:										
Rawhide	D	None	---	+2-0	Apparent	>60	---	---	High	High.
Harbeson	D	None	---	+2-0	Apparent	>72	0-2	2-6	Moderate	High.
26*:										
Ridgewood	C	None	---	2.0-3.5	Apparent	>60	---	---	Low	High.
Hurricane	C	None	---	2.0-3.5	Apparent	>60	---	---	Low	Moderate.
27*:										
Albany	C	None	---	1.0-2.5	Apparent	>60	---	---	High	High.
Ridgewood	C	None	---	2.0-3.5	Apparent	>60	---	---	Low	High.
28*:										
Clara	D	Frequent	Brief	0-0.5	Apparent	>60	---	---	High	Moderate.
Meadowbrook	D	Frequent	Very long	+2-0	Apparent	>60	---	---	Moderate	High.
29 Fluvaquents	D	Frequent	Long to very long	0-0.5	Apparent	>60	---	---	High	Moderate.
31*:										
Chaires	D	None	---	0-0.5	Apparent	>60	---	---	High	High.
Meadowbrook	D	None	---	0-0.5	Apparent	>60	---	---	Moderate	High.
32*:										
Chaires	D	None	---	+2-0	Apparent	>60	---	---	Moderate	High.
Meadowbrook	D	None	---	+2-0	Apparent	>60	---	---	Moderate	High.
33*:										
Tooles	D	Frequent	Brief	0-0.5	Apparent	40-60	---	---	High	Moderate.
Meadowbrook	D	Frequent	Brief	0-0.5	Apparent	55-80	---	---	High	Low.
Rawhide	D	Frequent	Long	+2-0	Apparent	>60	---	---	High	High.
34 Ortega	A	None	---	4.0-5.0	Apparent	>60	---	---	Low	High.
36 Wampee	C	None	---	1.0-3.0	Apparent	>60	---	---	High	Moderate.
37*:										
Pantego	D	None	---	+2-0	Apparent	>60	---	---	High	High.
Surrency	D	None	---	+2-0	Apparent	>60	---	---	High	High.

See footnote at end of table.

TABLE 15.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic group	Flooding		High water table		Depth to bedrock	Subsidence		Risk of corrosion	
		Frequency	Duration	Depth	Kind		Ini-tial	Total	Uncoated steel	Concrete
				Ft		In	In	In		
38*:										
Pantego----------	D	Frequent----	Long------	0-0.5	Apparent	>60	---	---	High-----	High.
Surrency---------	D	Frequent----	Long------	0-0.5	Apparent	>60	---	---	High-----	High.
39---------------- Eunola	C	None--------	---	1.0-2.5	Apparent	>60	---	---	High-----	Moderate.
41*:										
Meadowbrook------	D	None--------	---	+2-0	Apparent	>60	---	---	Moderate	High.
Harbeson---------	D	None--------	---	+2-0	Apparent	>72	0-2	2-6	Moderate	High.
42*:										
Sapelo-----------	D	None--------	---	0-0.5	Apparent	>60	---	---	High-----	High.
Clara------------	B/D	None--------	---	0-0.5	Apparent	>60	---	---	High-----	Moderate.
Surrency---------	D	None--------	---	+2-0	Apparent	>60	---	---	High-----	High.
43*:										
Garcon-----------	C	Occasional	Brief-----	1.5-3.0	Apparent	>60	---	---	High-----	High.
Albany-----------	C	Occasional	Brief-----	1.0-2.5	Apparent	>60	---	---	High-----	High.
Meadowbrook------	D	Occasional	Long------	+2-0	Apparent	>60	---	---	Moderate	High.
44*:										
Albany-----------	C	Occasional	Brief-----	1.0-2.5	Apparent	>60	---	---	High-----	High.
Ousley-----------	C	Occasional	Brief-----	1.5-3.0	Apparent	>60	---	---	Low------	High.
Meadowbrook------	D	Occasional	Brief to long.	+2-0	Apparent	>60	---	---	Moderate	High.
45*:										
Wekiva-----------	D	Occasional	Brief-----	0-1.0	Apparent	10-30	---	---	High-----	Low.
Rawhide----------	D	Occasional	Long------	+2-0	Apparent	>60	---	---	High-----	High.
Tooles-----------	D	Occasional	Brief-----	0-0.5	Apparent	40-60	---	---	High-----	Moderate.
46*:										
Tooles-----------	D	Frequent----	Brief-----	0-0.5	Apparent	40-60	---	---	High-----	Moderate.
Rawhide----------	D	Frequent----	Long------	+2-0	Apparent	>60	---	---	High-----	High.
48*:										
Otela------------	A	None--------	---	4.0-6.0	Apparent	60-80	---	---	Low------	Low.
Shadeville-------	B	None--------	---	4.0-6.0	Perched	40-72	---	---	Low------	Moderate.
Penney-----------	A	None--------	---	>6.0	---	>60	---	---	Low------	High.
52---------------- Mandarin	C	None--------	---	1.5-3.5	Apparent	>60	---	---	Moderate	High.
53---------------- Penney	A	None--------	---	>6.0	---	>60	---	---	Low------	High.

See footnote at end of table.

TABLE 15.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic group	Flooding		High water table		Depth to bedrock	Subsidence		Risk of corrosion	
		Frequency	Duration	Depth	Kind		Ini-tial	Total	Uncoated steel	Concrete
				Ft		In	In	In		
54*:										
Garcon	C	Occasional	Brief	1.5-3.0	Apparent	>60	---	---	High	High.
Eunola	C	Occasional	Brief	1.5-2.5	Apparent	>60	---	---	Low	High.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 16.--PHYSICAL ANALYSES OF SELECTED SOILS

(Absence of an entry indicates that data were not available)

Soil name and sample number	Depth	Horizon	Particle-size distribution: Sand: Very coarse (2-1 mm)	Coarse (1-0.5 mm)	Medium (0.5-0.25 mm)	Fine (0.25-0.1 mm)	Very fine (0.1-0.05 mm)	Total (2-0.05 mm)	Silt (0.05-0.002 mm)	Clay (<0.002 mm)	Hydraulic conductivity	Bulk density (field moist)	Water content: 1/10 bar	1/3 bar	15 bar
	In		Pct	Pct	Pct	Pct	Pct	Pct	Pct	Pct	Cm/hr	g/cm^3	Pct (wt)	Pct (wt)	Pct (wt)
Hurricane fine sand:															
S89FL-67-006-1	0-5	Ap	0.1	1.8	16.1	64.6	10.8	93.4	3.5	3.1	19.8	1.33	13.2	7.7	1.8
-2	5-16	E1	0.1	1.9	16.2	64.1	10.2	92.5	5.0	2.5	31.6	1.36	9.8	5.4	1.0
-3	16-25	E2	0.1	1.4	12.7	67.3	12.0	93.5	4.2	2.3	28.3	1.54	6.1	3.4	0.6
-4	25-51	E3	0.1	1.8	15.9	67.2	9.4	94.4	3.0	2.6	25.0	1.64	4.4	2.4	0.5
-5	51-54	Bh1	0.2	1.4	14.4	64.8	8.8	89.6	8.1	2.3	8.2	1.78	8.5	5.8	0.7
-6	54-65	Bh2	0.1	1.3	13.5	72.2	7.7	94.8	3.6	1.6	13.1	1.73	9.1	5.6	0.8
-7	65-80	Bh3	0.1	1.2	13.1	72.8	8.0	95.2	3.0	1.8	1.0	1.63	14.3	10.2	1.3
Leon fine sand:															
S89FL-67-003-1	0-4	Ap	0.0	1.8	15.1	73.2	5.6	95.7	3.4	0.9	31.6	1.41	7.9	5.1	1.7
-2	4-10	E	0.1	1.6	12.4	75.3	6.6	96.0	3.4	0.6	29.6	1.47	5.5	3.1	1.0
-3	10-17	Bh	0.1	2.0	13.0	75.6	5.8	96.5	0.9	2.6	43.4	1.25	18.1	11.7	4.2
-4	17-24	BE	0.1	1.5	10.9	69.6	6.6	88.7	6.2	5.1	43.4	1.47	7.1	4.6	1.4
-5	24-44	E'1	0.1	1.9	12.3	74.9	6.3	95.5	3.2	1.3	32.9	1.53	4.7	2.6	0.5
-6	44-63	E'2	0.1	2.1	13.2	73.1	5.8	94.3	3.3	2.4	27.6	1.63	4.4	2.5	0.9
-7	63-80	B'h	0.1	1.6	11.9	75.4	5.3	94.3	3.6	2.1	2.4	1.70	8.9	5.3	1.1
Lynn Haven mucky fine sand:															
S89FL-67-004-1	0-13	Ap	0.1	1.5	11.8	62.2	10.4	86.0	11.0	3.1	46.7	0.80	50.9	38.9	11.5
-2	13-19	E	0.0	1.2	10.6	74.8	11.7	98.3	1.0	0.7	20.4	1.60	4.0	1.8	0.4
-3	19-27	Bh	0.0	1.2	10.3	68.7	10.7	90.9	4.5	4.6	32.9	1.55	16.0	9.4	2.2
-4	27-34	Bw1	0.1	1.4	10.8	69.0	10.3	91.6	4.3	4.1	25.0	1.54	11.7	8.3	2.1
-5	34-52	Bw2	0.0	0.1	11.7	71.0	9.2	92.0	5.0	3.0	24.7	1.60	7.5	4.6	1.3
-6	52-80	B'h	0.1	1.3	11.6	69.2	7.8	90.0	6.1	3.9	15.8	1.59	13.9	10.6	3.6
Oaky fine sand:															
S89FL-67-005-1	0-6	Ap	0.3	4.9	23.7	53.5	11.5	93.9	5.2	0.9	17.1	1.41	9.9	6.1	1.8
-2	6-13	E	0.5	6.0	23.5	53.1	11.2	94.3	4.5	0.2	10.5	1.62	5.3	2.7	0.3
-3	13-40	Btg1	0.2	3.2	15.0	36.5	8.5	63.4	7.2	29.4	0.8	1.41	30.3	26.7	12.5
-4	40-51	Btg2	1.4	5.3	15.4	33.3	8.3	63.7	13.2	23.1	2.5	1.55	24.2	20.6	9.8
-5	51-80	Btg3	2.6	5.4	14.6	31.4	8.8	62.8	17.2	20.0	1.3	1.66	18.2	15.3	6.4
Ortega fine sand:															
S89FL-67-015-1	0-6	Ap	1.0	7.0	18.4	52.4	15.2	94.0	3.7	2.3	33.2	1.39	7.9	4.3	1.3
-2	6-31	C1	0.8	6.4	17.1	54.0	17.3	95.6	2.9	1.5	14.5	1.57	13.4	3.8	1.0
-3	31-52	C2	0.6	4.4	14.5	58.0	17.9	95.4	2.2	2.4	38.1	1.55	5.2	2.6	0.8
-4	52-80	C3	0.3	3.6	14.3	60.3	17.9	96.4	1.8	1.8	32.3	1.55	4.5	2.0	0.4

TABLE 16.--PHYSICAL ANALYSES OF SELECTED SOILS--Continued

Soil name and sample number	Depth	Horizon	Particle-size distribution: Sand: Very coarse (2-1 mm)	Coarse (1-0.5 mm)	Medium (0.5-0.25 mm)	Fine (0.25-0.1 mm)	Very fine (0.1-0.05 mm)	Total (2-0.05 mm)	Silt (0.05-0.002 mm)	Clay (<0.002 mm)	Hydraulic conductivity	Bulk density (field moist)	Water content: 1/10 bar	1/3 bar	15 bar
	In		Pct	Pct	Pct	Pct	Pct	Pct	Pct	Pct	Cm/hr	g/cm^3	Pct (wt)	Pct (wt)	Pct (wt)
Penney sand:															
S90FL-67-014-1	0-7	Ap	1.3	8.9	23.8	47.0	13.1	94.1	4.6	2.3	63.8	1.39	7.8	4.5	1.5
-2	7-24	E1	1.2	7.8	21.6	49.6	14.5	94.7	2.6	2.7	30.3	1.59	5.6	3.2	1.2
-3	24-55	E2	1.5	8.0	22.1	49.9	14.4	95.9	1.8	2.3	43.4	1.55	4.1	2.1	1.0
-4	55-80	E/Bt	1.5	7.6	20.0	51.5	15.9	96.5	0.7	2.8	42.1	1.52	3.5	1.5	0.5
Plummer fine sand:															
S90FL-67-013-1	0-7	Ap	0.2	3.0	14.6	60.3	16.1	94.2	4.4	1.4	24.3	1.33	12.3	7.5	2.5
-2	7-14	A2	0.3	2.7	12.4	60.7	17.1	93.2	4.5	2.3	17.1	1.54	12.1	7.6	1.6
-3	14-22	Eg1	0.3	2.7	11.5	63.4	17.1	95.0	3.1	1.9	12.7	1.63	7.7	4.0	0.8
-4	22-55	Eg2	0.3	3.3	11.8	61.6	19.2	96.2	3.1	0.7	14.0	1.67	6.2	2.7	0.4
-5	55-80	Btg	0.3	2.5	10.2	51.3	14.5	78.8	5.8	15.4	0.3	1.79	14.5	11.6	5.1
Ridgewood fine sand:															
S89FL-67-008-1	0-6	Ap	0.1	2.2	12.2	62.0	17.9	94.4	2.5	3.1	23.7	1.23	13.6	8.6	3.0
-2	6-18	C1	0.1	1.9	11.1	64.9	17.3	95.3	3.0	1.7	21.1	1.40	9.5	5.3	1.3
-3	18-39	C2	0.1	1.7	9.8	64.6	18.8	95.0	2.7	2.3	34.9	1.48	5.9	3.0	0.8
-4	39-80	C3	0.1	2.4	10.9	67.0	17.1	97.4	1.4	0.8	13.1	1.63	4.2	1.8	0.3
Sapelo fine sand:															
S89FL-67-007-1	0-6	Ap	0.1	2.1	12.2	60.0	22.0	96.5	2.8	0.8	47.3	1.26	12.4	7.3	2.6
-2	6-13	E1	0.2	2.5	13.1	58.1	21.0	94.9	4.3	0.8	23.4	1.46	8.5	4.4	1.4
-3	13-28	E2	0.2	2.4	10.9	61.1	22.6	97.2	2.5	0.3	21.1	1.52	4.4	1.9	0.6
-4	28-34	Bh1	0.2	2.8	11.2	55.2	21.3	90.7	4.7	4.6	31.2	1.54	14.0	8.4	2.2
-5	34-45	Bh2	0.2	1.8	9.9	60.5	23.0	95.4	2.9	1.7	28.0	1.57	10.5	6.2	1.5
-6	45-60	E'1	0.2	2.7	10.7	58.8	23.1	95.5	2.7	1.8	8.9	1.66	6.6	3.2	0.6
-7	60-73	Btg	0.2	1.8	8.6	38.6	24.8	74.0	3.3	22.7	0.5	1.73	16.7	13.9	7.8
-8	73-80	BCg	0.1	1.8	12.3	53.0	14.5	81.7	2.8	15.5	0.2	1.76	15.9	10.9	5.9
Wampee fine sand:															
S90FL-67-012-1	0-6	Ap	0.9	5.7	21.7	51.8	12.9	93.0	5.8	1.2	24.7	1.56	8.3	4.9	1.0
-2	6-12	E1	0.8	5.0	19.3	50.7	13.8	89.6	6.8	3.6	26.7	1.57	11.0	6.9	1.9
-3	12-21	E2	0.9	5.4	18.5	51.1	13.8	89.7	7.2	3.1	17.1	1.56	10.3	6.2	1.8
-4	21-32	E3	1.4	6.6	19.0	49.0	14.3	90.3	5.9	3.8	10.5	1.63	9.0	5.1	1.4
-5	32-55	Btg1	0.4	3.6	19.4	34.0	7.2	64.6	6.0	29.4	0.8	1.63	20.8	17.5	9.4
-6	55-80	Btg2	0.4	3.4	19.6	35.4	7.0	65.8	4.8	29.4	0.2	1.74	19.4	16.3	10.4

TABLE 17.--CHEMICAL ANALYSES OF SELECTED SOILS

Soil name and sample number*	Depth	Horizon	Extractable bases: Ca	Mg	Na	K	Sum	Extractable acidity	Sum of cations	Base saturation	Organic carbon	Electrical conductivity	pH: H_2O (1:1)	$CaCl_2$ 0.01M (1:2)	KCl 1N (1:1)	Pyrophosphate extractable: C	Fe	Al	Citrate-dithionite extractable: Fe	Al
	In		----Milliequivalents/100 grams of soil----							Pct	Pct	Mmhos/cm				Pct	Pct	Pct	Pct	Pct
Hurricane fine sand:																				
S89FL-67-006-1	0-5	Ap	0.25	0.08	0.02	0.03	0.38	10.29	10.67	4	1.08	0.05	6.6	5.0	5.7	---	---	---	---	---
-2	5-16	E1	0.09	0.03	0.01	0.02	0.15	7.28	7.43	2	0.77	0.02	6.7	5.1	5.8	---	---	---	---	---
-3	16-25	E2	0.04	0.03	0.01	0.02	0.10	4.37	4.47	2	0.44	0.02	6.8	5.1	5.9	---	---	---	---	---
-4	25-50	E3	0.02	0.02	0.01	0.01	0.06	1.31	1.36	4	0.16	0.02	6.5	5.1	6.0	---	---	---	---	---
-5	50-54	Bh1	0.02	0.02	0.00	0.00	0.04	30.69	30.73	0	0.47	0.01	6.2	4.9	5.9	---	---	---	---	---
-6	54-65	Bh2	0.04	0.02	0.00	0.00	0.06	6.49	6.55	1	0.35	0.01	6.0	4.9	5.8	0.45	0.00	0.18	0.03	0.12
-7	65-80	Bh3	0.05	0.03	0.00	0.00	0.08	11.03	11.11	1	0.69	0.44	6.0	4.8	5.6	0.67	0.00	0.31	0.04	0.21
Leon fine sand:																				
S89FL-67-003-1	0-4	Ap	0.22	0.30	0.03	0.02	0.57	8.14	8.71	7	1.52	0.08	4.0	3.1	2.6	---	---	---	---	---
-2	4-10	E	0.06	0.07	0.02	0.01	0.16	1.05	1.21	13	0.50	0.04	4.6	3.5	3.1	---	---	---	---	---
-3	10-17	Bh	0.05	0.09	0.03	0.01	0.18	25.98	26.16	1	2.21	0.04	4.6	3.8	3.2	1.86	0.02	0.31	0.05	0.29
-4	17-24	BE	0.04	0.03	0.02	0.01	0.10	8.41	8.51	1	0.63	0.02	5.2	4.4	4.1	---	---	---	---	---
-5	24-44	E'1	0.02	0.01	0.01	0.00	0.04	2.27	2.31	2	0.16	0.07	5.3	4.7	4.4	---	---	---	---	---
-6	44-63	E'2	0.02	0.01	0.01	0.00	0.04	3.21	3.25	1	0.21	0.03	5.3	4.6	4.4	---	---	---	---	---
-7	63-80	B'h	0.04	0.02	0.02	0.00	0.08	11.82	11.90	1	1.05	0.16	5.1	4.4	4.1	0.75	0.00	0.20	0.03	0.18
Lynn Haven muck fine sand:																				
S89FL-67-004-1	0-13	Ap	0.44	0.82	0.21	0.22	1.69	42.04	43.73	4	6.40	0.09	3.9	2.9	2.3	---	---	---	---	---
-2	13-19	E	0.02	0.02	0.01	0.00	0.05	0.85	0.90	6	0.23	0.18	4.8	3.8	3.3	---	---	---	---	---
-3	19-27	Bh	0.03	0.10	0.05	0.01	0.19	18.24	18.43	1	1.71	0.19	4.3	3.2	2.8	1.36	0.00	0.12	0.04	0.10
-4	27-34	Bw1	0.02	0.02	0.04	0.01	0.09	7.12	7.21	1	0.72	0.11	5.2	4.2	3.5	---	---	---	---	---
-5	34-52	Bw2	0.02	0.02	0.02	0.00	0.06	5.38	5.44	1	0.27	0.05	5.1	4.3	3.8	---	---	---	---	---
-6	52-80	B'h	0.11	0.05	0.03	0.01	0.20	10.64	10.84	2	0.81	0.02	5.0	4.5	4.3	0.35	0.00	0.22	0.02	0.21
Oaky fine sand:																				
S89FL-67-005-1	0-6	Ap	0.75	0.21	0.02	0.03	1.01	5.08	6.09	17	0.79	0.04	4.7	3.8	3.4	---	---	---	---	---
-2	6-13	E	0.17	0.06	0.00	0.00	0.23	1.85	2.08	11	0.24	0.02	5.0	4.3	3.9	---	---	---	---	---
-3	13-40	Btg1	19.25	2.39	0.09	0.05	21.89	4.93	26.82	82	0.27	0.09	6.4	5.9	5.9	---	---	---	0.85	0.15
-4	40-51	Btg2	26.88	2.84	0.08	0.04	29.84	5.67	35.50	84	0.10	0.17	7.3	6.4	6.5	---	---	---	0.83	0.07
-5	51-80	Btg3	30.75	2.80	0.07	0.03	33.65	5.79	39.44	85	0.02	0.17	7.7	6.6	7.2	---	---	---	0.53	0.04
Ortega fine sand:																				
S89FL-67-015-1	0-6	Ap	3.90	0.49	0.01	0.10	4.50	4.52	9.02	50	0.73	0.02	5.8	5.4	5.2	---	---	---	---	---
-2	6-31	C1	0.18	0.04	0.00	0.01	0.23	3.55	3.78	11	0.33	0.03	5.9	5.3	4.7	---	---	---	---	---
-3	31-52	C2	0.17	0.04	0.00	0.02	0.23	1.88	2.11	11	0.12	0.02	5.9	5.3	4.7	---	---	---	---	---
-4	52-80	C3	0.13	0.03	0.00	0.01	0.17	0.90	1.07	16	0.05	0.01	5.9	5.3	4.8	---	---	---	---	---

* See footnote at end of table.

TABLE 17.--CHEMICAL ANALYSES OF SELECTED SOILS--Continued

Soil name and sample number*	Depth	Horizon	Extractable bases: Ca	Extractable bases: Mg	Extractable bases: Na	Extractable bases: K	Extractable bases: Sum	Extractable acidity	Sum of cations	Base saturation	Organic carbon	Electrical conductivity	pH: H_2O (1:1)	pH: $CaCl_2$ 0.01M (1:2)	pH: KCl 1N (1:1)	Pyrophosphate extractable: C	Pyrophosphate extractable: Fe	Pyrophosphate extractable: Al	Citrate-dithionite extractable: Fe	Citrate-dithionite extractable: Al
	In		Milliequivalents/100 grams of soil							Pct	Pct	Mmhos/cm				Pct	Pct	Pct	Pct	Pct
Penney sand:																				
S90FL-67-014-1	0-7	Ap	1.35	0.58	0.00	0.22	2.15	6.06	8.21	26	0.74	0.03	5.6	4.9	4.3	---	---	---	---	---
-2	7-24	E1	0.29	0.18	0.00	0.05	0.52	2.71	3.23	16	0.19	0.02	5.6	5.1	4.5	---	---	---	---	---
-3	24-55	E2	0.13	0.08	0.00	0.02	0.23	1.86	2.09	8	0.17	0.02	5.6	5.1	4.5	---	---	---	---	---
-4	55-80	E/Bt	0.19	0.08	0.00	0.03	0.30	1.02	1.32	23	0.03	0.02	5.6	5.1	4.6	---	---	---	---	---
Plummer fine sand:																				
S90FL-67-013-1	0-7	Ap	0.11	0.08	0.00	0.02	0.21	7.93	8.14	3	1.32	0.02	4.8	4.2	3.3	---	---	---	---	---
-2	7-14	A2	0.07	0.04	0.00	0.00	0.11	9.40	9.51	1	0.80	0.01	5.0	4.7	3.9	---	---	---	---	---
-3	14-22	Eg1	0.06	0.04	0.00	0.00	0.10	2.52	2.62	4	0.29	0.01	5.2	5.0	4.6	---	---	---	---	---
-4	22-55	Eg2	0.02	0.01	0.00	0.00	0.03	0.57	0.60	5	0.06	0.01	5.5	5.2	4.7	---	---	---	---	---
-5	55-80	Btg	2.42	0.62	0.03	0.05	3.12	7.14	10.26	30	0.08	0.01	5.4	4.7	4.3	---	---	---	0.56	0.14
Ridgewood fine sand:																				
S89FL-67-008-1	0-6	Ap	0.80	0.11	0.03	0.03	0.97	8.76	9.73	10	1.76	0.03	5.4	4.3	3.6	---	---	---	---	---
-2	6-18	C1	0.25	0.04	0.00	0.00	0.29	5.69	5.98	5	0.76	0.02	5.7	4.8	4.2	---	---	---	---	---
-3	18-39	C2	0.02	0.01	0.00	0.00	0.03	1.42	1.45	2	0.35	0.01	5.5	4.8	4.4	---	---	---	---	---
-4	39-80	C3	0.03	0.02	0.00	0.01	0.05	0.20	0.24	20	0.10	0.01	5.5	5.0	4.7	---	---	---	---	---
Sapelo fine sand:																				
S89FL-67-007-1	0-6	Ap	0.21	0.15	0.02	0.03	0.41	5.23	5.64	7	1.13	0.04	4.3	3.4	3.4	---	---	---	---	---
-2	6-13	E1	0.07	0.07	0.01	0.02	0.17	4.10	4.27	4	1.12	0.03	4.3	3.4	2.9	---	---	---	---	---
-3	13-28	E2	0.02	0.02	0.00	0.00	0.04	0.46	0.50	8	0.47	0.01	5.5	4.2	3.8	---	---	---	---	---
-4	28-34	Bh1	0.04	0.02	0.01	0.01	0.07	11.25	11.32	1	1.41	0.02	4.7	3.8	3.3	0.75	0.00	0.15	0.04	0.10
-5	34-45	Bh2	0.02	0.01	0.00	0.00	0.03	5.40	5.43	1	0.34	0.01	5.3	4.6	3.8	---	---	---	---	---
-6	45-60	E'1	0.05	0.02	0.00	0.00	0.07	0.76	0.83	8	0.16	0.01	5.7	4.7	4.4	---	---	---	---	---
-7	60-73	Btg	0.72	0.49	0.02	0.03	1.26	7.89	9.15	14	0.18	0.01	5.5	4.2	4.1	---	---	---	0.05	0.11
-8	73-80	BCg	1.60	0.82	0.02	0.02	2.44	3.38	5.82	42	0.11	0.01	5.6	4.4	4.1	---	---	---	---	---
Wampee fine sand:																				
S90FL-67-012-1	0-6	Ap	0.85	0.19	0.01	0.02	1.07	3.56	4.63	23	1.18	0.02	5.6	4.7	3.6	---	---	---	---	---
-2	6-12	E1	0.38	0.13	0.00	0.01	0.52	7.60	8.12	6	0.62	0.01	5.3	5.0	4.1	---	---	---	---	---
-3	12-21	E2	0.11	0.05	0.00	0.00	0.16	5.48	5.64	3	0.38	0.01	5.4	5.1	4.3	---	---	---	---	---
-4	21-32	E3	0.10	0.05	0.00	0.00	0.15	3.87	4.02	4	0.14	0.01	5.4	5.0	4.3	---	---	---	---	---
-5	32-55	Btg1	2.92	0.99	0.05	0.08	4.04	10.34	14.38	28	0.16	0.01	5.5	4.5	3.6	---	---	---	0.35	0.12
-6	55-80	Btg2	5.50	1.97	0.05	0.10	7.62	8.18	15.79	48	0.08	0.01	5.5	4.6	3.8	---	---	---	---	---

* All of the soils are the typical pedon for the series in this survey area. For the location of the sample site, see the series description in the section "Soil Series and Their Morphology."

TABLE 18.--CLAY MINERALOGY OF SELECTED SOILS

Soil name and sample number*	Depth	Horizon	Clay minerals			
			Montmo- rillonite	14-angstrom intergrade	Kaolinite	Quartz
	In		Pct	Pct	Pct	Pct
Hurricane fine sand:						
S89FL-67-006-1	0-5	Ap	0	49	16	35
-6	54-65	Bh2	0	13	11	76
-7	65-80	Bh3	0	18	25	57
Leon fine sand:						
S89FL-67-003-1	0-4	Ap	0	0	14	86
-3	10-17	Bh	0	29	12	59
-7	63-80	B'h	0	11	10	79
Lynn Haven mucky fine sand:						
S89FL-67-004-1	0-13	Ap	21	0	10	69
-3	19-27	Bh	22	27	17	34
-6	52-80	B'h	0	24	15	61
Oaky fine sand:						
S89FL-67-005-1	0-6	Ap	31	14	15	40
-3	13-40	Btg1	70	15	10	5
-5	51-80	Btg3	37	6	4	3
Ortega fine sand:						
S89FL-67-015-1	0-6	Ap		37	21	43
-3	31-52	C2		40	16	44
Penney sand:						
S90FL-67-014-1	0-7	Ap		34	33	33
-4	55-80	E/Bt		38	42	20
Plummer fine sand:						
S90FL-67-013-1	0-7	Ap	4	26	20	50
-5	55-80	Btg	26	28	31	15
Ridgewood fine sand:						
S89FL-67-008-1	0-6	Ap	0	51	24	25
-4	39-80	C3	0	46	33	21
Sapelo fine sand:						
S89FL-67-007-1	0-6	Ap	0	0	20	80
-4	28-34	Bh1	0	36	30	34
-7	60-73	Btg	0	24	69	7
-8	73-80	BCg	0	22	71	7
Wampee fine sand:						
S90FL-67-012-1	0-6	Ap	26	19	17	38
-5	32-55	Btg1	37	14	42	7
-6	55-80	Btg2	42	13	36	9

* All of the soils are the typical pedon for the series in this survey area. For the location of the sample site, see the series description in the section "Soil Series and Their Morphology."

TABLE 19.--ENGINEERING INDEX TEST DATA

(Tests were performed by the Florida Department of Transportation (FDOT) in cooperation with the U.S. Bureau of Public Roads, in accordance with standard procedures of the American Association of State Highway and Transportation Officials (AASHTO). See the section "Soil Series and Their Morphology" for location of pedons sampled. NP means nonplastic)

Soil name, report number, horizon, and depth in inches	Classification		Mechanical analysis*								Liquid limit	Plasticity index	Moisture density**	
			Percentage passing sieve--				Percentage smaller than--						Maximum dry density	Optimum moisture
	AASHTO	Unified	No. 4	No. 10	No. 40	No. 200	.05 mm	.02 mm	.005 mm	.002 mm	Pct		Lb/cu ft	Pct
Leon fine sand: (S89FL-67-003) E'2 ------ 24-44	A-3(0)	SP-SM	100	100	93	6	5	4	2	1	---	NP	105.5	11.0
Lynn Haven mucky fine sand: (S89FL-67-004) E'1 ------ 45-60	A-3(0)	SP-SM	100	100	98	10	8	6	5	2	---	NP	109.1	10.3
Oaky fine sand: (S89FL-67-005) Btg1 ----- 13-40	A-6(1)	SC	100	100	94	36	33	32	30	28	34	17	103.9	16.9
Hurricane fine sand: (S89FL-67-006) E3 ------- 25-50	A-3(0)	SP-SM	100	100	96	7	6	4	2	1	---	NP	107.9	12.3
Sapelo fine sand: (S89FL-67-007) E' ------- 45-60	A-2-4(0)	SP-SM	100	100	96	12	8	3	2	1	---	NP	107.8	11.8
Ridgewood fine sand: (S89FL-67-008) C3 ------- 39-80	A-3(0)	SP-SM	100	100	96	8	5	3	2	2	---	NP	104.3	12.7
Wampee fine sand: (S90FL-67-012) Btg1 ----- 32-55	A-6(2)	SC	100	100	93	39	36	33	33	32	30	19	110.8	16.4
Plummer fine sand: (S90FL-67-013) Btg ------ 55-80	A-2-4(0)	SM	---	96	91	24	21	18	15	15	---	NP	118.3	12.3
Penney fine sand: (S90FL-67-014) E/Bt ----- 45-80	A-3(0)	SP-SM	100	100	87	6	2	1	0	0	---	NP	109.8	11.8
Ortega fine sand: (S90FL-67-015) C2 ------- 31-52	A-3(0)	SP-SM	100	100	93	7	6	4	3	2	---	NP	110.0	12.1

TABLE 20.--CLASSIFICATION OF THE SOILS

Soil name	Family or higher taxonomic class
Albany	Loamy, siliceous, thermic Grossarenic Paleudults
Blanton	Loamy, siliceous, thermic Grossarenic Paleudults
Chaires	Sandy, siliceous, thermic Alfic Haplaquods
Clara	Siliceous, thermic Spodic Psammaquents
Dorovan	Dysic, thermic Typic Medisaprists
Eunola	Loamy, siliceous, thermic Aquic Arenic Paleudults
Fluvaquents	Fluvaquents
Garcon	Loamy, siliceous, thermic Arenic Hapludults
Harbeson	Loamy, siliceous, thermic Grossarenic Umbraqualfs
Hurricane	Sandy, siliceous, thermic Grossarenic Entic Haplohumods
Leon	Sandy, siliceous, thermic Aeric Haplaquods
Lynn Haven	Sandy, siliceous, thermic Typic Haplaquods
Mandarin	Sandy, siliceous, thermic Typic Haplohumods
Meadowbrook	Loamy, siliceous, thermic Grossarenic Ochraqualfs
Oaky	Fine-loamy, siliceous, thermic Mollic Albaqualfs
Ortega	Thermic, uncoated Typic Quartzipsamments
Otela	Loamy, siliceous, thermic Grossarenic Paleudalfs
Ousley	Thermic, uncoated Aquic Quartzipsamments
Pamlico	Sandy or sandy-skeletal, siliceous, dysic, thermic Terric Medisaprists
Pantego	Fine-loamy, siliceous, thermic Umbric Paleaquults
Penney	Thermic, uncoated Typic Quartzipsamments
Plummer	Loamy, siliceous, thermic Grossarenic Paleaquults
Rawhide	Fine-loamy, siliceous, thermic Typic Argiaquolls
Ridgewood	Thermic, uncoated Aquic Quartzipsamments
Sapelo	Sandy, siliceous, thermic Ultic Haplaquods
Shadeville	Loamy, siliceous, thermic Arenic Hapludalfs
Surrency	Loamy, siliceous, thermic Arenic Umbric Paleaquults
Tooles	Loamy, siliceous, thermic Arenic Albaqualfs
Wampee	Loamy, siliceous, thermic Aquic Arenic Hapludalfs
Wekiva	Loamy, siliceous, thermic, shallow Aeric Ochraqualfs
Wesconnett	Sandy, siliceous, thermic Typic Haplaquods

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