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 Agriculture and Consumer Services

Soil Survey of Calhoun County, Florida

How to Use This Soil Survey

General Soil Map

The general soil map, which is a color map, 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.

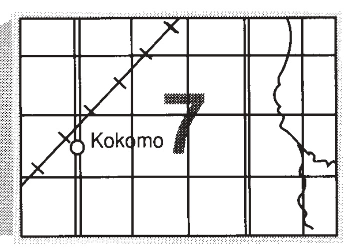
Detailed Soil Maps

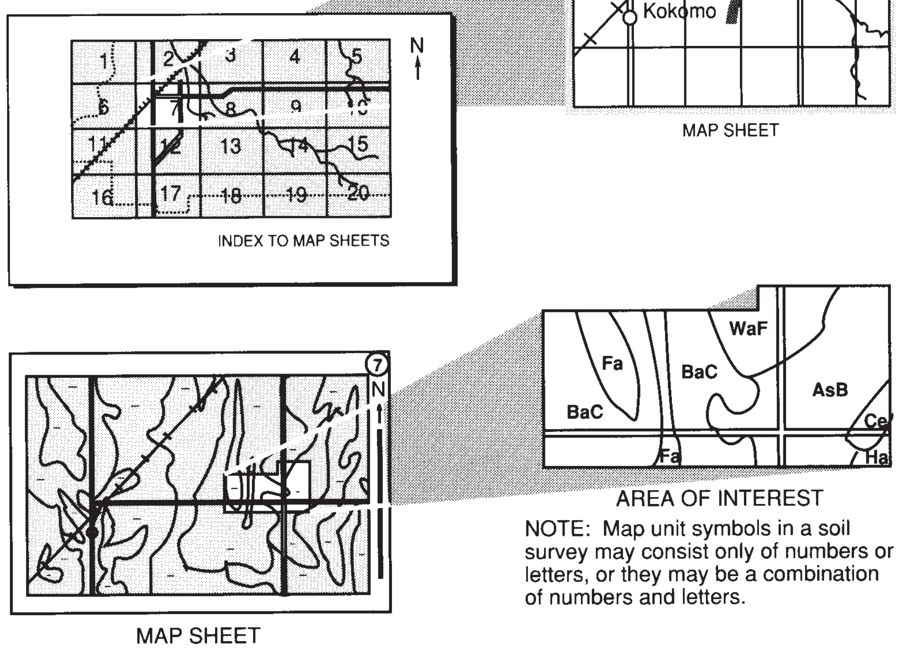
The detailed soil maps can be useful in planning the use and management of small areas.

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

Locate your area of interest on the map sheet. Note the map unit 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 **Contents** shows which table has data on a specific land use for each detailed soil map unit. Also see the **Contents** for sections of this publication that may address your specific needs.





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

Major fieldwork for this soil survey was completed in 1990. Soil names and descriptions were approved in 1990. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1990. This survey was made cooperatively by the Natural Resources Conservation Service and the University of Florida, Institute of Food and Agricultural Sciences, Agricultural Experiment Stations, and Soil and Water Science Department; the Florida Department of Agriculture and Consumer Services; and the Florida Department of Transportation. The survey is part of the technical assistance furnished to the Chipola River Soil and Water Conservation District. The Calhoun County Board of County Commissioners contributed office space for the soil scientists.

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: The Chipola River flowing through an area of Croatan, Kinston, and Surrency soils, frequently flooded.

Additional information about the Nation's natural resources is available online from the Natural Resources Conservation Service at http://www.nrcs.usda.gov.

Contents

How to Use This Soil Survey i
Contents iii
Foreword vii
General Nature of the County 1
How This Survey Was Made 4
General Soil Map Units 7
Soils on Sandy Uplands 7
1. Lakeland-Troup-Blanton 7
2. Lakeland-Foxworth-Pottsburg 8
Soils on Uplands, on Low Knolls, and in Areas of Flatwoods 8
3. Dothan-Orangeburg 8
4. Blanton-Leefield-Alapaha 9
5. Plummer-Albany-Blanton 10
6. Dothan-Fuquay-Alapaha 11
Soils in Areas of Low Flatwoods and on Broad Flats 11
7. Pansey-Leefield-Florala 11
8. Alapaha-Plummer 14
9. Bladen-Dunbar-Kenansville 14
Soils in Depressions and on Flood Plains Along Rivers 15
10. Croatan-Surrency-Rutlege 15
11. Brickyard-Wahee-Ochlockonee 15
Detailed Soil Map Units 17
2—Albany loamy sand, 0 to 5 percent slopes 18
4—Brickyard clay loam, frequently flooded 19
5—Robertsdale fine sandy loam 20
6—Bladen loam, rarely flooded 20
7—Blanton sand, 0 to 5 percent slopes 21
8—Blanton sand, 5 to 8 percent slopes 22
10—Bonifay sand, 0 to 5 percent slopes 23
12—Chipley sand, 0 to 5 percent slopes 24
14—Chipola loamy sand, 0 to 5 percent slopes, very rarely flooded 25
17—Florala loamy sand, 0 to 2 percent slopes ... 26
18—Florala loamy sand, 2 to 5 percent slopes ... 27
20—Dorovan-Pamlico-Rutlege association, depressional 28
21—Dothan sandy loam, 0 to 2 percent slopes 29
22—Dothan loamy sand, 2 to 5 percent slopes 30
23—Dothan loamy sand, 5 to 8 percent slopes 31
24—Dunbar fine sandy loam, rarely flooded 32
25—Duplin very fine sandy loam, very rarely flooded 33
29—Kenansville loamy sand, wet substratum, 0 to 5 percent slopes, rarely flooded 34
30—Garcon loamy sand, rarely flooded 35
31—Foxworth sand, 0 to 5 percent slopes 36
32—Fuquay loamy sand, 0 to 2 percent slopes 37
33—Fuquay loamy sand, 2 to 5 percent slopes 38
34—Fuquay loamy sand, 5 to 8 percent slopes 38
35—Hurricane sand 40
36—Lakeland sand, 0 to 5 percent slopes.......... 41
37—Lakeland sand, 5 to 8 percent slopes.......... 42
38—Wahee-Ochlockonee complex, commonly flooded 43
39—Leefield loamy sand, 0 to 5 percent slopes 44
41—Lucy loamy sand, 0 to 2 percent slopes 45
42—Lucy sand, 2 to 5 percent slopes 46
43—Lucy sand, 5 to 8 percent slopes 47
44—Orangeburg loamy sand, 0 to 2 percent slopes 48
45—Orangeburg loamy sand, 2 to 5 percent slopes 48
46—Orangeburg sandy loam, 5 to 8 percent slopes 49
48—Pansey sandy loam 50
51—Plummer sand, 0 to 5 percent slopes 51
54—Croatan, Surrency, and Pantego soils, depressional 51
55—Pottsburg sand 52
57—Stilson loamy sand, 0 to 2 percent slopes ... 53
58—Stilson loamy sand, 2 to 5 percent slopes 54
60—Croatan, Rutlege, and Surrency soils, depressional 55
61—Troup sand, 0 to 5 percent slopes 56
62—Troup sand, 5 to 8 percent slopes 57
64—Pamlico, Bibb, and Rutlege soils, frequently flooded 57
66—Lakeland and Troup soils, 8 to 12 percent slopes 58

67—Alapaha loamy sand, 0 to 2 percent slopes ... 59
68—Croatan, Kinston, and Surrency soils, frequently flooded ... 60
69—Leefield loamy sand, 5 to 8 percent slopes ... 61
70—Alapaha loamy sand, 2 to 8 percent slopes ... 62
71—Dothan-Fuquay complex, 8 to 12 percent slopes ... 62
72—Pits ... 64
Use and Management of the Soils ... 65
Hydric Soils ... 65
Ecological Communities ... 66
Crops and Pasture ... 68
Woodland Management and Productivity ... 72
Woodland Understory Vegetation ... 74
Windbreaks and Environmental Plantings ... 74
Recreation ... 74
Wildlife Habitat ... 75
Engineering ... 76
Building Site Development ... 76
Sanitary Facilities ... 77
Construction Materials ... 78
Water Management ... 79
Soil Properties ... 83
Engineering Index Properties ... 83
Physical and Chemical Properties ... 84
Soil and Water Features ... 85
Physical, Chemical, and Mineralogical Analyses of Selected Soils ... 87
Engineering Index Test Data ... 90
Classification of the Soils ... 91
Soil Series and Their Morphology ... 91
Alapaha Series ... 91
Albany Series ... 92
Bibb Series ... 93
Bladen Series ... 94
Blanton Series ... 94
Bonifay Series ... 95
Brickyard Series ... 96
Chipley Series ... 96
Chipola Series ... 97
Croatan Series ... 98
Dorovan Series ... 98
Dothan Series ... 99
Dunbar Series ... 100
Duplin Series ... 100
Florala Series ... 101
Foxworth Series ... 102
Fuquay Series ... 103
Garcon Series ... 104
Hurricane Series ... 104
Kenansville Series ... 105
Kinston Series ... 106
Lakeland Series ... 106
Leefield Series ... 107
Lucy Series ... 108
Ochlockonee Series ... 108
Orangeburg Series ... 113
Pamlico Series ... 114
Pansey Series ... 114
Pantego Series ... 115
Plummer Series ... 116
Pottsburg Series ... 117
Robertsdale Series ... 117
Rutlege Series ... 118
Stilson Series ... 118
Surrency Series ... 119
Troup Series ... 120
Wahee Series ... 121
Formation of the Soils ... 123
Factors of Soil Formation ... 123
Parent Material ... 123
Climate ... 123
Plants and Animals ... 123
Relief ... 123
Time ... 124
Processes of Horizon Formation ... 124
Geology ... 124
Geomorphology ... 124
Stratigraphy ... 126
Ground Water ... 129
Mineral Resources ... 130
References ... 131
Glossary ... 135
Tables ... 147
Table 1.—Temperature and Precipitation ... 148
Table 2.—Freeze Dates in Spring and Fall ... 149
Table 3.—Growing Season ... 149

Table 4.—Acreage and Proportionate Extent of the Soils 150
Table 5.—Land Capability Classes and Yields per Acre of Crops and Pasture 151
Table 6.—Woodland Management and Productivity 154
Table 7.—Recreational Development 161
Table 8.—Wildlife Habitat 166
Table 9.—Building Site Development 169
Table 10.—Sanitary Facilities 175
Table 11.—Construction Materials 179
Table 12.—Water Management 183
Table 13.—Engineering Index Properties 189
Table 14.—Physical and Chemical Properties of the Soils 199
Table 15.—Soil and Water Features 205
Table 16.—Physical Analyses of Selected Soils 209
Table 17.—Chemical Analyses Of Selected Soils 213
Table 18.—Clay Mineralogy of Selected Soils 217
Table 19.—Engineering Index Test Data 219
Table 20.—Classification of the Soils 222

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Foreword

This soil survey contains information that affects land use planning in this survey area. 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 on 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
Calhoun County, Florida

By William Jeffrey Allen, Walter G. George, and Darrell E. Leach, Natural Resources Conservation Service

Fieldwork by William Jeffrey Allen, Walter G. George, Steven W. Fischer, and Darrell E. Leach, 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 Agriculture and Consumer Services

Calhoun County is in the Florida panhandle about 50 miles west of Tallahassee (fig. 1). The county has a total area of 367,400 acres, or 568 square miles. Calhoun County is bordered on the north by Jackson County, on the west by Bay County, on the south by Gulf County, and on the east by the Apalachicola River and Liberty County. The two major river basins within the county are those of the Apalachicola and Chipola Rivers.

Calhoun County ranks 60th in population out of the 67 counties in Florida. In 1989, the estimated population of the county was 11,268. There are two incorporated communities in the county: Altha and Blountstown. The county seat is Blountstown. In 1990, the estimated population of Blountstown was 2,803.

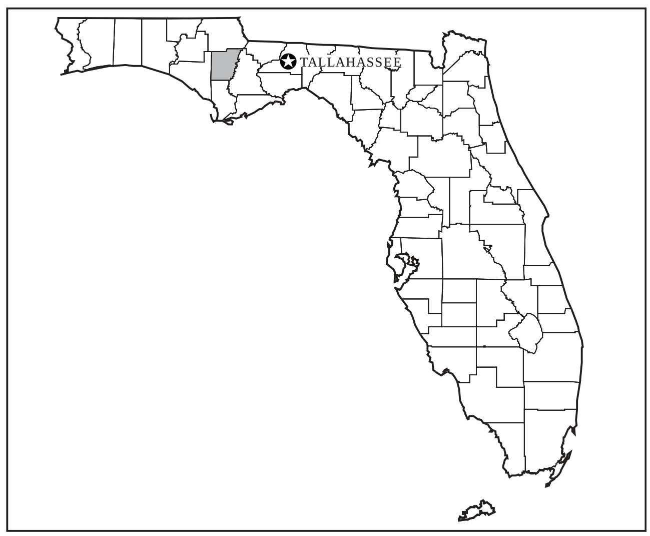

Figure 1.—Location of Calhoun County in Florida.

General Nature of the County

This section describes some of the environmental and cultural features that affect the use and management of soils in Calhoun County. These features are climate, history and development, farming, recreation, and transportation.

Climate

Calhoun County has a moderate climate (USDC-NOAA, 1990). Summers are long, warm, and humid. Winters are short, cool, and mild. The Gulf of Mexico moderates maximum and minimum temperatures.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Fountain, Florida, in the period 1961 to 1989. 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 Gulf breeze is largely responsible for the mild, moist climate, but proximity to the North American land mass gives the county a slightly more continental climate and greater temperature extremes than are encountered in peninsular Florida. The average temperature for the year is 66.3 degrees F. In winter, the average temperature is about 54 degrees F and the average daily minimum temperature is about 40 degrees F. In summer, the average daily maximum temperature is about 91 degrees F. The average temperature in June, July, and August is about 79 degrees F. Temperatures of 90 degrees or higher occur in June, July, August, and September, but temperatures above 100 degrees occur only a few days in most years. Clouds and the associated thundershowers or showers moderate the warm and humid days. The Gulf of Mexico moderates most of the air masses; therefore, hot desiccating winds and very high temperatures seldom occur. Warm, summery weather lasts until early in October.

Although the county is punctuated with periodic invasions of cold air masses from the north, the cold periods only last 1 to 3 days. The coldest weather generally occurs on the second night after the onset of a cold front, after the ground's stored heat is lost through radiation. The average temperature in December, January, and February is 54.8 degrees F. Temperatures range from the high forties to the low seventies. Freezing temperatures occur on an average of 20 days every winter. The average date of the first killing frost is about November 9th. The average date of the last killing frost is about March 23rd. Frost has occurred, however, as early as November 4th and as late as March 28th. Freeze data representative of the county are shown in table 2.

Growing degree days are shown in table 1. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (40.0 degrees F.) The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The total annual precipitation is about 62.4 inches. Of this, 36.4 inches, or 58.3 percent, usually falls in April through September. The growing season for most crops falls within this period. In 2 years out of 10, the rainfall in April through September is less than 21 inches. Thunderstorms occur most often in June, July, and August. About 90 percent of the annual precipitation occurs during the 10-month period between late December and early October. About 46 percent of the annual total occurs during June, July, August, and September. October, November, early December, April, and May have the least rainfall. Most rainfall in the summer occurs in the form of showers or thundershowers during the afternoon and evening when the air is moist and unstable. On the average, these showers occur on 45 percent of the days of summer. The showers are widely scattered, are of short duration, and are often extreme. Sometimes 2 or 3 inches of rain falls in 1 or 2 hours. Occasionally, heavy rain and high winds accompany the passage of a tropical disturbance or hurricane. Also occasionally, hail falls during a thunderstorm. The hail is generally small and seldom causes much damage.

Snowfall is rare. Measurable snow occurs about once every 10 years. For example, about 2 inches of snow fell on the night of December 22, 1989. The snow remained on the ground in protected places for 3 days. Precipitation data representative of the county are shown in table 1.

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

History and Development

By Bobby Mears, reference librarian, Calhoun County Public Library.

Calhoun County, Florida's 18th county, was created January 26, 1838. It was named in honor of John C. Calhoun, senator from South Carolina and fervent supporter of States rights. Calhoun County was created from land in Jackson, Washington, and Franklin Counties.

The boundary of Calhoun County has changed several times. The original boundary formed an outline resembling a pan with a long handle. Starting from a narrow neck of land just below present day Blountstown and continuing between the Chipola and Apalachicola Rivers, the boundary ran south to Wetappo Creek, over to the east arm of St. Andrews Bay, down the peninsula, and around the coast to what is now the boundary of Franklin County.

Later, Calhoun nearly doubled in size while Jackson and Washington Counties became smaller. The boundary between Calhoun County and Jackson County to the north followed the old Federal Road. Because many parts of the road had fallen into disrepair, the boundary waffled back and forth. Around 1897, the boundary was fixed at Township 2 North, which is the present boundary.

On April 24, 1913, Bay County was created from parts of Calhoun and Washington Counties. The residents of the southern part of Calhoun County felt isolated from the residents in the northern part. On June 6, 1925, after a referendum voted to divide Calhoun County, Gulf County was established.

Wewahitchka was the county seat of the new Gulf County. Between 1913 and 1925, Calhoun County lost about 60 percent of its former area.

Peter W. Gautier, Jr., a businessman formerly from Marianna, purchased the St. Joseph Telegram/Times (established March 10, 1836). He used the paper to promote the new town of St. Joseph, which had its beginnings in 1835. In September 1836, Gautier, along with Robert Beveridge and George S. Hawkins, established a railroad from Lake Wimico and St. Joseph. The railroad was built in hopes of diverting river traffic from Apalachicola. The primary purpose of the businessmen was to destroy Apalachicola as a trading port and then move the Franklin County seat to St. Joseph. Lake Wimico, however, proved too shallow for river vessels, and in 1839 and 1840 the extension of the railroad upstream to Lola proved too little too late.

For a short time, St. Joseph proved to be a boomtown. In 1836 and 1837, the legislative council tried to move the Franklin County seat to St. Joseph from Apalachicola, but both times the move was vetoed. Because Gautier had been elected as a member of the legislative council in 1837, he successfully convinced the council to form Calhoun County with St. Joseph as its seat of government.

St. Joseph's finest hour occurred when it hosted the constitutional convention of 1838. In the summer of 1841, however, a virulent epidemic of yellow fever hit St. Joseph and those who didn't succumb and die fled. St. Joseph was left a ghost town. In September of the same year, a hurricane hit St. Joseph, devastating it so much that the town was abandoned. Thus, after a wild and booming beginning, St. Joseph disappeared from the maps.

After the destruction of St. Joseph, the county seat was moved to Abe Spring, situated on the Chipola River. Around 1861, a blood feud broke out involving a large family named Durden. The feud was so bloody that the National Guard had to be called in to stop it. Abe Spring remained the county seat until about 1880, at which time the county seat was moved to Old Blountstown on the Apalachicola River. Blountstown was named in honor of Chief John Blount, tribal leader of a small band of Apalachee Indians who were granted a reservation on the flood plains along the "Big River." Despite aiding Andrew Jackson in his war against the Seminole Indians, Chief John Blount and his tribe lost their reservation and were removed to Oklahoma.

In 1885, a gazetteer listed West Wynnton as the county seat. West Wynnton was possibly an old subdivision of Blountstown. The population of the county was 2,094. The following communities were large enough to have a post office: Abe Spring, Czar, Chipola, Lola, Marysville, West Wynnton, and Wewahitchka. Corn, oranges, and honey were important agricultural products at the time. Timber was also important. In 1910, Port St. Joe, lying near the old site of St. Joseph, was incorporated. In 1949, Fuller Warren, who was born in Blountstown, became governor of Florida.

Today, Calhoun County is one of the least populated and most rural counties in Florida. Agriculture and forestry are the main industries. The county is relatively unpolluted and has some of the best fishing and hunting areas in the State.

Farming

Calhoun County is mainly a general farming area. The majority of the farming occurs around Altha. The principal crops are cotton, soybeans, small grains, and peanuts. Cattle are the main livestock. Some dairy and swine (hog) production also occurs.

About 51,000 acres, or 14 percent of the county, is used for crops and pasture. According to the 1992 Census of Agriculture, about 78 percent of this acreage is cropland and 22 percent is pasture (USDC, 1992). The grasses used for grazing and hay are improved bahiagrass and improved bermudagrass.

Catfish ponds are being built in the eastern part of the county. The University of Florida Institute of Food and Agricultural Sciences operates an aquaculture demonstration facility north of Blountstown.

Recreation

A variety of recreational activities are available in Calhoun County, including fishing, swimming, hiking, boating, canoeing, and horseback riding. Public boat ramps allow access to the major rivers and lakes. Picnic areas are adjacent to some of the boat ramps. Several wildlife management areas provide hunting opportunities. Parks in Bluntstown provide picnic areas and athletic fields.

Transportation

Three primary transportation arteries cross Calhoun County. East-west travel is on Florida Highway 20, and north-south travel is on Florida Highways 71 and 73. Many small roads and highways are throughout the county. Barge traffic uses the port of Blountstown on the Apalachicola River. An airstrip on the east side of Blountstown is available for private airplanes. Regularly scheduled bus transportation is available in Bluntstown. The county hospital in Bluntstown has emergency helicopter service to Tallahassee.

How This Survey Was Made

The general procedures followed in making the survey are described in the “National Soil Survey Handbook” (USDA-SCS, 1993) and the “Soil Survey Manual” (Soil Survey Division Staff, 1993) of the Natural Resources Conservation Service.

Soil Scientists studied United States Geological Survey topographic maps to relate land and image features. Reconnaissance was made by vehicle before the landscape was traversed on foot. Traverses generally were made at intervals of about 1/4 mile. They were made at closer intervals in complex areas of high variability and wider intervals in less complex areas of low variability. The older black-and-white photographs show the natural vegetation in many areas before they were cleared and planted to pine, used for urban development, or both. Landforms in areas of natural vegetation are easier to differentiate using these black-and-white photographs, and most soils can be correlated to certain landforms. Areas of hydric soil were more easily recognized using the 1984 infrared photographs than using black-and-white photography.

This survey was made to provide information about the soils and miscellaneous areas in the survey area. The information includes a description of the soils and miscellaneous areas and their location and a discussion of their suitability, limitations, and management for specified uses. Using the Soil Survey Manual (Soil Survey Division Staff, 1993) and the National Soil Survey Handbook (USDA-SCS, 1993) as guides, soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

The soils and miscellaneous areas in the survey area are in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of a landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of a landform, a soil scientist develops a concept or model of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area 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-vegetation-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 color, texture, size and shape of soil aggregates, distribution of plant roots, reaction, and other features that enable them to identify soils. While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists 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.

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. Soil taxonomy, 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.

Interpretations for all of the soils are field tested through observation of the soils in different uses and 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 predict 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.

The descriptions, names, and delineations of the soils in this survey area do not fully agree with those of the soils in adjacent survey areas. Differences are the result of a better knowledge of soils, modifications in series concepts, or variations in the intensity of mapping or in the extent of the soils in the survey areas.

Use of Ground-Penetrating Radar

Eddie Cummings, GPR specialist, Natural Resources Conservation Service, helped prepare this section.

A ground-penetrating radar (GPR) system was used as one of several methods to determine the variability of soils in the detailed soil map units (Doolittle, 1982 & 1983). GPR graphic printouts presented a continuous two-dimensional image of the depth to subsurface features, such as contrasting diagnostic horizons, abrupt textural changes, rock, and the water table.

The GPR system consisted of three main components: a control unit, an antenna, and a recorder. GPR operates by sending waves of electromagnetic energy from the control unit into the ground through the antenna. The waves of electromagnetic energy produce reflections within the different earthen materials. The reflections are then received by the antenna and recorded for interpretation.

General Soil Map Units

The general soil map in 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 or miscellaneous areas and some minor soils or miscellaneous areas. It is named for the major soils or miscellaneous areas. The components of one map 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 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 Sandy Uplands

The two general soil map units in this group consist of excessively drained to poorly drained, nearly level to strongly sloping soils. These soils are predominantly on summits, shoulders, and side slopes in the northwest quarter of the county, west of the Chipola River and along Cypress Creek. Most of the soils are sandy throughout. Some are sandy to a depth of more than 40 inches and have a loamy subsoil.

1. Lakeland-Troup-Blanton

Nearly level to strongly sloping, excessively drained soils that are sandy throughout and somewhat excessively drained and moderately well drained soils that are sandy to a depth of more than 40 inches and have a loamy subsoil

This map unit is on summits, shoulders, and side slopes in the uplands along Tenmile Creek north to Jackson County and along Cypress Creek. Natural vegetation includes longleaf pine, slash pine, mixed hardwoods, and an understory of saw palmetto, honeysuckle, pineland threeawn, and running oak.

This map unit makes up 16,939 acres, or about 5 percent of the county. It is about 32 percent Lakeland soils, 24 percent Troup soils, 8 percent Blanton soils, and 36 percent soils of minor extent.

Typically, Lakeland soils have a surface layer of brown sand about 6 inches thick. The substratum is sand. It is yellow to a depth of 37 inches, brownish yellow to a depth of 58 inches, and very pale brown to a depth of 80 inches or more.

Typically, Troup soils have a surface layer of dark grayish brown sand about 6 inches thick. The subsurface layer is sand. It is yellowish brown to a depth of 25 inches and is brownish yellow to a depth of 46 inches. The subsoil is red sandy loam to a depth of 63 inches and is red sandy clay loam to a depth of 80 inches or more.

Typically, Blanton soils have a surface layer of dark grayish brown sand about 4 inches thick. The subsurface layer is light yellowish brown sand to a depth of 40 inches, pale yellow sand to a depth of 60 inches, and pale yellow loamy sand that has mottles in shades of gray, yellow, and red to a depth of 68 inches. The subsoil is yellowish brown sandy loam that has mottles in shades of gray, yellow, and red to a depth 80 inches or more.

Of minor extent in this map unit are the Albany, Bonifay, Chipley, Foxworth, Hurricane, and Pottsburg soils. These minor soils generally are in small areas that are intermixed with areas of the major soils.

The soils of this map unit are poorly suited to moderately suited for crops and pasture, have a very low to moderately high potential productivity for slash pine, and have slight to severe limitations affecting recreational development, building site development, and sanitary facilities. See the detailed map unit descriptions and the interpretative tables for more information.

Much of the acreage of this map unit has been planted to sand pines or supports native woodland. The rest has been cleared for hay and pasture.

2. Lakeland-Foxworth-Pottsburg

Nearly level to strongly sloping, excessively drained to moderately well drained, sandy soils and poorly drained, sandy soils that have an organic-stained subsoil

This map unit is on summits, shoulders, and side slopes in the uplands in the northwest quarter of the county, beginning at Tenmile Creek and extending south to an area south of Juniper Creek. Natural vegetation includes longleaf pine, slash pine, mixed hardwoods, and an understory of saw palmetto, honeysuckle, pineland threeawn, and running oak.

This map unit makes up 43,350 acres, or about 12 percent of the county. It is about 53 percent Lakeland soils, 19 percent Foxworth soils, 15 percent Pottsburg soils, and 13 percent soils of minor extent.

Typically, Lakeland soils have a surface layer of brown sand about 6 inches thick. The substratum is sand. It is yellow to a depth of 37 inches, brownish yellow to a depth of 58 inches, and very pale brown to a depth of 80 inches or more.

Typically, Foxworth soils have a surface layer of brown sand about 6 inches thick. The substratum is sand. It is yellowish brown and has mottles in shades of gray to a depth of 43 inches; is yellowish brown and has mottles in shades of gray, yellow, and red to a depth of 67 inches; and is light gray and has mottles in shades of gray, yellow, and red to a depth of 80 inches or more.

Typically, Pottsburg soils have a surface layer of sand about 7 inches thick. The subsurface layer is dark grayish brown sand to a depth of 14 inches; is light gray sand that has mottles in shades of gray, yellow, and red to a depth of 22 inches; is white sand that has mottles in shades of gray, yellow, and red to a depth of 52 inches; and is light brownish gray loamy sand to a depth of 58 inches. The subsoil is black, organic-stained sand to a depth of 80 inches or more.

Of minor extent in this map unit are the Alapaha, Bibb, Blanton, Bonifay, Chipley, Chipola, Foxworth, Hurricane, Plummer, Rutlege, and Troup soils. These minor soils generally are in small areas that are intermixed with areas of the major soils.

The soils of this map unit are very poorly suited to moderately suited for crops and pasture, have a very low to moderate potential productivity for slash pine, and have slight to severe limitations affecting recreational development, building site development, and sanitary facilities. See the detailed map unit descriptions and the interpretative tables for more information.

Much of the acreage of this map unit has been planted to sand pines or supports native woodland. The rest has been cleared for hay and pasture.

Soils on Uplands, on Low Knolls, and in Areas of Flatwoods

The four general soil map units in this group consist of well drained to poorly drained, nearly level to strongly sloping soils. The soils are on summits, shoulders, and side slopes in the uplands and on rises, on knolls, and in areas of flatwoods in the coastal lowlands. They are throughout the county, except in the northwest corner. They are sandy or loamy and have a loamy subsoil within a depth of 20 inches, are sandy from a depth of 20 to 40 inches and have a loamy subsoil, or are sandy to a depth of 40 inches or more and have a loamy subsoil.

3. Dothan-Orangeburg

Nearly level to moderately sloping, well drained soils that have a loamy subsoil within a depth of 20 inches

This map unit is on summits, shoulders, and side slopes in the uplands in the northern part of the county near the community of Altha. Natural vegetation includes slash pine, loblolly pine, and longleaf pine and mixed hardwoods, such as oak, hickory, and dogwood. The understory consists of native grasses and shrubs, including bluestem, greenbrier, and pineland threeawn.

This map unit makes up 5,778 acres, or about 2 percent of the county. It is about 43 percent Dothan soils, 32 percent Orangeburg soils, and 25 percent soils of minor extent.

Typically, Dothan soils have a surface layer of very dark grayish brown sandy loam about 6 inches thick. The surface layer contains ironstone pebbles. The subsoil is sandy clay loam. It has ironstone pebbles, is yellowish brown, and has mottled in shades of gray, yellow, and red to a depth of 25 inches; is yellowish brown and has mottles in shades of gray, yellow, and red to a depth of 45 inches; is brownish yellow, has plinthite, and is mottled in shades of gray, yellow, and red to a depth of 65 inches; and is variegated in shades of gray, yellow, and red to a depth of 80 inches or more.

Typically, Orangeburg soils have a surface layer of very dark grayish brown loamy sand about 9 inches thick. The subsoil is strong brown sandy loam to a depth of 16 inches, is red sandy clay loam to a depth of 50 inches, and is red sandy clay that has mottles in shades of gray, yellow, and red to a depth of 80 inches or more.

Of minor extent in this map unit are the Chipola, Duplin, Florala, Fuquay, Leefield, Lucy, Robertsdale, and Stilson soils. These minor soils generally are in

Figure 2.—An area of Dothan sandy loam, 0 to 2 percent slopes, that produces grain for harvest and forage.

small areas that are intermixed with areas of the major soils.

The soils of this map unit are moderately well suited to very well suited for crops and pasture, have a moderately high or high potential productivity for slash pine, and have slight to severe limitations affecting recreational development, building site development, and sanitary facilities. See the detailed map unit descriptions and the interpretative tables for more information.

Most of the acreage of this map unit has been cleared for hay, pasture, or cultivated crops (fig. 2). The rest has been planted to pines or supports native woodland.

4. Blanton-Leefield-Alapaha

Nearly level to moderately sloping, moderately well drained soils that are sandy to a depth of more than 40 inches and have a loamy subsoil and somewhat poorly drained and poorly drained soils that are sandy to a depth of 20 to 40 inches and have a loamy subsoil

This map unit is on summits, shoulders, and side slopes in the uplands and on flats, rises, and knolls in the coastal lowlands throughout the county. It is mainly at the confluence of creeks and streams in the northern and central parts of the county. There is also a large area by Cypress Creek in the south-central part of the county. Natural vegetation includes slash pine, loblolly pine, and longleaf pine and mixed hardwoods, such as oak, hickory, and dogwood. The understory consists of native grasses and shrubs, including gallberry, bluestem, greenbrier, and pineland threeawn.

This map unit makes up 33,130 acres, or about 9 percent of the county. It is about 32 percent Blanton soils and the similar Troup and Albany soils, 13 percent Leefield soils and the similar Stilson soils, 12 percent Alapaha soils and the similar Pansey and Plummer soils, and 43 percent soils of minor extent.

Typically, Blanton soils have a surface layer of dark grayish brown sand about 4 inches thick. The subsurface layer is light yellowish brown sand to a depth of 40 inches, pale yellow sand to a depth of 60 inches, and pale yellow loamy sand that has mottles in shades of gray, yellow, and red to a depth of 68 inches. The subsoil is yellowish brown sandy loam that has mottles in shades of gray, yellow, and red to a depth 80 inches or more.

Typically, Leefield soils have a surface layer of dark gray loamy sand about 12 inches thick. The subsurface layer is pale yellow loamy sand that has mottles in shades of gray, yellow, and red to a depth of 34 inches. The subsoil to a depth of 61 inches or more is light gray fine sandy loam that has plinthite and has mottles in shades of gray, yellow, and red. Below this to a depth of 80 inches or more, the subsoil is light gray sandy clay loam that has plinthite and has mottles in shades of gray, yellow, and red.

Typically, Alapaha soils have a surface layer of very dark gray loamy sand about 6 inches thick. The subsurface layer is loamy sand. It is dark gray to a depth of 16 inches and is gray and has mottles in shades of gray, yellow, and red to a depth of 28 inches. The subsoil is gray sandy loam that has plinthite to a depth of 48 inches; is gray sandy loam that has plinthite and has mottles in shades of gray, yellow, and red to a depth of 62 inches; and is gray sandy clay loam that has plinthite and has mottles in shades of gray, yellow, and red to a depth of 80 inches or more.

Of minor extent in this map unit are the Albany, Bibb, Bladen, Bonifay, Chipley, Chipola, Croatan, Dothan, Florala, Foxworth, Fuquay, Garcon, Kinston, Lakeland, Lucy, Pansey, Pantego, Pottsburg, Robertsdale, Stilson, Surrency, Troup, and Wahee soils. These minor soils generally are in small areas that are intermixed with areas of the major soils.

The soils of this map unit are well suited to not suited for crops and pasture, have a moderately high potential productivity for slash pine, and have slight to severe limitations affecting recreational development, building site development, and sanitary facilities. See the detailed map unit descriptions and the interpretative tables for more information.

Most of the acreage of this map unit is used for planted pines or pasture. The rest is used for cultivated crops or supports native woodland.

5. Plummer-Albany-Blanton

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

This map unit is on flats, in areas of flatwoods, on rises, and on knolls in the coastal lowlands throughout the county. It is mainly in the west-central part of the county between Juniper Creek and Cypress Creek. Natural vegetation includes slash pine, loblolly pine, and longleaf pine and mixed hardwoods, such as oak, maple, and sweetgum. The understory consists of native grasses and shrubs, including wax-myrtle, greenbrier, and pineland threeawn.

This map unit makes up 14,357 acres, or about 4 percent of the county. It is about 33 percent Plummer soils and the similar Alapaha soils, 24 percent Albany soils and the similar Leefield soils, 7 percent Blanton soils and the similar Foxworth soils, and 36 percent soils of minor extent.

Typically, Plummer soils have a surface layer of very dark gray sand about 8 inches thick. The subsurface layer is sand. It is grayish brown to a depth of 16 inches and is light gray and has mottles in shades of gray, yellow, and red to a depth of 68 inches. The subsoil is light gray sandy loam that has mottles in shades of gray, yellow, and red to a depth of 80 inches or more.

Typically, Albany soils have a surface layer of dark grayish brown loamy sand about 8 inches thick. The subsurface layer is loamy sand. It is brown and has mottles in shades of gray to a depth of 14 inches; is very pale brown and has mottles in shades of gray to a depth of 29 inches; and is pale brown and has mottles in shades of gray, yellow, and red to a depth of 46 inches. The transitional subsoil is light yellowish brown loamy sand that has mottles in shades of gray, yellow, and red to a depth of 61 inches. The subsoil is variegated sandy clay loam in shades of gray, yellow, and red to a depth of 80 inches or more.

Typically, Blanton soils have a surface layer of dark grayish brown sand about 4 inches thick. The subsurface layer is light yellowish brown sand to a depth of 40 inches, pale yellow sand to a depth of 60 inches, and pale yellow loamy sand that has mottles in shades of gray, yellow, and red to a depth of 68 inches. The subsoil is yellowish brown sandy loam that has mottles in shades of gray, yellow, and red to a depth 80 inches or more.

Of minor extent in this map unit are the Alapaha, Bibb, Bonifay, Chipley, Chipola, Hurricane, Kinston, Lakeland, Leefield, Lucy, Pamlico, Pansey, Pottsburg, Rutlege, Stilson, Surrency, and Troup soils. These minor soils generally are in small areas that are intermixed with areas of the major soils.

The soils of this map unit are poorly suited to well suited for crops and pasture, have a moderately high potential productivity for slash pine, and have slight to severe limitations affecting recreational development, building site development, and sanitary facilities. See the detailed map unit descriptions and the interpretative tables for more information.

Most of the acreage of this map unit has been planted to pines. The rest is used for pasture or cultivated crops or supports native woodland.

6. Dothan-Fuquay-Alapaha

Nearly level to strongly sloping, well drained soils that have a loamy subsoil within a depth of 20 inches and well drained and poorly drained soils that are sandy to a depth of 20 to 40 inches and have a loamy subsoil

This map unit is on summits, shoulders, side slopes, and seeps in the uplands and on flats in the coastal lowlands. It is in the central and eastern parts of the county. Natural vegetation includes slash pine, loblolly pine, longleaf pine, southern magnolia, white oak, pignut hickory, and flowering dogwood. The understory consists of native grasses and shrubs, including shining sumac, sparkleberry, bluestem, greenbrier, and pineland threeawn.

This map unit makes up 81,125 acres, or about 22 percent of the county. It is about 38 percent Dothan soils, 18 percent Fuquay soils, 13 percent Alapaha soils, and 31 percent soils of minor extent.

Typically, Dothan soils have a surface layer of very dark grayish brown sandy loam that has ironstone pebbles and is about 6 inches thick. The subsoil is sandy clay loam. It is yellowish brown, has ironstone pebbles, and has mottles in shades of gray, yellow, and red to a depth of 25 inches; is yellowish brown, has plinthite, and has mottles in shades of gray, yellow, and red to a depth of 45 inches; is brownish yellow, has plinthite, and has mottles in shades of gray, yellow, and red to a depth of 65 inches; and is variegated in shades of gray, yellow, and red to a depth of 80 inches or more.

Typically, Fuquay soils have a surface layer of dark grayish brown loamy sand about 11 inches thick. The subsurface layer is olive yellow loamy fine sand that has mottles in shades of gray, yellow, and red to a depth of 32 inches. The subsoil is olive yellow fine sandy loam that has plinthite and has mottles in shades of gray, yellow, and red to a depth of 42 inches; is yellowish brown sandy loam that has plinthite and has mottles in shades of gray, yellow, and red to a depth of 58 inches; and is variegated sandy clay loam in shades of gray, yellow, and red to a depth of 80 inches or more.

Typically, Alapaha soils have a surface layer of very dark gray loamy sand about 6 inches thick. The subsurface layer is loamy sand. It is dark gray to a depth of 16 inches and is gray and has mottles in shades of gray, yellow, and red to a depth of 28 inches. The subsoil is gray sandy loam that has mottles in shades of gray, yellow, and red to a depth of 48 inches; is gray sandy loam that has plinthite and has mottles in shades of gray, yellow, and red to a depth of 62 inches; and is gray sandy clay loam that has plinthite and has mottles in shades of gray, yellow, and red to a depth of 80 inches or more.

Of minor extent in this map unit are the Albany, Bibb, Bladen, Blanton, Bonifay, Chipola, Croatan, Dunbar, Duplin, Florala, Garcon, Kenansville, Kinston, Leefield, Lucy, Orangeburg, Pansey, Pantego, Plummer, Pottsburg, Robertsdale, Stilson, Surrency, and Wahee soils. These minor soils generally are in small areas that are intermixed with areas of the major soils.

The soils of this map unit are very well suited to not suited for crops and pasture, have a moderately high or high potential productivity for slash pine, and have slight to severe limitations affecting recreational development, building site development, and sanitary facilities. See the detailed map unit descriptions and the interpretative tables for more information.

Most of the acreage of this map unit has been cleared for hay, pasture, or cultivated crops (fig. 3). The rest has been planted to pines or supports native woodland (fig. 4).

Soils in Areas of Low Flatwoods and on Broad Flats

The three general soil map units in this group consist of very poorly drained to moderately well drained, nearly level and gently sloping soils. These soils are on flats, in areas of flatwoods, on knolls, and on rises in the coastal lowlands and on terraces, flats, and footslopes in the uplands throughout the county, except in the northwest quarter. They are sandy or loamy and have a loamy or clayey subsoil within a depth of 20 inches, are sandy to a depth of 20 to 40 inches and have a loamy subsoil, are sandy to a depth of 40 inches or more and have a loamy subsoil, or are sandy to a depth of 20 to 40 inches and have a thin loamy subsoil that is underlain by sand within a depth of 60 inches.

7. Pansey-Leefield-Florala

Nearly level and gently sloping, poorly drained and very poorly drained soils that have a loamy subsoil within a depth of 20 inches, somewhat poorly drained soils that are sandy to a depth of 20 to 40 inches and have a loamy subsoil, and somewhat poorly drained soils that have a loamy subsoil within a depth of 20 inches

This map unit is on flats, knolls, and rises in the coastal lowlands throughout the county, except in the northwest corner. Natural vegetation includes slash pine, loblolly pine, longleaf pine, water oak, sweetgum,

Figure 3.—Peanut production in an area of Dothan sandy loam, 0 to 2 percent slopes.

and red maple. The understory consists of wax-myrtle, saw palmetto, inkberry, greenbrier, and pineland threeawn.

This map unit makes up 45,864 acres, or about 12 percent of the county. It is about 34 percent Pansey soils and the similar Alapaha soils, 29 percent Leefield soils and the similar Robertsdale soils, 18 percent Florala soils and the similar Stilson soils, and 19 percent soils of minor extent.

Typically, Pansey soils have a surface layer of very dark gray loam about 8 inches thick. The subsoil is light brownish gray sandy loam that has mottles in shades of gray, yellow, and red to a depth of 14 inches; is light gray sandy clay loam that has mottles in shades of gray, yellow, and red to a depth of 23 inches; is variegated sandy clay loam that has plinthite and is in shades of gray, yellow, and red to a depth of 50 inches; and is gray clay to a depth of 80 inches or more.

Typically, Leefield soils have a surface layer of dark gray loamy sand about 12 inches thick. The subsurface layer is pale yellow loamy sand that has mottles in shades of gray, yellow, and red to a depth of 34 inches. The subsoil is sandy loam. It is light gray, has plinthite, and has mottles in shades of gray, yellow, and red to a depth of 61 inches. It is light gray, has plinthite, and has mottles in shades of gray, yellow, and red to a depth of 80 inches or more.

Typically, Florala soils have a surface layer of dark grayish brown loamy sand about 8 inches thick. The subsoil is brownish yellow fine sandy loam that has mottles in shades of gray, yellow, and red to a depth of 25 inches; is brownish yellow sandy loam that has plinthite and has mottles in shades of gray, yellow, and red to a depth of 43 inches; is mixed light gray and yellowish brown sandy clay loam that has plinthite and has mottles in shades of gray, yellow, and red to a depth of 67 inches; and is variegated sandy clay loam in shades of gray, yellow, and red to a depth of 80 inches or more.

Of minor extent in this map unit are the Alapaha, Albany, Bladen, Blanton, Bonifay, Croatan, Dothan, Florala, Fuquay, Garcon, Kinston, Lucy, Orangeburg, Pantego, Plummer, Robertsdale, Stilson, and Surrency soils. These minor soils generally are in small areas that are intermixed with areas of the major soils.

The soils of this map unit are poorly suited to well suited for crops and pasture, have a moderate or moderately high potential productivity for slash pine, and have slight to severe limitations affecting recreational development, building site development, and sanitary facilities. See the detailed map unit descriptions and the interpretative tables for more information.

Most of the acreage of this map unit has been

Figure 4.—Slash pine in an area of Fuquay loamy sand, 0 to 2 percent slopes.

planted to pines. The rest is used for pasture or cultivated crops or supports native woodland.

8. Alapaha-Plummer

Nearly level and gently sloping, poorly drained soils that are sandy to a depth of 20 to 40 inches and have a loamy subsoil and poorly drained soils that are sandy to a depth of more than 40 inches and have a loamy subsoil

This map unit is on flats in the coastal lowlands in the southwest corner of the county. Natural vegetation includes slash pine, loblolly pine, longleaf pine, sweetgum, and red maple. The understory consists of wax-myrtle, saw palmetto, inkberry, greenbrier, and pineland threeawn.

This map unit makes up 3,974 acres, or about 1 percent of the county. It is about 58 percent Alapaha soils, 21 percent Plummer soils, and 21 percent soils of minor extent.

Typically, Alapaha soils have a surface layer of very dark gray loamy sand about 6 inches thick. The subsurface layer is loamy sand. It is dark gray to a depth of 16 inches. It is gray and has mottles in shades of gray, yellow, and red to a depth of 28 inches. The subsoil is gray sandy loam that has mottles in shades of gray, yellow, and red to a depth of 48 inches; is gray sandy loam that has plinthite and has mottles in shades of gray, yellow, and red to a depth of 62 inches; and is gray sandy clay loam that has plinthite and has mottles in shades of gray, yellow, and red to a depth of 80 inches or more.

Typically, Plummer soils have a surface layer of very dark gray sand about 8 inches thick. The subsurface layer is sand. It is grayish brown to a depth of 16 inches. It is light gray and has mottles in shades of gray, yellow, and red to a depth of 68 inches. The subsoil is light gray sandy loam that has mottles in shades of gray, yellow, and red to a depth of 80 inches or more.

Of minor extent in this map unit are the Albany, Bibb, Bladen, Chipley, Croatan, Garcon, Kinston, Leefield, and Pansey soils. These minor soils generally are in small areas that are intermixed with areas of the major soils.

The soils of this map unit are not suited for crops and pasture, have a moderately high potential productivity for slash pine, and have slight to severe limitations affecting recreational development, building site development, and sanitary facilities. See the detailed map unit descriptions and the interpretative tables for more information.

Most of the acreage of this map unit has been planted to pines. Some of the wettest areas support native hardwoods.

9. Bladen-Dunbar-Kenansville

Nearly level and gently sloping, poorly drained and somewhat poorly drained soils that have a clayey subsoil within a depth of 20 inches and moderately well drained soils that are sandy to a depth of 20 to 40 inches, have a loamy subsoil, and are underlain by sand within a depth of 60 inches

This map unit is on broad flats and stream terraces along the Apalachicola and Chipola Rivers. Natural vegetation includes slash pine, loblolly pine, longleaf pine, water oak, sweetgum, red maple, dogwood, American holly, sassafras, and persimmon. The understory consists of wax-myrtle, inkberry, gallberry, greenbrier, and pineland threeawn.

This map unit makes up 24,256 acres, or about 7 percent of the county. It is about 26 percent Bladen soils, 22 percent Dunbar soils and the similar Duplin soils, 18 percent Kenansville soils and the similar Chipola and Garcon soils, and 34 percent soils of minor extent.

Typically, Bladen soils have a surface layer of black loam about 7 inches thick. The subsurface layer is gray loam that has mottles in shades of gray, yellow, and red to a depth of 14 inches. The subsoil is gray clay that has mottles in shades of gray, yellow, and red to a depth of 80 inches or more.

Typically, Dunbar soils have a surface layer of black fine sandy loam about 6 inches thick. The subsoil is light olive brown clay loam that has mottles in shades of gray, yellow, and red to a depth of 14 inches; is light gray clay that has mottles in shades of gray, yellow, and red to a depth of 36 inches; and is gray clay that has mottles in shades of gray, yellow, and red to a depth of 80 inches or more.

Typically, Kenansville soils have a surface layer of dark grayish brown loamy sand about 7 inches thick. The subsurface layer is light yellowish brown loamy sand to a depth of 22 inches. The subsoil is yellowish brown sandy clay loam to a depth of 38 inches and is brownish yellow sandy loam to a depth of 52 inches. The substratum is very pale brown loamy sand that has mottles in shades of gray, yellow, and red to a depth of 80 inches or more.

Of minor extent in this map unit are the Alapaha, Chipola, Duplin, Garcon, Fuquay, Pansey, Pantego, Ochlockonee, Robertsdale, Stilson, Surrency, and Wahee soils. These minor soils generally are in small areas that are intermixed with areas of the major soils.

The soils of this map unit are not suited to well suited for crops and pasture, have a moderately high or high potential productivity for slash pine, and have slight to severe limitations affecting recreational development, building site development, and sanitary facilities. See the detailed map unit descriptions and the interpretative tables for more information.

Most of the acreage of this map unit has been planted to pines or supports native woodland. The rest is used for pasture or cultivated crops.

Soils in Depressions and on Flood Plains Along Rivers

The two general soil map units in this group consist of very poorly drained to moderately well drained, nearly level soils. These soils are on flood plains, in depressions, and along the shoreline of Dead Lake. Some of these soils are mucky from a depth of 16 to 51 inches and are underlain by loamy or sandy material; some have a loamy surface and a loamy subsoil at a depth of 20 to 40 inches; some are stratified with loamy and clayey material being predominantly clayey underlain by loamy material; some are sandy throughout; and others are predominantly loamy and stratified with sandy material.

10. Croatan-Surrency-Rutlege

Nearly level, very poorly drained soils that are muck to a depth of 16 to 51 inches and are underlain by loamy or sandy material, sandy soils that have a loamy subsoil at a depth of 20 to 40 inches, and soils that are sandy throughout

This map unit is on flood plains and in depressions throughout the county and along the shoreline of Dead Lake. Natural vegetation includes bay, cypress, and gum trees, scattered areas of longleaf pine, and greenbrier.

This map unit makes up 71,684 acres, or about 19 percent of the county. It is about 38 percent Croatan soils and the similar Pamlico and Dorovan soils, 25 percent Surrency soils and the similar Pantego and Alapaha soils, 14 percent Rutlege soils and the similar Bibb soils, and 23 percent soils of minor extent.

Typically, Croatan soils have a surface layer of black muck about 19 inches thick. The substratum is very dark brown mucky sandy loam to a depth of 42 inches, dark brown sandy loam to a depth of 47 inches, and light brownish gray sand to a depth of 80 inches or more.

Typically, Surrency soils have a surface layer that is black mucky sand to a depth of about 5 inches and very dark grayish brown sand to a depth of 8 inches. The subsurface layer is grayish brown sand to a depth of 35 inches. The subsoil is grayish brown sandy clay loam that has mottles in shades of gray, yellow, and red to a depth of 80 inches or more.

Typically, Rutlege soils have a surface layer of black sand about 13 inches thick. The substratum is grayish brown sand to a depth of 80 inches or more.

Of minor extent in this map unit are the Alapaha, Bibb, Brickyard, Dorovan, Garcon, Kinston, Pansey, Pamlico, Pantego, Plummer, and Pottsburg soils. These minor soils generally are in small areas that are intermixed with areas of the major soils.

The soils of this map unit are not suited for crops, pasture, or pine trees and have very severe limitations affecting recreational development, building site development, and sanitary facilities (fig. 5). See the detailed map unit descriptions and the interpretative tables for more information.

Most of the acreage of this map unit supports native woodland. The rest, which includes drained areas and minor soils, has been planted to pines.

11. Brickyard-Wahee-Ochlockonee

Nearly level, very poorly drained clayey soils that are underlain by loamy material, somewhat poorly drained clayey soils that are underlain by loamy material, and moderately well drained soils that are predominantly loamy and are stratified with sandy material

This map unit is on the flood plains along the Apalachicola River on the eastern side of the county. Natural vegetation includes swamp chestnut oak, American sycamore, river birch, American hornbean, ogeechee tupelo, sweetgum, cypress, hickory, and scattered areas of longleaf pine and loblolly pine. The understory is crossvine, greenbriers, peppervine, poison ivy, trumpet creeper, and wild grape.

This map unit makes up 26,943 acres, or about 7 percent of the county. It is about 57 percent Brickyard soils, 21 percent Wahee soils, 7 percent Ochlockonee soils, and 15 percent soils of minor extent.

Typically, Brickyard soils have a surface layer of dark brown clay loam about 6 inches thick. The subsoil is silty clay. It is grayish brown and has mottles in shades of gray, yellow, and red to a depth of 15 inches. It is light brownish gray and has mottles in shades of gray, yellow, and red to a depth of 28 inches. The substratum is gray silty clay that has mottles in shades of gray, yellow, and red to a depth of 80 inches or more.

Typically, Wahee soils have a surface layer of brown loam about 4 inches thick. The subsoil is light yellowish brown silty clay that has mottles in shades of gray, yellow, and red to a depth of 24 inches; is light brownish gray silty clay that has mottles in shades of gray, yellow, and red to a depth to 42 inches; and is light gray clay that has mottles in shades of gray, yellow, and red to a depth of 80 inches or more.

Typically, Ochlockonee soils have a surface layer of very dark grayish brown loam about 4 inches thick. The substratum is dark yellowish brown sandy loam that has mottles in shades of gray, yellow, and red to a depth of 31 inches; is dark yellowish brown loamy sand that has mottles in shades of gray, yellow, and red to a depth of 61 inches; and is dark brown loam that has mottles in shades of gray, yellow, and red to a depth of 80 inches or more.

Of minor extent in this map unit are the Bibb, Bladen, Croatan, Dorovan, Dunbar, Duplin, Kinston, Pamlico, Pantego, Surrency, and Rutlege soils. These minor soils generally are in small areas that are intermixed with areas of the major soils.

Most of the acreage of this map unit supports native woodland. The rest, which mainly includes minor soils, has been planted to pines.

The soils of this map unit are not suited for crops, pasture, or pine trees and have very severe limitations affecting recreational development, building site development, and sanitary facilities. See the detailed map unit descriptions and the interpretative tables for more information.

Figure 5.—Flooding in an area of Croatan, Kinston, and Surrency soils, frequently flooded, adjacent to an area of Duplin very fine sandy loam.

Detailed Soil Map Units

The map units delineated on the detailed maps at the back of this survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this section, along with the maps, can be used to determine the suitability and potential of a unit for specific uses. They also can be used to plan the management needed for those uses. More information about each map unit, including a description of the ecological communities (USDA-SCS, 1985a), is given under the heading "Use and Management of the Soils."

A map unit delineation on a map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils or miscellaneous areas. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils and miscellaneous areas are natural phenomena, and they have the characteristic variability of all natural phenomena. 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 other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some "included" areas that belong to other taxonomic classes.

Most included soils have properties 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, or similar, soils. They may or may not be mentioned in the map unit description. Other included soils and miscellaneous areas, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, soils. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. The included areas of contrasting soils or miscellaneous areas are mentioned in the map unit descriptions. A few included areas may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

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

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit 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, 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, slope, flooding, ponding, degree of erosion, depth to a seasonal high water table, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Dothan loamy sand, 2 to 5 percent slopes, is a phase of the Dothan series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Dothan-Fuquay complex, 8 to 12 percent slopes, is an example.

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

An *undifferentiated group* is made up of two or more soils or miscellaneous areas 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 or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Croatan, Surrency, and Pantego soils, depressional, is an undifferentiated group in this survey area.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Pits is an example.

Table 4 gives the acreage and proportionate extent of each map unit. Other 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 or miscellaneous areas.

2—Albany loamy sand, 0 to 5 percent slopes

This somewhat poorly drained soil is on low uplands, such as rises and knolls, and on flats in the coastal lowlands and in low upland areas that are depressed relative to the surrounding upland landforms. Areas of this soil are irregular in shape and range from 3 to 350 acres in size. Slopes are smooth to convex.

Typically, the surface layer is dark grayish brown loamy sand about 8 inches thick. Below this is brown loamy sand that has mottles in shades of gray to a depth of 14 inches, very pale brown loamy sand that has mottles in shades of gray to a depth of 29 inches, and pale brown loamy sand that has mottles in shades of gray, yellow, and red to a depth of 46 inches. The transitional subsoil is light yellowish brown loamy sand that has mottles in shades of gray, yellow, and red to a depth of 61 inches. The subsoil is sandy clay loam that is variegated in shades of gray, yellow, and red to a depth of 80 inches or more.

In 80 percent of the areas of this map unit, the Albany soil and similar soils make up 79 to 100 percent of the unit. Also included in mapping are small areas that have 5 percent or more plinthite in the upper part of the subsoil.

Dissimilar soils make up 0 to 21 percent of the mapped areas. The dissimilar soils include Blanton, Chipley, Florala, Foxworth, and Plummer soils. Blanton soils are moderately well drained, are in slightly higher positions than the Albany soil, and have mottles related to wetness below a depth of 30 inches. Chipley soils are somewhat poorly drained, are on landforms similar to those of the Albany soil, and have mottles related to wetness at a depth of 18 to 42 inches. Foxworth soils are moderately well drained, are in slightly higher positions than the Albany soil, are sandy throughout, and have mottles related to wetness below a depth of 42 inches. Florala soils are somewhat poorly drained, have an argillic horizon within a depth of 20 inches, are on landforms similar to those of the Albany soil, and have mottles related to wetness within a depth of 30 inches. Plummer soils are poorly drained, are on flats and in drainageways, and have mottles related to wetness at a depth of 6 to 12 inches.

The seasonal high water table is at a depth of 18 to 42 inches from December through March and from June through September. The available water capacity is very low in the surface and subsurface layers and moderate in the subsoil.

Typically, this map unit supports the Mixed Hardwood and Pine ecological community, which has several variations. In mature, natural stands, the hardwoods replace the pines. The natural climax vegetation is thought to be a beech-magnolia-maple association. The trees that characterize this community are loblolly pine, white oak, pignut hickory, American beech, and flowering dogwood. The herbaceous plants and vines include aster, partridge pea, poison ivy, violet, Virginia creeper, and wild grape. Grasses include broomsedge bluestem, longleaf uniola, low panicum, and spike uniola.

This map unit is moderately suited to cultivated crops. Periodic wetness or droughtiness in the root zone, rapid leaching of plant nutrients, and the hazard of erosion where slopes are more than 2 percent are management concerns. The number of crops that are adapted to the local conditions is very limited unless intensive water-control measures are used. If adequate water-control measures are used, such crops as wheat, soybeans, and peanuts are moderately well adapted. Good management measures include planting close-growing, soil-improving crops in rotation with row crops. Fertilizer and lime are needed for best results.

This map unit is moderately suited to pasture and hay. It requires good management for best yields. Improved bermudagrasses and improved bahiagrasses are well adapted to the local conditions and respond well to applications of fertilizer and lime. Surface drainage is needed to remove excess water in wet seasons. Controlled grazing is needed to maintain vigorous plants and to obtain maximum yields.

The potential productivity of this map unit is moderately high for slash pine. The main management concerns are equipment limitations and plant competition caused by seasonal wetness and seedling mortality caused by low available water capacity and low fertility. Site preparation should include removing the larger debris to facilitate mechanical operations and chopping the woody understory vegetation to help control immediate plant competition. Limiting mechanical operations to the drier periods can help to overcome the equipment limitations and usually results in less soil compaction and less damage to roots during thinning operations. Prescribed burning in established stands can help to control the competing vegetation and help to maintain ease of access.

This map unit has severe limitations affecting septic tank absorption fields, sanitary landfills, sewage lagoon areas, shallow excavations, dwellings with basements, small commercial buildings, lawns, and landscaping. It has moderate limitations affecting dwellings without basements and local roads and streets. Wetness is the main limitation. Tables 9 and 10 contain additional information regarding factors that can affect urban development.

This map unit has severe limitations affecting camp areas, playgrounds, and golf fairways. It has moderate limitations affecting picnic areas, paths, and trails. The sandy surface and wetness are the main limitations. Table 7 contains additional information regarding factors that can affect recreational development.

The capability subclass is IIIw.

4—Brickyard clay loam, frequently flooded

This very poorly drained soil is on flood plains along the Apalachicola River. Areas of this soil are elongated or irregular in shape and range to several thousand acres in size. Slopes are smooth and range from 0 to 2 percent.

Typically, the surface layer is dark brown clay loam about 6 inches thick. The subsoil is silty clay. It is grayish brown and has mottles in shades of gray, yellow, and red to a depth of 15 inches and is light brownish gray and has mottles in shades of gray, yellow, and red to a depth of 28 inches. The substratum is gray silty clay that has mottles in shades of gray, yellow, and red to a depth of 80 inches or more.

In 95 percent of the areas of this map unit, the Brickyard soil and similar soils make up 90 to 100 percent of the unit. The similar soils include Pantego and Surrency soils. Pantego soils have less clay in the subsoil than the Brickyard soil. Surrency soils have a subsoil at a depth of 20 to 40 inches.

Dissimilar soils within this map unit make up less than 10 percent of the mapped areas. The dissimilar soils include very poorly drained Kinston soils that are loamy throughout and are on flood plains and moderately well drained Ochlockonee and somewhat poorly drained Wahee soils that are in more elevated positions and have mottles related to drainage within a depth of 12 inches. Also included are small areas of soils that are sandy throughout.

The seasonal high water table is at or near the surface from December through March and from June through September. Flooding is likely to occur often under usual weather conditions. The chance of flooding is more than a 50 percent in any year but is less than 50 percent in all months in any year. On the average, flooding occurs more than 50 times in 100 years. The average duration of the flooding ranges from 7 to more than 30 days. The available water capacity is moderate or high.

Typically, this map unit supports the Bottomland Hardwoods ecological community, which is extremely diverse. Understory growth is profuse where light enters through the openings in the canopy. Common trees include tupelo, cypress, sweetbay, red maple, black willow, green ash, river birch, swamp chestnut oak, sweetgum, American sycamore, water hickory, water oak, and willow oak. Common herbaceous vines include crossvine, greenbrier, peppervine, poison ivy, trumpet creeper, and wild grape.

This map unit is not suited to cultivated crops, hay, or pasture because of the flooding and excessive wetness.

This map unit is not suited to the production of pine trees because of the flooding and excessive wetness. This soil is suited to hardwood production through natural regeneration.

This map unit has severe limitations affecting urban and recreational development. Flooding and wetness are the main limitations. Tables 7, 9, and 10 contain additional information regarding factors that can affect urban and recreational development.

The capability subclass is VIIw.

5—Robertsdale fine sandy loam

This somewhat poorly drained soil is in flat areas that are slightly depressed relative to the surrounding upland landforms. Areas of this soil are irregular in shape and range from 3 to 550 acres in size. Slopes are smooth to concave and range from 0 to 2 percent.

Typically, the surface layer, to a depth of about 7 inches, is very dark gray fine sandy loam that has iron concretions. The subsoil is sandy clay loam. It is brown, has iron concretions, and has mottles in shades of gray, yellow, and red to a depth of 13 inches; is yellowish brown, has plinthite, and has mottles in shades of gray, yellow, and red to a depth of 32 inches; and has plinthite and is variegated in shades of gray, yellow, and red to a depth of 80 inches or more.

In 95 percent of the areas of this map unit, the Robertsdale soil and similar soils make up 100 percent of the unit. The similar soils include Florala and Leefield soils that are in positions similar to those of the Robertsdale soil. Florala soils have less than 18 percent clay in the upper 20 inches of the loamy subsoil. Leefield soils have a loamy subsoil at a depth of 20 to 40 inches. Also included in mapping are soils that are similar to the Robertsdale soil but have less than 5 percent iron concretions or plinthite or that have slopes of 2 to 5 percent.

Dissimilar soils make up less than 5 percent of the mapped areas. The dissimilar soils include Dothan and Pansey soils. Dothan soils are well drained, are in higher positions than the Robertsdale soil, and have mottles related to wetness below a depth of 30 inches. Pansey soils are poorly drained, are in lower positions, and have mottles related to wetness within a depth of 12 inches.

The seasonal high water table is perched at a depth of 12 to 18 inches from December through March and from June through September. The available water capacity is moderate in the surface layer and subsoil.

Typically, this map unit supports the North Florida Flatwoods ecological community, which has only slight variations in composition. Slash pine and live oak are the main trees. Herbaceous plants and shrubs include blackberry, dogfennel, gallberry, greenbrier, saw palmetto, and wax-myrtle. Grasses and grasslike plants include chalky bluestem, yellow Indiangrass, low panicum, pineland threeawn, and sedges.

This map unit is poorly suited to cultivated crops because of wetness. If a total water-management system is applied, this soil is suited to such crops as corn and soybeans. Seedbed preparation should include bedding the rows. Management should include crop rotations that keep the soil in close-growing cover crops at least two-thirds of the time. The cover crops and all other crop residue should be returned to the soil. Maximum yields require good tilth and nutrient management.

This map unit is moderately well suited to pasture and hay. Such grasses as improved bermudagrasses and improved bahiagrasses are adapted to the local conditions. Nutrient management, surface drainage, and controlled grazing are needed to maintain vigorous plants and good cover and to obtain maximum yields.

The potential productivity of this map unit is moderately high for slash pine. The main management concerns are equipment limitations, plant competition, and windthrow hazard caused by wetness and a shallow depth to horizons that have a texture of sandy clay loam. Site preparation should include chopping the woody understory vegetation to help control the immediate plant competition caused by wetness. Limiting mechanical operations to the drier periods can help to overcome the equipment limitations and usually results in less soil compaction and less damage to roots during thinning operations. Prescribed burning in established stands can help to control the competing vegetation and help to maintain ease of access. Windthrow hazard can be reduced by intermittently leaving unharvested rows of mature trees to act as windbreaks.

This map unit has severe limitations affecting septic tank absorption fields, sanitary landfills, shallow excavations, dwellings, and small commercial buildings. It has moderate limitations affecting local roads, streets, lawns, and landscaping. It has slight limitations affecting sewage lagoon areas. Wetness and slow percolation are the main limitations. Tables 9 and 10 contain additional information regarding factors that can affect urban development.

This map unit has severe limitations affecting camp areas and playgrounds. It has moderate limitations affecting picnic areas, paths, trails, and golf fairways. Wetness and slow percolation are the main limitations. Table 7 contains additional information regarding factors that can affect recreational development.

The capability subclass is IIIw.

6—Bladen loam, rarely flooded

This poorly drained soil is on flats adjacent to the flood plains along large streams. Areas of this soil are irregular or elongated in shape and range from 3 to

100 acres in size. Slopes are smooth to concave and range from 0 to 2 percent.

Typically, the surface layer is black loam about 7 inches thick. The subsurface layer is gray loam that has mottles in shades of gray, yellow, and red to a depth of 14 inches. The subsoil is gray clay that has mottles in shades of gray, yellow, and red to a depth of 80 inches or more.

In 95 percent of the areas of this map unit, the Bladen soil and similar soils make up 100 percent of the unit. The similar soils include Dunbar and Pansey soils. Dunbar soils are better drained than the Bladen soil, are in higher positions, and have mottles related to wetness within a depth of 1 foot. Pansey soils have a loamy subsoil.

Dissimilar soils make up less than 5 percent of the mapped areas. The dissimilar soils include Pantego and Surrency soils that are very poorly drained and are in lower positions than the Bladen soil. These dissimilar soils have a loamy subsoil, are very poorly drained, are on flood plains and in depressions, and are subject to ponding. Also, the Surrency soils are frequently flooded.

The seasonal high water table is at or near the surface from December through March and from June through September. The available water capacity is moderate or high throughout. Flooding is unlikely but possible under unusual weather conditions. The chance of flooding is 1 to 5 percent in any year. On the average, flooding occurs 1 to 5 times in 100 years. The average duration of the flooding ranges from 2 to 7 days.

Typically, this map unit supports the North Florida Flatwoods ecological community, which has only slight variations in composition. The main trees when the community has climax vegetation are slash pine and live oak. Herbaceous plants and shrubs include blackberry, dogfennel, gallberry, greenbrier, saw palmetto, and wax-myrtle. Grasses and grasslike plants include chalky bluestem, yellow Indiangrass, low panicum, pineland threeawn, and sedges.

This map unit is not suited to cultivated crops because of excessive wetness.

This map unit is moderately suited to pasture and hay. Wetness and a high clay content severely limit accessibility. Surface drainage and applications of fertilizer and lime are needed. Grazing should be controlled so that plants remain vigorous.

The potential productivity of this map unit is moderately high for slash pine. The main management concerns are equipment limitations, seedling mortality, plant competition, and windthrow hazard caused by wetness and a shallow depth to horizons that have a texture of clay. Site preparation should include chopping the woody understory vegetation to help control immediate plant competition and bedding to minimize the seedling mortality caused by wetness. The installation of shallow surface ditches to remove excess water during wet periods may also be necessary. Limiting mechanical operations to the drier periods can help to overcome the equipment limitations and usually results in less soil compaction and less damage to roots during thinning operations. Prescribed burning in established stands can help to control the competing vegetation and help to maintain ease of access. Windthrow hazard can be reduced by intermittently leaving unharvested rows of mature trees to act as windbreaks. During harvesting, site preparation, and road building, care should be taken not to impede the flow of the creeks and drainageways that remove excess water from the area.

Excessive wetness and the flooding are severe limitations affecting urban and recreational development. Tables 7, 9, and 10 contain additional information regarding factors that can affect urban and recreational development.

The capability subclass is VIw.

7—Blanton sand, 0 to 5 percent slopes

This moderately well drained soil is on summits and shoulders in the uplands. Areas of this soil are elongated or irregular in shape and range from 3 to 275 acres in size. Slopes are smooth to convex.

Typically, the surface layer is dark grayish brown sand about 4 inches thick. The subsurface layer is light yellowish brown sand to a depth of 40 inches, pale yellow sand to a depth of 60 inches, and pale yellow loamy sand that has mottles in shades of gray, yellow, and red to a depth of 68 inches. The subsoil is yellowish brown sandy loam that has mottles in shades of gray, yellow, and red to a depth of 80 inches or more.

In 80 percent of the areas of this map unit, the Blanton soil and similar soils make up 83 to 100 percent of the unit. The similar soils include Albany, Bonifay, Stilson, and Troup soils. Albany soils are more poorly drained than the Blanton soil, are in lower positions, and have mottles related to wetness at a depth of 12 to 30 inches. Bonifay and Stilson soils have plinthite. Also, Bonifay soils are better drained than the Blanton soil and are in higher positions. Troup soils are better drained than the Blanton soil, are in higher positions, and have mottles related to wetness below a depth of 72 inches.

Dissimilar soils make up as much as 17 percent of the mapped areas. The dissimilar soils include Chipley, Foxworth, Leefield, and Lakeland soils. Chipley, Foxworth, and Lakeland soils are sandy throughout. Also, Chipley soils are in lower positions than the Blanton soil and Lakeland soils are in more elevated positions. Leefield soils have a subsoil within a depth of 20 to 40 inches, are somewhat poorly drained, and are in lower positions than the Blanton soil.

The seasonal high water table is at a depth of 42 to 72 inches from January through March and from June through September. The available water capacity is very low or low in the surface and subsurface layers and moderate in the subsoil.

Typically, this map unit supports the Mixed Hardwood and Pine ecological community, which has several variations. In mature, natural stands, the hardwoods replace the pines. The natural climax vegetation is thought to be a beech-magnolia-maple association. The trees that characterize this community are loblolly pine, white oak, pignut hickory, American beech, and flowering dogwood. The herbaceous plants and vines include aster, partridge pea, poison ivy, violet, Virginia creeper, and wild grape. Grasses include broomsedge bluestem, longleaf uniola, low panicum, and spike uniola.

This map unit is moderately suited to most cultivated crops. Droughtiness and rapid leaching of plant nutrients limit the choice of plants and reduce the potential yields of those crops that are adapted to the local conditions. Row crops need to be planted on the contour in alternating strips with close-growing cover crops. Crop rotations should include close-growing cover crops. Lime and fertilizer are needed. Irrigation of high-value crops is usually feasible where irrigation water is readily available.

This map unit is moderately well suited to pasture and hay. Deep-rooted, hybrid bermudagrasses and bahiagrasses are best adapted to the local conditions, but yields are reduced by periodic droughts. Nutrient management and carefully controlled grazing are needed to maintain vigorous plants. Regular applications of fertilizer and lime are also needed. Grazing should be controlled to maintain plant vigor and a good ground cover.

The potential productivity of this map unit is moderately high for slash pine. The main management concerns are equipment limitations and seedling mortality caused by the sandy surface and seasonal droughtiness. To facilitate mechanical operations, site preparation should include the removal of the larger debris. Planting trees that are adapted to the local conditions and planting during the wetter months can reduce the seedling mortality rate.

This map unit has severe limitations affecting sewage lagoons, sanitary landfills, shallow excavations, lawns, and landscaping. It has moderate limitations affecting septic tank absorption fields and dwellings with basements. Wetness, the sandy surface, and seepage are the main limitations. This map unit has slight limitations affecting dwellings without basements, small commercial buildings, and local roads and streets. Tables 9 and 10 contain additional information regarding factors that can affect urban development.

This map unit has severe limitations affecting recreational development. The sandy surface is the main limitation. Table 7 contains additional information regarding factors that can affect recreational development.

The capability subclass is IIIs.

8—Blanton sand, 5 to 8 percent slopes

This moderately well drained soil is on side slopes in the uplands. Areas of this soil are elongated in shape and range from 3 to 80 acres in size. Slopes are smooth to convex.

Typically, the surface layer is brown sand about 5 inches thick. The subsurface layer is light yellowish brown sand to a depth of 75 inches. The subsoil is brownish yellow sandy loam that has mottles in shades of gray, yellow, and red to a depth of 80 inches or more.

In 80 percent of the areas of this map unit, the Blanton soil and similar soils make up 80 to 100 percent of the unit. The similar soils include Albany, Bonifay, Stilson, and Troup soils. Albany soils are more poorly drained than the Blanton soil, are in lower positions, and have mottles related to wetness at a depth of 12 to 30 inches. Bonifay and Stilson soils have plinthite. Also, Bonifay soils are better drained than the Blanton soil and are in higher positions. Troup soils are better drained than the Blanton soil, are in higher positions, and have mottles related to wetness below a depth of 72 inches.

Dissimilar soils make up 0 to 20 percent of the mapped areas. The dissimilar soils include Chipley, Foxworth, Leefield, and Lakeland soils. Chipley, Foxworth, and Lakeland soils are sandy throughout. Also, Chipley soils are more poorly drained than the Blanton soil and are in lower positions and Lakeland soils are better drained and are in higher positions. Leefield soils have a loamy subsoil at a depth of 20 to 40 inches, are more poorly drained than the Blanton soil, and are in lower positions.

The seasonal high water table is at a depth of 42 to

72 inches from January through March and from June through September. The available water capacity is very low or low in the surface and subsurface layers and moderate in the subsoil.

Typically, this map unit supports the Mixed Hardwood and Pine ecological community, which has several variations. In mature, natural stands, the hardwoods replace the pines. The natural climax vegetation is thought to be a beech-magnolia-maple association. The trees that characterize this community are loblolly pine, white oak, pignut hickory, American beech, and flowering dogwood. The herbaceous plants and vines include aster, partridge pea, poison ivy, violet, Virginia creeper, and wild grape. Grasses include broomsedge bluestem, longleaf uniola, low panicum, and spike uniola.

This map unit is poorly suited to most cultivated crops. Droughtiness and rapid leaching of plant nutrients limit the choice of plants and reduce the potential yields of those crops that are adapted to the local conditions. The control of erosion is also a management concern. Row crops need to be planted on the contour in alternating strips with close-growing cover crops. Crop rotations should include close-growing cover crops. Nutrient management helps to maximize yields. Irrigation of high-value crops is usually feasible where water is readily available.

This map unit is moderately suited to pasture and hay. Improved bermudagrasses and improved bahiagrasses are well adapted to the local conditions, but yields are reduced by periodic droughts. Regular applications of fertilizer and lime are needed. Grazing should be controlled to maintain plant vigor and a good ground cover.

The potential productivity of this map unit is moderately high for slash pine. The main management concerns are equipment limitations and seedling mortality caused by the sandy surface and seasonal droughtiness. To facilitate mechanical operations, site preparation should include the removal of the larger debris. Planting trees that are adapted to the local conditions and planting during the wetter months can reduce the seedling mortality rate.

This map unit has severe limitations affecting sewage lagoon areas, sanitary landfills, shallow excavations, lawns, and landscaping. It has moderate limitations affecting septic tank absorption fields, small commercial buildings, and dwellings with basements. It has slight limitations affecting dwellings without basements and local roads and streets. Wetness and the sandy surface are the main limitations. Tables 9 and 10 contain additional information regarding factors that can affect urban development.

This map unit has severe limitations affecting recreational development. The sandy surface is the main limitation. Also, the slope is a limitation affecting playgrounds. Table 7 contains additional information regarding factors that can affect recreational development.

The capability subclass is IVs.

10—Bonifay sand, 0 to 5 percent slopes

This well drained soil is on summits and shoulders in the uplands. Individual areas of this soil are irregular in shape and range from 3 to 100 acres in size. Slopes are smooth to convex.

Typically, the surface layer is very dark grayish brown sand about 5 inches thick. The subsurface layer is yellowish brown sand to a depth of 52 inches and is yellow loamy sand that has mottles in shades of gray, yellow, and red to a depth of 64 inches. The subsoil is strong brown sandy loam that has plinthite nodules and has mottles in shades of gray, yellow, and red to a depth of 80 inches or more.

In 95 percent of the areas of this map unit, the Bonifay soil and similar soils make up 100 percent of the unit. The similar soils include Albany, Blanton, Fuquay, and Troup soils. Albany and Blanton soils are more poorly drained than the Bonifay soil and are in lower positions. Fuquay soils have a loamy subsoil at a depth of 20 to 40 inches and are in positions similar to those of Bonifay soil. Troup soils do not have plinthite and have a redder subsoil than that of the Bonifay soil.

Dissimilar soils make up less than 5 percent of the mapped areas.

The seasonal high water table is perched at a depth of 48 to 72 inches from January through March and from June through September. The available water capacity is very low or low in the surface and subsurface layers and moderate in the subsoil.

Typically, this map unit supports the Longleaf Pine-Turkey Oak Hills ecological community, which has several variations. Scattered longleaf pine are the overstory in mature, natural stands of trees. Areas from which pines have been removed are dominated by oaks. The trees that characterize this community are longleaf pine, turkey oak, blackjack oak, and post oak. Herbaceous plants and vines include aster, blazingstar, brackenfern, butterfly pea, elephantsfoot, grassleaf goldaster, partridge pea, pineland beggarweed, sandhill milkweed, showy crotalaria, and wild indigo. Grasses and grasslike plants include Curtis' dropseed, hairy panicum, yellow Indiangrass, low panicum, and pineywoods dropseed.

This map unit is poorly suited to cultivated crops.

Droughtiness and rapid leaching of plant nutrients limit the choice of plants and reduce the potential yields of those crops that are adapted to the local conditions. Row crops need to be planted on the contour in alternating strips with close-growing cover crops. Lime and fertilizer are needed. Irrigation of high-value crops is generally feasible where irrigation water is readily available.

This map unit is moderately suited to pasture and hay. Deep-rooted plants, such as improved bermudagrasses and improved bahiagrasses, are well adapted to the local conditions. They grow well and produce good ground cover if lime and fertilizer are applied. Controlled grazing is needed to maintain vigorous plants and to obtain maximum yields. Yields are occasionally reduced by extended, severe droughts.

The potential productivity of this map unit is moderately high for slash pine. The main management concerns are equipment limitations, seedling mortality, and plant competition caused by the sandy surface, low available water capacity, and seasonal wetness. Site preparation should included removing the larger debris to facilitate mechanical operations and chopping the woody understory vegetation to help control immediate plant competition. Planting trees that are adapted to the local conditions and planting during the wetter months can reduce the seedling mortality rate.

The sandy surface, seepage, and cutbanks caving are severe limitations affecting sewage lagoons, sanitary landfills, shallow excavations, lawns, and landscaping. Wetness and moderate percolation in the subsoil are moderate limitations affecting septic tank absorption fields and dwellings with basements. This map unit has slight limitations affecting dwellings without basements, small commercial buildings, and local roads and streets. Tables 9 and 10 contain additional information regarding factors that can affect urban development.

The sandy surface layer is a severe limitation affecting recreational development. Table 7 contains additional information regarding factors that can affect recreational development.

The capability subclass is IIIs.

12—Chipley sand, 0 to 5 percent slopes

This somewhat poorly drained soil is in flat areas that are depressed relative to the surrounding upland landforms and on rises and knolls in the coastal lowlands. Areas of this soil are irregular in shape and range from 3 to 140 acres in size. Slopes are smooth to concave.

Typically, the surface layer is dark grayish brown sand about 7 inches thick. The substratum is sand. It is brown and has mottles in shades of gray, yellow, and red to a depth of 21 inches; is brownish yellow and has mottles in shades of gray, yellow, and red to a depth of 47 inches; is very pale brown and has mottles in shades of gray, yellow, and red to a depth of 50 inches; and is white to a depth of 80 inches or more.

In 95 percent of the areas of this map unit, the Chipley soil and similar soils make up 100 percent of the unit. The similar soils include Albany and Hurricane soils, which are in positions similar to those of the Chipley soil and have similar drainage. Albany soils have a loamy subsoil below a depth of 40 inches. Hurricane soils have an organic-stained subsoil below a depth of 50 inches.

Dissimilar soils make up less than 5 percent of the mapped areas. The dissimilar soils include Foxworth soils, which are better drained than the Chipley soil, are in higher positions, and have mottles below a depth of 42 inches.

The seasonal high water table is within a depth of 18 to 42 inches from December through March and from June through September. The available water capacity is low in the surface layer and low or very low in the substratum.

Typically, this map unit supports the Longleaf Pine-Turkey Oak Hills ecological community, which has several variations. Scattered longleaf pine are the overstory in mature, natural stands of trees. Areas from which pines have been removed are dominated by oaks. The trees that characterize this community are longleaf pine, turkey oak, blackjack oak, and post oak. Herbaceous plants and vines include aster, blazingstar, brackenfern, butterfly pea, elephantsfoot, grassleaf goldaster, partridge pea, pineland beggarweed, sandhill milkweed, showy crotalaria, and wild indigo. Grasses and grasslike plants include Curtis' dropseed, hairy panicum, yellow Indiangrass, low panicum, and pineywoods dropseed.

This map unit is moderately well suited to cultivated crops. Droughtiness and rapid leaching of plant nutrients limit the choice of plants and reduce the potential yields of those crops that are adapted to the local conditions. The seasonal high water table increases the availability of water in the root zone by providing water through capillary rise, helping to offset the very low available water capacity. In very dry seasons, the water table drops well below the root zone and little capillary water is available to plants. Row crops should be planted on the contour in alternating strips with close-growing cover crops. Lime and fertilizer should be applied to all crops. Soil-improving cover crops and crop residues should be left on the land. Irrigation of high-value crops is usually feasible where irrigation water is readily available. Tile or other kinds of drains are needed for some crops that are damaged by a high water table during the growing season. Intensive management of soil fertility and water is required for maximum crop production.

This map unit is moderately well suited to pasture and hay. Droughtiness and rapid leaching of nutrients are the major management concerns. Intensive management of soil fertility and water is required to fully utilize this soil for pasture and hay. Such plants as improved bermudagrasses and improved bahiagrasses are well adapted to the local conditions. They require applications of fertilizer and lime. Controlled grazing is needed to maintain vigorous plants and to obtain maximum yields.

The potential productivity of this map unit is moderately high for slash pine. The main management concerns are equipment limitations, seedling mortality, and plant competition caused by the sandy surface, low available water capacity, and seasonal wetness. Site preparation should include removing the larger debris to facilitate mechanical operations and chopping the woody understory vegetation to help control immediate plant competition. Planting trees that are adapted to the local conditions and planting during the wetter months can reduce the seedling mortality rate. Prescribed burning in established stands can help to control the competing vegetation and help to maintain ease of access.

This map unit has severe limitations affecting septic tank absorption fields, sanitary landfills, sewage lagoon areas, shallow excavations, dwellings with basements, lawns, and landscaping. Wetness and seepage are the main limitations affecting these uses. This map unit has moderate limitations affecting dwellings without basements, small commercial buildings, and local roads and streets. Wetness is the main limitation affecting these uses. Tables 9 and 10 contain additional information regarding factors that can affect urban development.

This map unit has severe limitations affecting recreational development. The sandy surface is the main limitation. Table 7 contains additional information regarding factors that can affect recreational development.

The capability subclass is IIIs.

14—Chipola loamy sand, 0 to 5 percent slopes, very rarely flooded

This well drained soil is on broad stream terraces in the uplands. Areas of this soil are elongated or irregular in shape and range from 10 to 250 acres in size. Slopes are smooth to convex.

Typically, the surface layer is yellowish brown loamy sand about 6 inches thick. The subsurface layer is light yellowish brown loamy sand to a depth of 22 inches. The subsoil is yellowish red sandy loam to a depth of 34 inches, yellowish red sandy clay loam to a depth of 41 inches, and yellowish red sandy loam to a depth of 58 inches. The substratum is yellowish red sand to a depth of 80 inches or more.

In 95 percent of the areas of this map unit, the Chipola soil and similar soils make up 100 percent of the unit. The similar soils include Kenansville, Lucy, and Troup soils. Kenansville soils have a yellow subsoil. Lucy and Troup soils have a loamy subsoil to a depth of 60 inches or more. The loamy subsoil in the Troup soils begins below a depth of 40 inches. Also included in mapping are soils that are similar to the Chipola soil but have A and E horizons with a combined thickness of less than 20 inches. A few areas have slopes of 5 to 8 percent.

Dissimilar soils make up less than 5 percent of the mapped areas.

This map unit does not have a seasonal high water table within a depth of 72 inches. The available water capacity is low in the surface and subsurface layers, moderate in the subsoil, and very low in the substratum. Flooding is very unlikely but possible under extremely unusual weather conditions. The chance of flooding is less than 1 percent in any year. On the average, flooding occurs less than 1 time in 100 years but more than 1 time in 500 years. The average duration of the flooding ranges from 2 to 7 days.

Typically, this map unit supports the Mixed Hardwood and Pine ecological community, which has several variations. In mature, natural stands, the hardwoods replace the pines. The natural climax vegetation is thought to be a beech-magnolia-maple association. The trees that characterize this community are loblolly pine, white oak, pignut hickory, American beech, and flowering dogwood. The herbaceous plants and vines include aster, partridge pea, poison ivy, violet, Virginia creeper, and wild grape. Grasses include broomsedge bluestem, longleaf uniola, low panicum, and spike uniola.

This map unit is well suited to cultivated crops. It can be cultivated using ordinary, good farming methods. Droughtiness and rapid leaching of plant nutrients, however, limit the choice of crops and the potential yields. If good management is used, such crops as corn, soybeans, peanuts, and cotton can be grown. Nutrient management helps to maximize yields. Row crops should be planted on the contour in alternating strips with cover crops. Where water is readily available, irrigation of some high-value crops is usually feasible.

This map unit is well suited to pasture and hay. Deep-rooted plants, such as improved bermudagrasses and improved bahiagrasses, grow well. Yields are good if fertilizer and lime are applied. Controlled grazing is essential to maintain vigorous plants and good cover and to obtain maximum yields.

The potential productivity of this map unit is moderate for slash pine. The main management concerns are equipment limitations, seedling mortality, and plant competition caused by the sandy surface, low available water capacity, and seasonal wetness. Site preparation should include removing the larger debris to facilitate mechanical operations and chopping the woody understory vegetation to help control immediate plant competition. Planting trees that are adapted to the local conditions and planting during the wetter months can reduce the seedling mortality rate. Prescribed burning in established stands can help to control the competing vegetation and help to maintain ease of access.

This map unit has severe limitations affecting septic tank absorption fields, sewage lagoons, sanitary landfills, shallow excavations, and dwellings. The main limitations are seepage and flooding. The flooding and droughtiness are moderate limitations affecting local roads and streets, lawns, and landscaping. Tables 9 and 10 contain additional information regarding factors that can affect urban development.

This map unit has severe limitations affecting camp areas. The flooding is the main limitation. The sandy surface, the slope, and droughtiness are moderate limitations affecting picnic areas, playgrounds, paths, trails, and golf fairways. Table 7 contains additional information regarding factors that can affect recreational development.

The capability subclass is IIs.

17—Florala loamy sand, 0 to 2 percent slopes

This somewhat poorly drained soil is on toeslopes in the uplands. Areas of this soil are irregular in shape and range from 3 to 60 acres in size. Slopes are smooth to concave.

Typically, the surface layer is dark grayish brown loamy sand about 8 inches thick. The subsoil is brownish yellow fine sandy loam that has mottles in shades of gray, yellow, and red to a depth of 25 inches; is brownish yellow sandy loam that has plinthite and has mottles in shades of gray, yellow, and red to a depth of 43 inches; is mixed light gray and yellowish brown sandy clay loam that has plinthite and has mottles in shades of gray, yellow, and red to a depth of 67 inches; and is sandy clay that is variegated in shades of gray, yellow, and red to a depth of 80 inches or more.

In 95 percent of the areas of this map unit, the Florala soil and similar soils make up 100 percent of the unit. The similar soils include Leefield and Robertsdale soils. Leefield soils have a loamy subsoil at a depth of 20 to 40 inches. Robertsdale soils have more than 18 percent clay in the loamy subsoil. Also included in mapping are soils that are similar to the Florala soil but have 18 to 35 percent clay in the argillic horizon, do not contain plinthite, or both.

Dissimilar soils make up less than 5 percent of the mapped areas. The dissimilar soils include Alapaha, Dothan, Fuquay, Pansey, and Stilson soils. Alapaha and Pansey soils are more poorly drained than the Florala soil, are in lower positions, and have mottles related to wetness within a depth of 1 foot. Dothan soils are better drained than the Florala soil, are in higher positions, and have mottles related to wetness below a depth of 30 inches. Fuquay and Stilson soils have a subsoil at depth of 20 to 40 inches and are in positions that are similar to those of Florala soil or higher.

The seasonal high water table is at a depth of 18 to 30 inches from December through March and from June through September. The available water capacity is low in the surface layer and moderate or high in the subsoil.

Typically, this map unit supports the Mixed Hardwood and Pine ecological community, which has several variations. In mature, natural stands, the hardwoods replace the pines. The natural climax vegetation is thought to be a beech-magnolia-maple association. The trees that characterize this community are loblolly pine, white oak, pignut hickory, American beech, and flowering dogwood. The herbaceous plants and vines include aster, partridge pea, poison ivy, violet, Virginia creeper, and wild grape. Grasses include broomsedge bluestem, longleaf uniola, low panicum, and spike uniola.

This map unit is moderately well suited to cultivated crops (fig. 6). The variety of crops that are adapted to the local conditions is somewhat limited because of the occasional wetness. Simple ditching to remove

Figure 6.—Cotton production in an area of Florala loamy sand, 0 to 2 percent slopes. An inclusion of wetter soils is in the background. The included soils are ponded briefly after periods of heavy rain.

excess surface water during rains is needed for most crops. Crop rotations need to include cover crops. Crop residue and the cover crops need to be left on the land to help control erosion. Conservation tillage helps conserve moisture and control erosion. Good seedbed preparation and applications of fertilizer and lime are needed for maximum yields.

This map unit is well suited to pasture and hay. Clovers, tall fescue, improved bermudagrasses, and improved bahiagrasses are well adapted to the local conditions and grow well if properly managed. Applications of fertilizer and lime and controlled grazing are needed to maintain vigorous plants and to obtain highest yields.

The potential productivity of this map unit is moderately high for slash pine. The main management concern is plant competition causes by seasonal wetness. Site preparation should include chopping the woody understory vegetation to help control immediate plant competition. Prescribed burning in established stands can help to control the competing vegetation and help to maintain ease of access.

This map unit has severe limitations affecting septic tank absorption fields, sanitary landfills, shallow excavations, and dwellings with basements. It has moderate limitations affecting sewage lagoon areas, dwellings without basements, small commercial buildings, local roads and streets, lawns, and landscaping. Wetness is the main limitation. Tables 9 and 10 contain additional information regarding factors that can affect urban development.

This map unit has moderate limitations affecting recreational development. Wetness and slow percolation are the main limitations affecting this use. Table 7 contains additional information regarding factors that can affect recreational development.

The capability subclass is IIw.

18—Florala loamy sand, 2 to 5 percent slopes

This somewhat poorly drained soil is on shoulders in the uplands. Areas of this soil are irregular in shape and range from 3 to 45 acres in size. Slopes are mostly smooth to convex but are concave in places.

Typically, the surface layer is very dark gray loamy sand about 6 inches thick. The subsurface layer is brown loamy sand to a depth of 11 inches. The subsoil is sandy loam. It is brownish yellow and has mottles in shades of gray, yellow, and red to a depth of 25 inches; is light yellowish brown, has plinthite, and has mottles in shades of gray, yellow, and red to a depth of 45 inches; and is variegated in shades of gray, yellow, and red to a depth of 80 inches or more.

In 90 percent of the areas of this map unit, the Florala soil and similar soils make up 75 to 100 percent of the unit. The similar soils include Leefield and Robertsdale soils. Leefield soils have a loamy subsoil at a depth of 20 to 40 inches. Robertsdale soils have more than 18 percent clay in the loamy subsoil. Also included in mapping are soils that are similar to the Florala soil but have 18 to 35 percent clay in the argillic horizon, do not contain plinthite, or have slopes of 5 to 8 percent.

Dissimilar soils make up 0 to 25 percent of the mapped areas. The dissimilar soils include Alapaha, Dothan, Fuquay, Pansey, and Stilson soils. Alapaha and Pansey soils are poorly drained, are in lower positions than the Florala soil, and have mottles related to wetness within a depth of 1 foot. Dothan soils are better drained than the Florala soil, are in higher positions, and have mottles related to wetness below a depth of 30 inches. Fuquay and Stilson soils have a subsoil at depth of 20 to 40 inches or are in higher positions than the Florala soil. Fuquay soils have mottles related to wetness below a depth of 40 inches. Stilson soils have mottles related to wetness at a depth of 30 to 40 inches, at 5 to 14 inches below the top of the loamy subsoil, or both.

The seasonal high water table is at a depth of 18 to 30 inches from December through March and from June through September. The available water capacity is low in the surface layer and moderate or high in the subsoil.

Typically, this map unit supports the Mixed Hardwood and Pine ecological community, which has several variations. In mature, natural stands, the hardwoods replace the pines. The natural climax vegetation is thought to be a beech-magnolia-maple association. The trees that characterize this community are loblolly pine, white oak, pignut hickory, American beech, and flowering dogwood. The herbaceous plants and vines include aster, partridge pea, poison ivy, violet, Virginia creeper, and wild grape. Grasses include broomsedge bluestem, longleaf uniola, low panicum, and spike uniola.

This map unit is moderately well suited to cultivated crops. The hazard of erosion is the main management concern. The variety of crops that are adapted to the local conditions is somewhat limited because of wetness. Installing terraces that have stabilized outlets, planting on the contour, alternating strips of row crops with cover crops, leaving crop residues and soil-improving cover crops on the ground, and using conservation tillage help to conserve moisture and control erosion. Good seedbed preparation and applications of fertilizer and lime are needed for maximum yields.

This map unit is well suited to pasture and hay. Clovers, tall fescue, improved bermudagrasses, and improved bahiagrasses are well adapted to the local conditions and grow well if properly managed. Applications of fertilizer and lime and controlled grazing are needed to maintain vigorous plants and a good ground cover and to obtain highest yields.

The potential productivity of this map unit is moderately high for slash pine. The main management concern is plant competition caused by seasonal wetness. Site preparation should include chopping the woody understory vegetation to help control immediate plant competition. Prescribed burning in established stands can help to control the competing vegetation and help to maintain ease of access.

This map unit has severe limitations affecting septic tank absorption fields, sanitary landfills, shallow excavations, and dwellings with basements. It has moderate limitations affecting dwellings without basements, local roads and streets, lawns, landscaping, sewage lagoons areas, and small commercial buildings. Wetness is the main limitation. Tables 9 and 10 contain additional information regarding factors that can affect urban development.

This map unit has moderate limitations affecting recreational development. Wetness and slow percolation are the main limitations. Table 7 contains additional information regarding factors that can affect recreational development.

The capability subclass is IIe.

20—Dorovan-Pamlico-Rutlege association, depressional

These very poorly drained soils are in depressions. Dorovan and Pamlico soils are moderately permeable, organic, and underlain by sandy sediments. Rutlege soils are rapidly permeable and are sandy throughout. Areas of this map unit are irregular in shape and range from 5 to 850 acres in size. Slopes are less than 2 percent.

In 95 percent of the areas of this map unit, the Dorovan, Pamlico, Rutlege, and similar soils make up 100 percent of the unit. Each of the soils is not necessarily present in every mapped area, and the relative proportion of each soil varies. Although the areas of each individual soil are generally large enough to be mapped separately, they were mapped as one unit because of present and predicted use.

Dissimilar soils make up less than 5 percent of the mapped areas.

Typically, the Dorovan soil is black muck to a depth of 80 inches or more.

In areas of the Dorovan soil, the seasonal high water table is at or above the surface during most of the year. The available water capacity is very high.

Typically, the surface layer of the Pamlico soil is dark reddish brown and black muck about 31 inches thick. The substratum is light brownish gray sand to a depth of 80 inches or more.

In areas of the Pamlico soil, the seasonal high water table is at or above the surface during most of the year. The available water capacity is very high.

Typically, the surface layer of the Rutlege soil is black sand about 13 inches thick. The substratum is grayish brown sand to a depth of 80 inches or more.

In areas of the Rutlege soil, the seasonal high water table is at or above the surface from December through March and from June through September. The available water capacity is low.

Included in mapping are Surrency soils and small areas of very poorly drained soils that have a dark, sandy surface layer that is more than 24 inches thick, have an organic surface layer that is less than 16 inches thick, or are stratified. Also included in mapping are small areas of the poorly drained Plummer and Pottsburg soils.

Typically, this map unit supports the Shrub Bogs-Bay Swamps ecological community. The natural vegetation of this community is dominated by evergreen shrubs and trees, including buckwheat tree, loblolly bay, redbay, sweetbay, swamp cyrilla (titi), and large gallberry. Scattered slash pine, pond pine, and cypress form a very open canopy over the shrub bogs.

This map unit is not suited to cultivated crops, pasture, or hay because of excessive wetness and ponding.

This map unit is not suited to the production of pine trees because of excessive wetness and ponding. It is suited to hardwood production through natural regeneration. Hardwoods, cypress, and Atlantic white cedar grow well.

Excessive wetness, ponding, and subsidence are severe limitations affecting urban and recreational development. Tables 7, 9, and 10 contain additional information regarding factors that can affect urban and recreational development.

The capability subclass is VIIw.

21—Dothan sandy loam, 0 to 2 percent slopes

This well drained soil is on summits in the uplands. Areas of this soil are irregular in shape and range from 3 to 850 acres in size. Slopes are smooth to concave.

Typically, the surface layer is very dark grayish brown sandy loam that has ironstone pebbles and is about 6 inches thick. The subsoil is sandy clay loam. It is yellowish brown, has ironstone pebbles, and has mottles in shades of gray, yellow, and red to a depth of 25 inches; is yellowish brown, has plinthite, and has mottles in shades of gray, yellow, and red to a depth of 45 inches; is brownish yellow, has plinthite, and has mottles in shades of gray, yellow, and red to a depth of 65 inches; and is variegated in shades of gray, yellow, and red to a depth of 80 inches.

In 95 percent of the areas of this map unit, the Dothan soil and similar soils make up 100 percent of the unit. The similar soils include Fuquay and Orangeburg soils. Fuquay soils have a loamy subsoil at a depth of 20 to 40 inches. Orangeburg soils have a redder subsoil than that of the Dothan soil. Also included are small areas of soils that have 5 percent or more plinthite above a depth of 24 inches or that have less than 18 percent clay in the upper part of the argillic horizon.

Dissimilar soils make up less than 5 percent of the mapped areas. The dissimilar soils include Florala soils that are more poorly drained than the Dothan soil, are in lower positions, and have mottles related to wetness within a depth of 30 inches.

The seasonal high water table is perched at a depth of 30 to 60 inches from December through March and from June through September. The available water capacity is low or moderate in the surface layer and moderate in the subsoil.

Typically, this map unit supports the Mixed Hardwood and Pine ecological community, which has several variations. In mature, natural stands, the hardwoods replace the pines. The natural climax vegetation is thought to be a beech-magnolia-maple association. The trees that characterize this community are loblolly pine, white oak, pignut hickory, American beech, and flowering dogwood. The herbaceous plants and vines include aster, partridge pea, poison ivy, violet, Virginia creeper, and wild grape. Grasses include broomsedge bluestem, longleaf uniola, low panicum, and spike uniola.

This map unit is very well suited to cultivated crops. The variety of well adapted crops, however, is limited because of a slightly restricted root zone and slight wetness. Good management practices include crop rotations that provide cover crops at least half the time. Crop residues and soil-improving cover crops should be left on the land. Good seedbed preparation and applications of fertilizer and lime are needed for maximum yields.

This map unit is well suited to pasture and hay. Tall fescue, clovers, improved bermudagrasses, and improved bahiagrasses are well adapted to the local conditions. They grow well if properly managed, and they respond well to applications of fertilizer and lime. Grazing should be controlled to maintain vigorous plants and a good ground cover.

The potential productivity of this map unit is moderately high for slash pine. The main management concern is plant competition caused by seasonal wetness. Site preparation should include chopping the woody understory vegetation to help control immediate plant competition. Prescribed burning in established stands can help to control the competing vegetation and help to maintain ease of access.

This map unit has severe limitations affecting septic tank absorption fields. It has moderate limitations affecting trench sanitary landfills, sewage lagoons, shallow excavations, dwellings with basements, lawns, and landscaping. Wetness and slow percolation are the main limitations affecting these uses. This map unit has slight limitations affecting area sanitary landfills, dwellings without basements, small commercial buildings, and local roads and streets. Tables 9 and 10 contain additional information regarding factors that can affect urban development.

This map unit has slight limitations affecting paths, trails, and golf fairways. It has moderate limitations affecting camp areas, picnic areas, and playgrounds. Table 7 contains additional information regarding factors that can affect these uses.

The capability subclass is I.

22—Dothan loamy sand, 2 to 5 percent slopes

This well drained soil is on summits and shoulders in the uplands. Areas of this soil are irregular in shape and range from 3 to 50 acres in size. Slopes are smooth to convex.

Typically, the surface layer is dark grayish brown loamy sand about 7 inches thick. The subsurface layer is brown loamy sand to a depth of 11 inches. The subsoil is sandy clay loam. It is yellowish brown and has mottles in shades of gray, yellow, and red to a depth of 42 inches; is yellowish brown and brownish yellow and has mottles in shades of gray, yellow, and red to a depth of 48 inches; and is yellowish brown, has plinthite, and has mottles in shades of gray, yellow, and red to a depth of 80 inches or more.

In 95 percent of the areas of this map unit, the Dothan soil and similar soils make up 100 percent of the unit. The similar soils include Fuquay and Orangeburg soils. Fuquay soils have a loamy subsoil at a depth of 20 to 40 inches. Orangeburg soils have a redder subsoil than that of the Dothan soil. Also included in mapping are small areas that have 5 percent or more plinthite above a depth of 24 inches, that have less than 18 percent clay in the upper part of the argillic horizon, or that have an eroded surface.

Dissimilar soils make up less than 5 percent of the mapped areas. The dissimilar soils include Florala soils that are more poorly drained than the Dothan soil, are in lower positions, and have mottles related to wetness within a depth of 30 inches.

The seasonal high water table is perched at a depth 30 to 60 inches from December through March and from June through September. The available water capacity is low in the surface and subsurface layers and moderate in the subsoil.

Typically, this map unit supports the Mixed Hardwood and Pine ecological community, which has several variations. In mature, natural stands, the hardwoods replace the pines. The natural climax vegetation is thought to be a beech-magnolia-maple association. The trees that characterize this community are loblolly pine, white oak, pignut hickory, American beech, and flowering dogwood. The herbaceous plants and vines include aster, partridge pea, poison ivy, violet, Virginia creeper, and wild grape. Grasses include broomsedge bluestem, longleaf uniola, low panicum, and spike uniola.

This map unit is well suited to cultivated crops. The hazard of erosion is the main management concern. The variety of crops that are well adapted to the local conditions is limited because of a slightly restricted root zone and slight wetness. Good management practices include installing terraces that have stabilized outlets, planting on the contour, alternating row crops with strips of cover crops, including cover crops in the rotation, and leaving crop residue and soil-improving cover crops on the soil. Good seedbed preparation and applications of fertilizer and lime are needed for maximum yields.

This map unit is well suited to pasture and hay. Tall fescue, clovers, improved bermudagrasses, and improved bahiagrasses are well adapted to the local conditions. These plants grow well if properly managed, and they respond well to applications of fertilizer and lime. Grazing should be controlled to maintain vigorous plants and a good ground cover.

The potential productivity of this map unit is moderately high for slash pine. The main management concern is plant competition caused by seasonal wetness. Site preparation should include chopping the woody understory vegetation to help control immediate plant competition. Prescribed burning in established stands can help to control the competing vegetation and help to maintain ease of access.

This map unit has severe limitations affecting septic tank absorption fields. It has moderate limitations affecting sewage lagoons areas, trench sanitary landfills, shallow excavations, dwellings with basements, lawns, and landscaping. Wetness and slow percolation are the main limitations. This map unit has slight limitations affecting area sanitary landfills, dwellings without basements, small commercial buildings, and local roads and streets. Tables 9 and 10 contain additional information regarding factors that can affect urban development.

Slow percolation and droughtiness are moderate limitations affecting camp areas, picnic areas, playgrounds, and golf fairways. This map unit has slight limitations affecting paths and trails. Table 7 contains additional information regarding factors that can affect recreational development.

The capability subclass is IIe.

23—Dothan loamy sand, 5 to 8 percent slopes

This well drained soil is on side slopes in the uplands. Areas of this soil are irregular or elongated in shape and range from 3 to 25 acres in size. Slopes are smooth to convex.

Typically, the surface layer is brown loamy sand about 5 inches thick. The subsoil is yellowish brown sandy loam to a depth of 12 inches; is yellowish brown sandy clay loam that has mottles in shades of gray, yellow, and red to a depth of 35 inches; and is sandy clay loam that has plinthite and is variegated in shades of gray, yellow, and red to a depth of 80 inches or more.

In 80 percent of the areas of this map unit, the Dothan soil and similar soils make up 83 to 100 percent of the unit. The similar soils include Fuquay and Orangeburg soils. Fuquay soils have a loamy subsoil at a depth of 20 to 40 inches. Orangeburg soils have a redder subsoil than that of the Dothan soil. Also included in mapping are small areas of soils that have 5 percent or more plinthite above a depth of 24 inches, that have less than 18 percent clay in the upper part of the argillic horizon, or that have an eroded surface.

Dissimilar soils make up 0 to 17 percent of the mapped areas. The dissimilar soils include Lucy, Robertsdale, and Stilson soils. Lucy and Stilson soils have a subsoil at a depth of 20 to 40 inches. Also, the Stilson soils are more poorly drained than the Dothan soil, are in lower positions, and have mottles related to wetness at a depth of 30 to 40 inches and/or at 5 to 14 inches below the top of the loamy subsoil. Robertsdale soils are somewhat poorly drained, are in lower positions than the Dothan soil, and have mottles related to wetness below a depth of 30 inches.

The seasonal high water table is perched at a depth of 30 to 60 inches from December through March and from June through September. The available water capacity is low in the surface layer and moderate or low in the subsoil.

Typically, this map unit supports the Mixed Hardwood and Pine ecological community, which has several variations. In mature, natural stands, the hardwoods replace the pines. The natural climax vegetation is thought to be a beech-magnolia-maple association. The trees that characterize this community are loblolly pine, white oak, pignut hickory, American beech, and flowering dogwood. The herbaceous plants and vines include aster, partridge pea, poison ivy, violet, Virginia creeper, and wild grape. Grasses include broomsedge bluestem, longleaf uniola, low panicum, and spike uniola.

This map unit is moderately well suited to cultivated crops. The hazard of erosion is a management concern. The variety of crops that are adapted to the local conditions is somewhat limited because of occasional wetness. Intensive erosion-control measures are needed. Such measures include installing carefully designed terraces that have stabilized outlets, planting on the contour, growing row crops in alternating strips with close-growing cover crops, and including close-growing cover crops in the rotation. All crop residues should be left on the land. Tile drains or open drains are needed to intercept seepage water from high areas. Good seedbed preparation and applications of fertilizer and lime are needed for maximum yields.

This map unit is moderately well suited to pasture and hay. The main management concerns are the establishment of the pasture and the hazard of erosion. Improved bermudagrasses and improved bahiagrasses are well adapted to the local conditions. These grasses produce moderate yields if fertilizer and lime are applied. Grazing should be controlled to maintain vigorous plants and a good ground cover. An established and well-maintained pasture or the production of hay are excellent uses for this soil.

The potential productivity of this map unit is moderately high for slash pine. The main management concern is plant competition caused by seasonal wetness. Site preparation should include chopping the woody understory vegetation to help control immediate plant competition. Prescribed burning in established stands can help to control the competing vegetation and help to maintain ease of access.

This map unit has severe limitations affecting septic tank absorption fields. It has moderate limitations affecting trench sanitary landfills, sewage lagoons areas, small commercial buildings, shallow excavations, dwellings with basements, lawns, and landscaping. Wetness, slow percolation, and the slope are the main limitations. This map unit has slight limitations affecting area sanitary landfills, dwellings without basements, and local roads and streets. Tables 9 and 10 contain additional information regarding factors that can affect urban development.

The slope is a severe limitation affecting playgrounds. This map unit has slight limitations affecting camp areas, picnic areas, paths, and trails. Table 7 contains additional information regarding factors that can affect recreational development.

The capability subclass is IIIe.

24—Dunbar fine sandy loam, rarely flooded

This somewhat poorly drained soil is on flats in interstream divides adjacent to flood plains along large streams and flood plains in the uplands. Areas of this soil are irregular or elongated in shape and range from 3 to 100 acres in size. Slopes are smooth to convex and range from 0 to 2 percent.

Typically, the surface layer is black fine sandy loam about 6 inches thick. The subsoil is light olive brown clay loam that has mottles in shades of gray, yellow, and red to a depth of 14 inches; is light gray clay that has mottles in shades of gray, yellow, and red to a depth of depth of 36 inches; and is gray clay that has mottles in shades of gray, yellow, and red to a depth of 80 inches or more.

In 80 percent of the areas of this map unit, the Dunbar soil and similar soils make up 85 to 100 percent of the unit. The similar soils include Robertsdale soils that have less clay in the subsoil than the Dunbar soil. Also included are soils that have a thinner subsoil than the Dunbar soil, are more than 30 percent silt, or have slopes of 2 to 5 percent.

Dissimilar soils make up 0 to 15 percent of the mapped areas. The dissimilar soils include Bladen, Duplin, Pantego, and Surrency soils. Bladen, Pantego, and Surrency soils are more poorly drained than the Dunbar soil, are in lower positions, and have wetness indicators within a depth of 12 inches. Duplin soils are better drained than the Dunbar soil, are in higher positions, and have mottles related to wetness at a depth of 18 to 36 inches.

The seasonal high water table is at a depth of 12 to 18 inches from December through March and from June through September. The available water capacity is moderate in the surface layer and high in the subsoil. Flooding is unlikely but possible under unusual weather conditions. The chance of flooding is 1 to 5 percent in any year. On the average, flooding occurs 1 to 5 times in 100 years. The average duration of the flooding ranges from 2 to 7 days.

Typically, this map unit supports the Mixed Hardwood and Pine ecological community, which has several variations. In mature, natural stands, the hardwoods replace the pines. The natural climax vegetation is thought to be a beech-magnolia-maple association. The trees that characterize this community are loblolly pine, white oak, pignut hickory, American beech, and flowering dogwood. The herbaceous plants and vines include aster, partridge pea, poison ivy, violet, Virginia creeper, and wild grape. Grasses include broomsedge bluestem, longleaf uniola, low panicum, and spike uniola.

These soils are moderately well suited to cultivated crops. The main management concern is wetness. These soils are well suited to some cultivated crops. The variety of crops, however, is limited by the presence of a water table near the surface. Simple ditching to remove excess surface water is needed for most crops. Including a close-growing crop in the rotation is a good management practice. Good seedbed preparation, bedded rows, and applications of fertilizer and lime are needed for high yields.

This map unit is well suited to pasture and hay. Such grasses as improved bermudagrasses and improved bahiagrasses are adapted to the local conditions. White clover and other legumes are moderately well adapted. Applications of fertilizer and lime at regular intervals and carefully controlled grazing are needed to maintain vigorous plants and good cover and to obtain maximum yields.

The potential productivity of this map unit is moderately high for slash pine. The main management concerns are equipment limitations, seedling mortality, and plant competition caused by the shallow depth to heavy textured material and by seasonal wetness. Limiting mechanical operations to the drier periods can help to overcome the equipment limitations and usually results in less soil compaction and less damage to roots during thinning operations. Site preparation should include bedding to reduce the seedling mortality rate and chopping the woody understory vegetation to help control immediate plant competition. Planting trees that are adapted to the local conditions, such as loblolly pine, can also reduce the seedling mortality rate. Prescribed burning in established stands can help to control the competing vegetation and help to maintain ease of access.

This map unit has severe limitations affecting urban development. Wetness, slow percolation, low strength, and the rare flooding are the main limitations. Tables 9 and 10 contain additional information regarding factors that can affect urban development.

This map unit has severe limitations affecting camp areas and playgrounds. It has moderate limitations affecting picnic areas, paths, trails, and golf fairways. Wetness, slow percolation, and the rare flooding are the main limitations. Table 7 contains additional information regarding factors that can affect recreational development.

The capability subclass is IIw.

25—Duplin very fine sandy loam, very rarely flooded

This moderately well drained soil is on rises and knolls of terraces adjacent to flood plains along large streams. Areas of this soil are irregular or elongated in shape and range from 10 to 140 acres in size. Slopes are smooth to convex and range from 0 to 2 percent.

Typically, the surface layer is dark grayish brown very fine sandy loam about 6 inches thick. The subsoil is yellowish brown clay loam that has mottles in shades of yellow and red to a depth of 12 inches; is strong brown clay that has mottles in shades of gray, yellow, and red to a depth of 50 inches; and is clay that is variegated in shades of gray, yellow, and red to a depth of 80 inches or more.

In 95 percent of the areas of this map unit, the Duplin soil and similar soils make up 100 percent of the unit. The similar soils include Dothan and Dunbar soils. Dothan soils are better drained than the Duplin soil, are in higher positions, and have less clay in the subsoil. Dunbar soils are more poorly drained than the Duplin soil, are in lower positions, and have mottles related to wetness at a depth of 12 to 18 inches. Also included are soils that have a thinner subsoil than that of the Duplin soil, have gray mottles below a depth of 30 inches, or have slopes of 2 to 5 percent.

Dissimilar soils make up less than 5 percent of the mapped areas.

The seasonal high water table is at a depth of 24 to 36 inches from December through April. The available water capacity is moderate in the surface layer and moderate or high in the subsoil. Flooding is very unlikely but possible under extremely unusual weather conditions. The chance of flooding is less than 1 percent in any year. On the average, flooding occurs less than 1 time in 100 years but more than 1 time in 500 years. The average duration of the flooding ranges from 2 to 7 days.

Typically, this map unit supports the Mixed Hardwood and Pine ecological community, which has several variations. In mature, natural stands, the hardwoods replace the pines. The natural climax vegetation is thought to be a beech-magnolia-maple association. The trees that characterize this community are loblolly pine, white oak, pignut hickory, American beech, and flowering dogwood. The herbaceous plants and vines include aster, partridge pea, poison ivy, violet, Virginia creeper, and wild grape. Grasses include broomsedge bluestem, longleaf uniola, low panicum, and spike uniola.

This map unit is moderately well suited to cultivated crops. The variety of crops that are adapted to the local conditions is somewhat limited because of occasional wetness. This map unit is well suited to some cultivated crops, but a carefully designed system of tile drains or open drains is needed to remove excess water rapidly after heavy rains. Crop rotations need to include cover crops. Crop residue and the cover crops need to be left on the land to help control erosion. Good seedbed preparation, bedded rows, and applications of fertilizer and lime are needed for high yields.

This map unit is well suited to pasture and hay. Such grasses as improved bermudagrasses and improved bahiagrasses are adapted to the local conditions. White clover and other legumes are moderately well adapted. Applications of fertilizer and lime at regular intervals and carefully controlled grazing are needed to maintain vigorous plants and good cover and to obtain maximum yields.

The potential productivity of this map unit is moderately high for slash pine. The main management concerns are equipment limitations, seedling mortality, and plant competition caused by the shallow depth to clayey material and seasonal wetness. Limiting mechanical operations to the drier periods can help to overcome the equipment limitations and usually results in less soil compaction and less damage to roots during thinning operations. Site preparation should include ripping the subsoil to reduce the seedling mortality rate and chopping the woody understory vegetation to help control immediate plant competition. Planting trees that are adapted to the local conditions, such as loblolly pine, can also reduce the seedling mortality rate. Prescribed burning in established stands can help to control the competing vegetation and help to maintain ease of access.

This map unit has severe limitations affecting septic tank absorption fields, sewage lagoon areas, sanitary landfills, shallow excavations, dwellings with basements, and local roads and streets. It has moderate limitations affecting dwellings without basements and small commercial buildings. Wetness and slow percolation are the main limitations. This map unit has slight limitations affecting lawns and landscaping. Tables 9 and 10 contain additional information regarding factors that can affect urban development.

This map unit has moderate limitations affecting camp areas, picnic areas, and playgrounds. Wetness and slow percolation are the main limitations. This map unit has slight limitations affecting paths, trails, and golf fairways. Table 7 contains additional information regarding factors that can affect recreational development.

The capability subclass is IIw.

29—Kenansville loamy sand, wet substratum, 0 to 5 percent slopes, rarely flooded

This moderately well drained soil is on stream terraces in the uplands adjacent to flood plains along large streams. Areas of this soil are irregular in shape and range from 5 to 120 acres in size. Slopes are smooth to convex.

Typically, the surface layer is dark grayish brown loamy sand about 7 inches thick. The subsurface layer is light yellowish brown loamy sand to a depth of 22 inches. The subsoil is yellowish brown sandy clay loam to a depth of 38 inches and is brownish yellow sandy loam to a depth 52 inches. The substratum is very pale brown loamy sand that has mottles in shades of gray, yellow, and red to a depth of 80 inches or more.

In 95 percent of the areas of this map unit, the Kenansville soil and similar soils make up 83 to 100 percent of the unit. The similar soils include Chipola, Fuquay, Garcon, and Stilson soils. Chipola soils have a redder subsoil than that of the Kenansville soil. Fuquay and Stilson soils have plinthite and have a loamy subsoil that extends below a depth of 60 inches. Garcon soils are more poorly drained than the Kenansville soil, are in lower positions, and have a yellow subsoil that has mottles related to wetness at a depth of 18 to 36 inches. Also included in mapping are areas of soils that have a subsoil to a depth of 60 to 70 inches or that have surface and subsurface layers with a combined thickness of less than 20 inches.

Dissimilar soils make up 0 to 17 percent of the mapped areas. The dissimilar soils include Bladen, Dunbar, Duplin, and Surrency soils. Bladen, Dunbar, and Duplin soils have an argillic horizon within a depth of 20 inches, have a solum that is more than 60 inches thick, and are in the uplands. Surrency soils are more poorly drained than the Kenansville soil, are subject to flooding, and are on flood plains.

The seasonal high water table is at a depth of 48 to 72 inches from December through March and from June through September. The available water capacity is low in the surface and subsurface layers and moderate in the subsoil. Flooding is very unlikely but possible under extremely unusual weather conditions. The chance of flooding is less than 1 percent in any year. On the average, flooding occurs less than 1 time in 100 years but more than 1 time in 500 years. The average duration of the flooding ranges from 2 to 7 days.

Typically, this map unit supports the Mixed Hardwood and Pine ecological community, which has several variations. In mature, natural stands, the hardwoods replace the pines. The natural climax vegetation is thought to be a beech-magnolia-maple association. The trees that characterize this community are loblolly pine, white oak, pignut hickory, American beech, and flowering dogwood. The herbaceous plants and vines include aster, partridge pea, poison ivy, violet, Virginia creeper, and wild grape. Grasses include broomsedge bluestem, longleaf uniola, low panicum, and spike uniola.

This map unit is well suited to cultivated crops. The main management concerns are droughtiness during dry seasons and wetness during wet seasons. This map unit can be cultivated using ordinary, good farming methods. Droughtiness and rapid leaching of plant nutrients, however, limit the choice of crops and the potential yields of those crops that are adapted to the local conditions. Row crops need to be planted on the contour, and crop rotations need to include cover crops to help control erosion. Good seedbed preparation and regular applications of fertilizer and lime are needed for maximum yields. Irrigation of high-value crops is usually feasible where irrigation water is readily available.

This map unit is well suited to pasture and hay. Improved bermudagrasses and improved bahiagrasses are well adapted to the local conditions. These plants produce well if fertilizer and lime are applied. Controlled grazing is important to maintain vigorous plants and good cover and to obtain maximum yields.

The potential productivity of this map unit is high for slash pine. The main management concerns are equipment limitations, seedling mortality, and plant competition caused by the sandy surface, low available water capacity, and seasonal wetness. Site preparation should include removing the larger debris to facilitate mechanical operations and chopping the woody understory vegetation to help control immediate plant competition. Planting trees that are adapted to the local conditions and planting during the wetter months can reduce the seedling mortality rate. Prescribed burning in established stands can help to control the competing vegetation and help to maintain ease of access.

The flooding and wetness are severe limitations affecting most urban development and moderate limitations affecting septic tank absorption field. Droughtiness is also a moderate limitations affecting lawns and landscaping. Tables 9 and 10 contain additional information regarding factors that can affect urban development.

The flooding is a severe limitation affecting camp areas. The sandy texture is a moderate limitation affecting other recreational development. Table 7 contains additional information regarding factors that can affect recreational development.

The capability subclass is IIs.

30—Garcon loamy sand, rarely flooded

This somewhat poorly drained soil is on stream terraces in the coastal lowlands adjacent to the flood plains along large streams. Areas of this soil are irregular in shape and range from 5 to 50 acres in size. Slopes are smooth to concave and range from 0 to 2 percent.

Typically, the surface layer is dark grayish brown loamy sand about 5 inches thick. The subsurface layer is brown loamy sand to a depth of 21 inches. The subsoil is light yellowish brown sandy loam to a depth of 28 inches, brown sandy clay loam that has mottles in shades of gray to a depth of 34 inches, and gray sandy clay loam that has mottles in shades of gray, yellow, and red to a depth of 47 inches. The substratum is light gray sand that has mottles in shades of gray, yellow, and red to a depth of 80 inches or more.

In 95 percent of the areas of this map unit, the Garcon soil and similar soils make up 100 percent of the unit. The similar soils include Kenansville soils that are better drained than the Garcon soil, are in higher positions, and have mottles related to wetness below a depth of 48 inches. Also included in mapping are small areas of soils that have 18 to 30 percent clay in the upper 20 inches of the argillic horizon, have a solum that is less than 45 inches thick, or have slopes of more than 2 percent.

Dissimilar soils make up less than 5 percent of the mapped areas. The dissimilar soils include Leefield and Stilson soils, which have plinthite in the loamy subsoil, extend to a depth of 60 inches or more, and are in higher positions than the Garcon soil.

The seasonal high water table is at a depth of 18 to 36 inches from December through March and from June through September. The available water capacity is low or moderate in the surface and subsurface layers, moderate in the subsoil, and low in the substratum. Flooding is unlikely but possible under unusual weather conditions. The chance of flooding is 1 to 5 percent in any year. On the average, flooding occurs 1 to 5 times in 100 years. The average duration of the flooding ranges from 2 to 7 days.

Typically, this map unit supports the Mixed Hardwood and Pine ecological community, which has several variations. In mature, natural stands, the hardwoods replace the pines. The natural climax vegetation is thought to be a beech-magnolia-maple association. The trees that characterize this community are loblolly pine, white oak, pignut hickory, American beech, and flowering dogwood. The herbaceous plants and vines include aster, partridge pea, poison ivy, violet, Virginia creeper, and wild grape. Grasses include broomsedge bluestem, longleaf uniola, low panicum, and spike uniola.

This map unit is moderately well suited to cultivated crops. The variety of crops that are adapted to the local conditions is somewhat limited because the water table is near the surface much of the time. Tile drains or open ditches are needed to protect crops from wetness. Crop residue and cover crops need to be left on the land to help control erosion. Good seedbed preparation and applications of fertilizer and lime are needed for maximum yields.

This map unit is well suited to pasture and hay. Pasture plants, such as improved bermudagrasses and improved bahiagrasses, grow well if properly managed. White clovers and other legumes are moderately adapted to the local conditions. Applications of fertilizer and lime are needed to obtain maximum yields, and controlled grazing is needed to maintain vigorous plants.

The potential productivity of this map unit is moderate for slash pine. The main management concerns are seedling mortality and plant competition caused by low available water capacity and seasonal wetness. Site preparation should include chopping the woody understory vegetation to help control immediate plant competition. Planting trees that are adapted to the local conditions and planting during the wetter months can reduce the seedling mortality rate. Prescribed burning in established stands can help to control the competing vegetation and help to maintain ease of access.

This map unit has severe limitations affecting most urban development. It has moderate limitations affecting local roads and streets. Wetness and rare flooding are the main limitations affecting these uses. Tables 9 and 10 contain additional information regarding factors that can affect urban development.

This map unit has moderate or severe limitations affecting camp areas. It has moderate limitations affecting picnic areas, playgrounds, paths, trails, and golf fairways. Wetness, the sandy texture, and rare flooding are the main limitations. Table 7 contains additional information regarding factors that can affect recreational development.

The capability subclass is IIw.

31—Foxworth sand, 0 to 5 percent slopes

This moderately well drained soil is on summits and shoulders in the uplands. Areas of this soil are irregular in shape and range from 5 to 500 acres in size. Slopes are mostly smooth to concave but are convex in places.

Typically, the surface layer is brown sand about 6 inches thick. The substratum is sand. It is yellowish brown and has mottles in shades of gray to a depth of 43 inches; is yellowish brown and has mottles in shades of gray, yellow, and red to a depth of 67 inches; and is light gray and has mottles in shades of yellow and red to a depth of 80 inches or more.

In 95 percent of the areas of this map unit, the Foxworth soil and similar soils make up 100 percent of the unit. The similar soils include soils that have a dark, organic-stained layer in the lower part of the subsoil.

Dissimilar soils make up less than 5 percent of the mapped areas. The dissimilar soils include Chipley and Lakeland soils. Chipley are more poorly drained than the Foxworth soil, are in lower positions, and have mottles related to wetness at a depth of 18 to 42 inches. Lakeland soils are better drained than the Foxworth soil, are in higher positions, and have mottles related to wetness below a depth of 72 inches.

The seasonal high water table is at a depth of 42 to 72 inches from December through March and from June through September. The available water capacity is very low.

Typically, this map unit supports the Longleaf Pine-Turkey Oak Hills ecological community, which has several variations. Scattered longleaf pine are the overstory in mature, natural stands of trees. Areas from which pines have been removed are dominated by oaks. The trees that characterize this community are longleaf pine, turkey oak, blackjack oak, and post oak. Herbaceous plants and vines include aster, blazingstar, brackenfern, butterfly pea, elephantsfoot, grassleaf goldaster, partridge pea, pineland beggarweed, sandhill milkweed, showy crotalaria, and wild indigo. Grasses and grasslike plants include Curtis' dropseed, hairy panicum, yellow Indiangrass, low panicum, and pineywoods dropseed.

This map unit is poorly suited to cultivated crops. Droughtiness and rapid leaching of plant nutrients limit the choice of plants and reduce the potential yields of those crops that are adapted to the local conditions. In very dry seasons, the water table drops well below the root zone and little capillary water is available to plants. Row crops should be planted on the contour in alternating strips with close-growing cover crops. Lime and fertilizer should be applied to all crops. Soil-improving cover crops and crop residues should be left on the land. Irrigation of high-value crops is usually feasible where irrigation water is readily available. Intensive management of soil fertility and water is required for maximum crop production.

This map unit is moderately suited to pasture and hay. Droughtiness and rapid leaching of nutrients are the major management concerns. Intensive management of soil fertility and water is required to fully utilize this soil for pasture and hay. Such plants as improved bermudagrasses and bahiagrasses are well adapted to the local conditions. Applications of fertilizer and lime and controlled grazing are needed to maintain vigorous plants and to obtain maximum yields.

The potential productivity of this map unit is moderate for slash pine. The main management concerns are equipment limitations and seedling mortality caused by the sandy surface and the low available water capacity. To facilitate mechanical operations, site preparation should include the removal of the larger debris. Planting trees that are adapted to the local conditions and planting during the wetter months can reduce the seedling mortality rate.

This map unit has severe limitations affecting landfills and shallow excavations. It has moderate limitations affecting septic tank absorption fields, dwelling with basements, lawns, and landscaping. Wetness, seepage, the sandy texture, and droughtiness are the main limitations. This map unit has slight limitations affecting dwellings without basements, small commercial buildings, and local roads and streets. Tables 9 and 10 contain additional information regarding factors that can affect urban development.

This map unit has severe limitations affecting recreational development. The sandy surface is the main limitation. Table 7 contains additional information regarding factors that can affect recreational development.

The capability subclass is IIIs.

32—Fuquay loamy sand, 0 to 2 percent slopes

This well drained soil is on summits in the uplands. Areas of this soil are irregular in shape and range from 5 to 750 acres in size. Slopes are smooth to concave.

Typically, the surface layer is dark grayish brown loamy sand about 11 inches thick. The subsurface layer is olive yellow loamy fine sand that has plinthite and has mottles in shades of gray, yellow, and red to a depth of 32 inches. The subsoil is olive yellow fine sandy loam that has plinthite and has mottles in shades of gray, yellow, and red to a depth of 42 inches; is yellowish brown sandy loam that has plinthite and has mottles in shades of gray, yellow, and red to a depth of 58 inches; and is sandy clay loam that is variegated in shades of gray, yellow, and red to a depth of 80 inches or more.

In 95 percent of the areas of this map unit, the Fuquay soil and similar soils make up 100 percent of the unit. The similar soils include Dothan soils, which have a loamy subsoil within a depth of 20 inches.

Dissimilar soils make up less than 5 percent of the mapped areas. The dissimilar soils include Bonifay and Stilson soils. Bonifay soils have a loamy subsoil below a depth of 40 inches and have mottles related to wetness at a depth of 48 to 72 inches. Stilson soils are more poorly drained than the Fuquay soil, are in lower positions, and have wetness indicators at a depth of 30 to 42 inches and/or at 5 to 14 inches below the top of the loamy subsoil.

The seasonal high water table is perched at a depth of 42 to 72 inches from December through March and from June through September. The available water capacity is low in the surface and subsurface layers and moderate in the subsoil.

Typically, this map unit supports the Mixed Hardwood and Pine ecological community, which has several variations. In mature, natural stands, the hardwoods replace the pines. The natural climax vegetation is thought to be a beech-magnolia-maple association. The trees that characterize this community are loblolly pine, white oak, pignut hickory, American beech, and flowering dogwood. The herbaceous plants and vines include aster, partridge pea, poison ivy, violet, Virginia creeper, and wild grape. Grasses include broomsedge bluestem, longleaf uniola, low panicum, and spike uniola.

This map unit is well suited to cultivated crops. It can be cultivated using ordinary, good farming methods. Droughtiness and rapid leaching of plant nutrients, however, limit the choice of crops and the potential yields of those crops that are adapted to the local conditions. Good seedbed preparation and applications of fertilizer and lime are needed for maximum yields.

This map unit is well suited to pasture and hay. Improved bermudagrasses and improved bahiagrasses are well adapted to the local conditions. This soil responds well to applications of fertilizer and lime. Controlled grazing is needed to maintain vigorous plants and good cover and to obtain maximum yields.

The potential productivity of this map unit is high for slash pine. The main management concerns are equipment limitations, seedling mortality, and plant competition caused by the sandy surface, low available water capacity, and seasonal wetness. Site preparation should include the removal of the larger debris to facilitate mechanical operations and chopping the woody understory vegetation to help control immediate plant competition. Planting trees that are adapted to the local conditions and planting during the wetter months can reduce the seedling mortality rate. Prescribed burning in established stands can help to control the competing vegetation and help to maintain ease of access.

This map unit has severe limitations affecting septic tank absorption fields, sewage lagoons, and area sanitary landfills. It has moderate limitations affecting trench sanitary landfills, dwellings with basements, lawns, and landscaping. Wetness and slow percolation are the main limitations. This map unit has slight limitations affecting shallow excavations, dwelling without basements, small commercial buildings, and local roads and streets. Tables 9 and 10 contain additional information regarding factors that can affect urban development.

The sandy surface is a moderate limitation affecting recreational development. Table 7 contains additional information regarding factors that can affect recreational development.

The capability subclass is IIs.

33—Fuquay loamy sand, 2 to 5 percent slopes

This well drained soil is on shoulders in the uplands. Areas of this soil are irregular in shape and range from 5 to 120 acres in size. Slopes are smooth to convex.

Typically, the surface layer is dark grayish brown loamy sand about 7 inches thick. The subsurface layer is yellowish brown loamy sand that has mottles in shades of gray, yellow, and red to a depth of 30 inches. The subsoil is sandy clay loam. It is brownish yellow, has common plinthite nodules, and has mottles in shades of gray, yellow, and red to a depth of 38 inches; and it is variegated in shades of gray, yellow, and red to a depth of 80 inches or more.

In 95 percent of the areas of this map unit, the Fuquay soil and similar soils make up 100 percent of the unit. The similar soils include Dothan soils that have a loamy subsoil within a depth of 20 inches and are in positions similar to those of the Fuquay soil.

Dissimilar soils make up less than 5 percent of the mapped areas. The dissimilar soils include Bonifay and Stilson soils. Bonifay soils have a loamy subsoil below a depth of 40 inches, have mottles related to wetness at a depth of 48 to 72 inches, and are in positions similar to those of the Fuquay soil. Stilson soils are more poorly drained than the Fuquay soil, are in lower positions, and have wetness indicators at a depth of 30 to 42 inches and/or at 5 to 14 inches below the top of the loamy subsoil.

The seasonal high water table is perched at a depth of 42 to 72 inches from December through March and from June through September. The available water capacity is low in the surface and subsurface layers and moderate in the subsoil.

Typically, this map unit supports the Mixed Hardwood and Pine ecological community, which has several variations. In mature, natural stands, the hardwoods replace the pines. The natural climax vegetation is thought to be a beech-magnolia-maple association. The trees that characterize this community are loblolly pine, white oak, pignut hickory, American beech, and flowering dogwood. The herbaceous plants and vines include aster, partridge pea, poison ivy, violet, Virginia creeper, and wild grape. Grasses include broomsedge bluestem, longleaf uniola, low panicum, and spike uniola.

This map unit is well suited to cultivated crops. It can be cultivated using ordinary, good farming methods. Droughtiness and rapid leaching of plant nutrients, however, limit the choice and potential yields of those crops that are adapted to the local conditions. Row crops should be planted on the contour in alternating strips with cover crops to help control erosion. Good seedbed preparation and applications of fertilizer and lime are needed for maximum yields.

This map unit is well suited to pasture and hay. Improved bermudagrasses and improved bahiagrasses are well adapted to the local conditions. This soil responds well to applications of fertilizer and lime. Controlled grazing is needed to maintain vigorous plants and good cover and to obtain maximum yields.

The potential productivity of this map unit is high for slash pine (fig. 7). The main management concerns are equipment limitations, seedling mortality, and plant competition caused by the sandy surface, low available water capacity, and seasonal wetness. Site preparation should include removing the larger debris to facilitate mechanical operations and chopping the woody understory vegetation to help control immediate plant competition. Planting trees that are adapted to the local conditions and planting during the wetter months can reduce the seedling mortality rate. Prescribed burning in established stands can help to control the competing vegetation and help to maintain ease of access.

Seepage is a severe limitation affecting septic tank absorption fields, sewage lagoons, and area sanitary landfills. Wetness and slow percolation are moderate limitations affecting trench sanitary landfills, dwellings with basements, lawns, and landscaping. This map unit has slight limitations affecting shallow excavations, dwelling without basements, small commercial buildings, and local roads and streets. Tables 9 and 10 contain additional information regarding factors that can affect urban development.

The sandy surface and the slope are moderate limitations affecting recreational development. Table 7 contains additional information regarding factors that can affect recreational development.

The capability subclass is IIs.

34—Fuquay loamy sand, 5 to 8 percent slopes

This well drained soil is on side slopes in the uplands. Areas of this soil are irregular in shape and range from 3 to 40 acres in size. Slopes are smooth to convex.

Typically, the surface layer is dark grayish brown loamy sand about 6 inches thick. The subsurface layer is yellowish brown loamy sand that has mottles in shades of gray, yellow, and red to a depth of 26 inches. The subsoil is yellowish brown sandy loam that has mottles in shades of gray, yellow, and red to a depth of

Figure 7.—An area of Fuquay loamy sand, 2 to 5 percent slopes, that was recently converted from cropland to woodland.

35 inches; is yellowish brown sandy clay loam that has plinthite and has mottles in shades of gray, yellow, and red to a depth of 50 inches; and is sandy clay loam that is variegated in shades of gray, yellow, and red to a depth of 80 inches or more.

In 95 percent of the areas of this map unit, the Fuquay soil and similar soils make up 100 percent of the unit. The similar soils include Dothan soils that have a loamy subsoil within a depth of 20 inches and are in positions similar to those of the Fuquay soil.

Dissimilar soils make up less than 5 percent of the mapped areas. The dissimilar soils include Bonifay and Stilson soils. Bonifay soils have a loamy subsoil below a depth of 40 inches, have mottles related to wetness at a depth of 48 to 72 inches, and are in positions similar to those of the Fuquay soil. Stilson soils are more poorly drained than the Fuquay soil, are in lower positions, and have wetness indicators at a depth of 30 to 42 inches and/or at 5 to 14 inches below the top of the loamy subsoil.

The seasonal high water table perched is at a depth of 42 to 72 inches from December through March and from June through September. The available water capacity is low in the surface and subsurface layers and moderate in the subsoil.

Typically, this map unit supports the Mixed Hardwood and Pine ecological community, which has several variations. In mature, natural stands, the hardwoods replace the pines. The natural climax vegetation is thought to be a beech-magnolia-maple association. The trees that characterize this community are loblolly pine, white oak, pignut hickory, American beech, and flowering dogwood. The herbaceous plants and vines include aster, partridge pea, poison ivy, violet, Virginia creeper, and wild grape. Grasses include broomsedge bluestem, longleaf uniola, low panicum, and spike uniola.

This map unit is moderately well suited to cultivated crops. Droughtiness and rapid leaching of plant nutrients are management concerns. The slope is a management concern and increases the hazard of erosion. Proper management includes planting cover crops, planting on the contour, alternating strips of row crops with cover crops, and leaving crop residues on the soil. Nutrient management helps to maximize yields.

This map unit is moderately well suited to pasture and hay. Improved bermudagrasses and improved bahiagrasses are well adapted to the local conditions. The slope increases the hazard of erosion and reduces the potential yields. This soil responds well to applications of fertilizer and lime. Controlled grazing is needed to maintain vigorous plants and good cover, to obtain maximum yields, and to prevent erosion.

The potential productivity of this map unit is high for slash pine. The main management concerns are equipment limitations, seedling mortality, and plant competition caused by the sandy surface, low available water capacity, and seasonal wetness. Site preparation should include removing the larger debris to facilitate mechanical operations and chopping the woody understory vegetation to help control immediate plant competition. Planting trees that are adapted to the local conditions and planting during the wetter months can reduce the seedling mortality rate. Prescribed burning in established stands can help to control the competing vegetation and help to maintain ease of access.

Slow percolation and seepage are severe limitations affecting septic tank absorption fields, sewage lagoons, and area sanitary landfills. Wetness, the sandy texture, and the slope are moderate limitations affecting trench sanitary landfills, dwellings with basements, small commercial buildings, lawns, and landscaping. This map unit has slight limitations affecting shallow excavations, dwelling without basements, and local roads and streets. Tables 9 and 10 contain additional information regarding factors that can affect urban development.

The slope and the sandy surface are severe limitations affecting playgrounds and moderate limitations affecting camp areas, picnic areas, paths, trails, and golf fairways. Table 7 contains additional information regarding factors that can affect recreational development.

The capability subclass is IIIs.

35—Hurricane sand

This somewhat poorly drained soil is on rises and knolls in the coastal lowlands and on toeslopes in the uplands. Areas of this soil are irregular or elongated in shape and range from 3 to 70 acres in size. Slopes are smooth to slightly concave or convex and range from 0 to 3 percent.

Typically, the surface layer is mixed dark gray and light gray sand to a depth of 6 inches. The subsurface layer is sand. It is gray and has white splotches to a depth of 23 inches; is grayish brown and has mottles in shades of gray, yellow, and red to a depth of 37 inches; and is white to a depth of 72 inches. The subsoil is very dark gray sand that has mottles in shades of gray, yellow, and red to a depth of 80 inches or more.

In 95 percent of the areas of this map unit, the Hurricane soil and similar soils make up 85 to 100 percent of the unit. The similar soils include Albany and Pottsburg soils. Albany soils have a loamy subsoil below a depth of 40 inches. Pottsburg soils are more poorly drained than the Hurricane soil, are in lower positions, and have mottles related to wetness below a depth of 18 inches.

Dissimilar soils make up 0 to 15 percent of the mapped areas. The dissimilar soils include Foxworth and Chipley soils, which do not have an organic-stained subsoil within a depth of 80 inches. Also included are soils that have dark, organic-stained layers and are better drained than the Hurricane soil and soils that have slopes of 2 to 5 percent.

The seasonal high water table is at a depth of 18 to 42 inches from December through March and from June through September. The available water capacity is very low in the surface and subsurface layers and is low or moderate in the subsoil.

Typically, this map unit supports the Longleaf Pine-Turkey Oak Hills ecological community, which has several variations. Scattered longleaf pine are the overstory in mature, natural stands of trees. Areas from which pines have been removed are dominated by oaks. The trees that characterize this community are longleaf pine, turkey oak, blackjack oak, and post oak. Herbaceous plants and vines include aster, blazingstar, brackenfern, butterfly pea, elephantsfoot, grassleaf goldaster, partridge pea, pineland beggarweed, sandhill milkweed, showy crotalaria, and wild indigo. Grasses and grasslike plants include Curtis' dropseed, hairy panicum, yellow Indiangrass, low panicum, and pineywoods dropseed.

This map unit is moderately suited to cultivated crops. Droughtiness and rapid leaching of plant nutrients limit the choice of plants and reduce potential yields for those crops that are adapted to the local conditions. The seasonal high water table increases the availability of water in the root zone by providing water through capillary rise. Row crops should be planted on the contour in alternating strips with close-growing cover crops. Soil-improving cover crops and crop residues should be left on the land. Irrigation of high-value crops is usually feasible where irrigation water is readily available. Tile drains or other kinds of drains are needed for some crops that are damaged by a high water table during the growing season. Intensive management of soil fertility and water is required for maximum crop production.

The map unit is moderately well suited to pasture and hay. Droughtiness and rapid leaching of plant nutrients are major management concerns. Intensive management of soil fertility and water is required to fully utilize this soil for pasture and hay. Such plants as improved bermudagrasses and improved bahiagrasses are well adapted to the local conditions. Applications of fertilizer and lime and controlled grazing are needed to maintain vigorous plants and to obtain maximum yields.

The potential productivity of this map unit is moderately high for slash pine. The main management concerns are equipment limitations, seedling mortality, and plant competition because of the sandy surface, low available water capacity, and seasonal wetness. Site preparation should include removing the larger debris to facilitate mechanical operations and chopping the woody understory vegetation to help control immediate plant competition. Planting trees that are adapted to the local conditions and planting during the wetter months can reduce the seedling mortality rate. Prescribed burning in established stands can help to control the competing vegetation and help to maintain ease of access.

This map unit has severe limitations affecting septic tank absorption fields, sewage lagoons, sanitary landfills, shallow excavations, dwellings with basements, lawns, and landscaping. It has moderate limitations affecting dwellings without basements, small commercial buildings, and local roads and streets. Wetness and seepage are the main limitations. Tables 9 and 10 contain additional information regarding factors that can affect urban development.

This map unit has severe limitations affecting recreational development. The sandy surface is the main limitation. Table 7 contains additional information regarding factors that can affect recreational development.

The capability subclass is IIIw.

36—Lakeland sand, 0 to 5 percent slopes

This excessively drained soil is on summits and shoulders in the uplands. Individual areas of this soil are irregular in shape and range from 20 to 2,000 acres in size. Slopes are mostly smooth to convex.

Typically, the surface layer is brown sand about 6 inches thick. The substratum is sand. It is yellow to a depth of 37 inches, brownish yellow to a depth of 58 inches, and very pale brown to a depth of 80 inches or more.

In 95 percent of the areas of this map unit, the Lakeland soil and similar soils make up 100 percent of the unit. The similar soils include soils that have thin bands of loamy material.

Dissimilar soils make up less than 5 percent of the mapped areas. The dissimilar soils include Foxworth and Troup soils. Foxworth soils are more poorly drained than the Lakeland soil, are in lower positions, and have mottles related to wetness below a depth of 42 inches. Troup soils have a reddish, loamy subsoil below a depth of 40 inches.

This map unit does not have a seasonal high water table within a depth of 72 inches. The available water capacity is low in the surface layer and very low or low in the substratum.

Typically, this map unit supports the Longleaf Pine-Turkey Oak Hills ecological community, which has several variations. Scattered longleaf pine are the overstory in mature, natural stands of trees. Areas from which pines have been removed are dominated by oaks. The trees that characterize this community are longleaf pine, turkey oak, blackjack oak, and post oak. Herbaceous plants and vines include aster, blazingstar, brackenfern, butterfly pea, elephantsfoot, grassleaf goldaster, partridge pea, pineland beggarweed, sandhill milkweed, showy crotalaria, and wild indigo. Grasses and grasslike plants include Curtis' dropseed, hairy panicum, yellow Indiangrass, low panicum, and pineywoods dropseed.

This map unit is poorly suited to cultivated crops because of droughtiness and the rapid leaching of plant nutrients, which is caused by the sandy texture of the soil. These factors also limit the choice of plants and reduce the potential yields of those crops that are adapted to the local conditions. If cultivated, this soil requires intensive management practices. Row crops should be planted on the contour in alternating strips with close-growing cover crops. Crop rotations should include close-growing crops on the land at least two-thirds of the time. Irrigation and nutrient management are necessary for acceptable yields. Soil-improving cover crops and all crop residues should be left on the land.

This map unit is moderately suited to pasture and hay. Deep-rooted plants, such as improved bermudagrasses and improved bahiagrasses, are well adapted to the local conditions, but yields are reduced by periodic droughts. Regular applications of fertilizer and lime are needed. Intensive management of soil fertility and water is required to fully utilize this soil for pasture and hay. Controlled grazing is needed to maintain vigorous plants and to obtain maximum yields.

The potential productivity of this map unit is very low for slash pine. A better rotation is sand pine followed by longleaf pine. The main management concerns are equipment limitations and seedling mortality caused by the sandy surface and very low available water capacity. To facilitate mechanical operations, site preparation should include the removal of the larger debris. Planting trees that are adapted to the local conditions and planting during the wetter months can reduce the seedling mortality rate.

Seepage and the sandy surface are severe limitations affecting sewage lagoons, sanitary landfills, and shallow excavations. This map unit has slight limitations affecting septic tank absorption fields, dwellings, small commercial buildings, lawns, and landscaping. Tables 9 and 10 contain additional information regarding factors that can affect urban development.

This map unit has severe limitations affecting most recreational development. The sandy surface is the main limitation. Table 7 contains additional information regarding factors that can affect recreational development.

The capability subclass is IVs.

37—Lakeland sand, 5 to 8 percent slopes

This excessively drained soil is on side slopes in the uplands. Individual areas of this soil are elongated in shape and range from 3 to 160 acres in size. Slopes are mostly smooth to convex but are concave in places.

Typically, the surface layer is brown sand about 6 inches thick. The substratum is sand. It is light yellowish brown to a depth of 45 inches, very pale brown to a depth of 74 inches, and brownish yellow to a depth of 80 inches or more.

In 90 percent of the areas of this map unit, the Lakeland soil and similar soils make up 75 to 100 percent of the unit. The similar soils include soils that have thin bands of loamy material. Also included are soils that have slopes of more than 8 percent.

Dissimilar soils make up 0 to 25 percent of the mapped areas. The dissimilar soils include Blanton, Foxworth, and Troup soils. Blanton soils are more poorly drained than the Lakeland soil, are in lower positions, have a loamy subsoil below depth of 40 inches, and have mottles related to wetness below a depth of 30 inches. Foxworth soils are more poorly drained than the Lakeland soil, are in lower positions, and have mottles related to wetness below a depth of 42 inches. Troup soils have a reddish, loamy subsoil below a depth of 40 inches. Also included in mapping are small areas of poorly drained soils at seepage spots.

This map unit does not have a seasonal high water table within a depth of 72 inches. The available water capacity is low in the surface layer and very low or low in the substratum.

Typically, this map unit supports the Longleaf Pine-Turkey Oak Hills ecological community, which has several variations. Scattered longleaf pine are the overstory in mature, natural stands of trees. Areas from which pines have been removed are dominated by oaks. The trees that characterize this community are longleaf pine, turkey oak, blackjack oak, and post oak. Herbaceous plants and vines include aster, blazingstar, brackenfern, butterfly pea, elephantsfoot, grassleaf goldaster, partridge pea, pineland beggarweed, sandhill milkweed, showy crotalaria, and wild indigo. Grasses and grasslike plants include Curtis' dropseed, hairy panicum, yellow Indiangrass, low panicum, and pineywoods dropseed.

This map unit is very poorly suited to cultivated crops because of droughtiness, slope, and the hazard of erosion.

This map unit is moderately suited to pasture and hay. Deep-rooted plants, such as improved bermudagrasses and improved bahiagrasses, are well adapted to the local conditions, but yields are reduced by periodic droughts. Regular applications of fertilizer and lime are needed. Intensive management of soil fertility and water is required to fully utilize this soil for pasture and hay. Controlled grazing is needed to maintain vigorous plants and to obtain maximum yields.

The potential productivity of this map unit is very low for slash pine. A better rotation is sand pine followed by longleaf pine. The main management concerns are equipment limitations and seedling mortality caused by the sandy surface and low available water capacity. To facilitate mechanical operations, site preparation should include the removal

Figure 8.—The Apalachicola River flowing through an area of Wahee-Ochlockonee complex, commonly flooded.

of the larger debris. Planting trees that are adapted to the local conditions and planting during the wetter months can reduce the seedling mortality rate.

Seepage and the sandy surface are severe limitations affecting sewage lagoons, sanitary landfills, and shallow excavations. The slope is a moderate limitation affecting small commercial buildings. This map unit has slight limitations affecting septic tank absorption fields, dwellings, and local roads and streets. Tables 9 and 10 contain additional information regarding factors that can affect urban development.

This map unit has severe limitations affecting most recreational development. The sandy surface and the slope are the main limitations. Table 7 contains additional information regarding factors that can affect recreational development.

The capability subclass is VIs.

38—Wahee-Ochlockonee complex, commonly flooded

This map unit consists of somewhat poorly drained Wahee soils and well drained Ochlockonee soils on the flood plains along the Apalachicola River (fig. 8). The Ochlockonee soils are in the higher areas adjacent to the river's edge and its many meandering tributaries. The Wahee soils are generally farther away from the river in the lower, wetter areas on the flood plains. The soils in this map unit are so intermingled that it was not practical to separate them at the scale selected for mapping. The proportions and patterns of the Wahee, Ochlockonee, and similar soils, however, are relatively consistent in most areas. Individual areas of each soil range from 3 to 1,700 acres in size. Mapped areas of this complex range from 5 to 2,000 acres in size. Slopes are less than 2 percent.

Wahee and similar soils make up 55 to 65 percent of the complex. Typically, the surface layer of the Wahee soil is brown clay loam about 4 inches thick. The subsoil is light yellowish brown silty clay that has mottles in shades of gray to a depth of 24 inches; is light brownish gray silty clay that has mottles in shades of gray, yellow, and red to a depth of 42 inches; and is light gray clay that has mottles in shades of gray, yellow, and red to a depth of 80 inches or more.

In areas of the Wahee soil, the seasonal high water table is at a depth of 18 to 30 inches from December through March and from June through September. The available water capacity is moderate or high. Frequent flooding is likely to occur often under usual weather conditions. The chance of flooding is more than a 50 percent in any year but less than 50 percent in all months in any year. On the average, flooding occurs more than 50 times in 100 years. The average duration of the flooding ranges from 7 to 30 days.

Ochlockonee and similar soils make up 20 to 25 percent of the complex. Typically, the surface layer of the Ochlockonee soil is very dark grayish brown loam about 4 inches thick. The substratum is dark yellowish brown sandy loam that has mottles in shades of gray, yellow, and red to a depth of 31 inches; is dark yellowish brown loamy sand that has mottles in shades of gray, yellow, and red to a depth of 61 inches; and is dark brown loam that has mottles in shades of gray, yellow, and red to a depth of 80 inches or more.

In areas of the Ochlockonee soil, the seasonal high water table is at a depth of 30 to 60 inches from December through March and from June through September. The available water capacity is moderate or high in the upper part and low or moderate in the lower part. Occasional flooding is likely to occur infrequently under usual weather conditions. The chance of flooding is 5 to 50 percent in any year. On the average, flooding occurs 5 to 50 times in 100 years. The average duration of the flooding ranges from 2 to 7 days.

Dissimilar soils make up 10 to 25 percent of the map unit. The dissimilar soils include Bibb, Bladen, Brickyard, Dunbar, Duplin, and Kinston soils. Bibb, Bladen, Brickyard, and Kinston soils are more poorly drained than the Wahee and Ochlockonee soils. Bladen soils are on flats. Bibb, Brickyard, and Kinston soils are on flood plains. Dunbar and Duplin soils are on terraces and have a clayey subsoil. Included in mapping are areas of sandy materials deposited on the riverbank during dredging operations. Also included are small areas of somewhat poorly drained and moderately well drained soils that are loamy to a depth of 60 inches or less and that are sandy below or that are stratified and are 18 to 35 percent clay in the control section. They are in positions similar to those of the Wahee and Ochlockonee soils.

Typically, this map unit supports the Bottomland Hardwoods ecological community, which is extremely diverse. Understory growth is profuse where light enters through the openings in the canopy. Common trees include black willow, green ash, river birch, swamp chestnut oak, sweetgum, American sycamore, water hickory, water oak, and willow oak. Common herbaceous vines include crossvine, greenbrier, peppervine, poison ivy, trumpet creeper, and wild grape.

This map unit is not suited to cultivated crops, pasture, or hay because of wetness and the flooding.

This map unit is not normally planted to pine trees because of seedling mortality, plant competition, and equipment limitations caused by wetness and the flooding. This soil is better suited to hardwood production through natural regeneration.

The wetness and flooding are severe limitations affecting urban development and most recreational development. Tables 7, 9, and 10 contain additional information regarding factors that can affect urban and recreational development.

The capability subclass is VIw in areas of the Wahee soil and IIw in areas of the Ochlockonee soil.

39—Leefield loamy sand, 0 to 5 percent slopes

This somewhat poorly drained soil is on summits and shoulders in the uplands. Areas of this soil are irregular in shape and range from 3 to 100 acres in size. Slopes are mostly smooth to concave but are convex in places.

Typically, the surface layer is dark gray loamy sand about 12 inches thick. The subsurface layer is pale yellow loamy sand that has mottles in shades of gray, yellow, and red to a depth of 34 inches. The subsoil is light gray fine sandy loam that has plinthite and has mottles in shades of gray, yellow, and red to a depth of about 61 inches. It is light gray sandy clay loam that has plinthite and has mottles in shades of gray, yellow, and red to a depth of 80 inches or more.

In 80 percent of the areas of this map unit, the Leefield soil and similar soils make up 86 to 100 percent of the unit. The similar soils include Florala and Robertsdale soils, which have a loamy subsoil within a depth of 20 inches. Also included in mapping are small areas that have less than 15 percent clay in the upper 20 inches of the argillic horizon.

Dissimilar soils make up 0 to 14 percent of the mapped areas. The dissimilar soils include Alapaha, Plummer, and Stilson soils. Alapaha and Plummer soils are more poorly drained than the Leefield soil, are in lower positions, and have a loamy subsoil below a depth of 40 inches. Stilson soils are better drained than the Leefield soil, are in higher positions, and have mottles related to wetness at a depth of 30 to 40 inches and/or at 5 to 14 inches below the top of the loamy subsoil.

The seasonal high water table is at a depth of 18 to 30 inches from December through March and from June through September. The available water capacity is low in the surface and subsurface layers and moderate or low in the subsoil.

Typically, this map unit supports the Mixed Hardwood and Pine ecological community, which has several variations. In mature, natural stands, the hardwoods replace the pines. The natural climax vegetation is thought to be a beech-magnolia-maple association. The trees that characterize this community are loblolly pine, white oak, pignut hickory, American beech, and flowering dogwood. The herbaceous plants and vines include aster, partridge pea, poison ivy, violet, Virginia creeper, and wild grape. Grasses include broomsedge bluestem, longleaf uniola, low panicum, and spike uniola.

This map unit is moderately well suited to cultivated crops. The variety of crops that are adapted to the local conditions is somewhat limited because the water table is near the surface much of the time. Tile drains or open ditches are needed to protect crops from wetness. Crop residue and the cover crops need to be left on the land to help control erosion. Good seedbed preparation and applications of fertilizer and lime are needed for maximum yields.

This map unit is well suited to pasture and hay. Pasture plants, such as improved bermudagrasses and improved bahiagrasses, grow well if properly managed. White clovers and other legumes are moderately adapted to the local conditions. Applications of fertilizer and lime are needed to obtain maximum yields, and controlled grazing is needed to maintain vigorous plants.

The potential productivity of this map unit is moderately high for slash pine. The main management concerns are equipment limitations, seedling mortality, and plant competition because of the sandy surface, low available water capacity, and seasonal wetness. Site preparation should include removing the larger debris to facilitate mechanical operations and chopping the woody understory vegetation to help control immediate plant competition. Planting trees that are adapted to the local conditions and planting during the wetter months can reduce the seedling mortality rate. Prescribed burning in established stands can help to control the competing vegetation and help to maintain ease of access.

Wetness and slow percolation are severe limitations affecting septic tank absorption fields, sewage lagoons, sanitary landfills, shallow excavations, and dwellings with basements. This map unit has moderate limitations affecting dwellings without basements, small commercial buildings, local roads and streets, lawns, and landscaping. Wetness is the main limitation. Tables 9 and 10 contain additional information regarding factors that can affect urban development.

This map unit has moderate limitations affecting recreational development. Wetness and the sandy surface are the main limitations. Table 7 contains additional information regarding factors that can affect recreational development.

The capability subclass is IIw.

41—Lucy loamy sand, 0 to 2 percent slopes

This well drained soil is on summits in the uplands. Areas of this soil are irregular in shape and range from 5 to 100 acres in size. Slopes are smooth to concave.

Typically, the surface layer is dark grayish brown loamy sand about 6 inches thick. The subsurface layer is reddish yellow and strong brown loamy sand to a depth of 34 inches. The subsoil is red sandy loam to a depth of 52 inches, red sandy clay loam to a depth of 57 inches, and red sandy clay loam that has mottles in shades of pink to a depth of 80 inches or more.

In 80 percent of the areas of this map unit, the Lucy soil and similar soils make up 80 to 100 percent of the unit. The similar soils include Chipola soils.

Dissimilar soils make up 0 to 20 percent of the mapped areas. The dissimilar soils include Bonifay, Lakeland, Orangeburg, and Troup soils, all of which are in positions similar to those of the Lucy soil. Bonifay and Troup soils have a loamy subsoil at a depth of more than 40 inches. Orangeburg soils have a loamy subsoil within a depth of 20 inches. Lakeland soils are sandy throughout.

This map unit does not have a seasonal high water table within a depth of 72 inches. The available water capacity is low or moderate in the surface and subsurface layers and moderate in the subsoil.

Typically, this map unit supports the Mixed Hardwood and Pine ecological community, which has several variations. In mature, natural stands, the hardwoods replace the pines. The natural climax vegetation is thought to be a beech-magnolia-maple association. The trees that characterize this community are loblolly pine, white oak, pignut hickory, American beech, and flowering dogwood. The herbaceous plants and vines include aster, partridge pea, poison ivy, violet, Virginia creeper, and wild grape. Grasses include broomsedge bluestem, longleaf uniola, low panicum, and spike uniola.

This map unit is well suited to cultivated crops. It can be cultivated using ordinary, good farming methods. Droughtiness and rapid leaching of plant nutrients, however, limit the choice of crops and the potential yields. Good seedbed preparation and applications of fertilizer and lime are needed for maximum yields. Where water is readily available, irrigation of some high-value crops is usually feasible.

The map unit is well suited to pasture and hay. Deep-rooted plants, such as improved bermudagrasses and improved bahiagrasses, grow well. Applications of fertilizer and lime and controlled grazing are needed to maintain vigorous plants and good cover and to obtain maximum yields.

The potential productivity of this map unit is moderately high for slash pine. The main management concerns are equipment limitations, seedling mortality, and plant competition caused by the sandy surface, low available water capacity, and seasonal wetness. Site preparation should include removing the larger debris to facilitate mechanical operations and chopping the woody understory vegetation to help control immediate plant competition. Planting trees that are adapted to the local conditions and planting during the wetter months can reduce the seedling mortality rate. Prescribed burning in established stands can help to control the competing vegetation and help to maintain ease of access.

Seepage is a severe limitation affecting area sanitary landfills and sewage lagoons. Cutbanks caving and droughtiness are moderate limitations affecting shallow excavations, lawns, and landscaping. This map unit has slight limitations affecting septic tank absorption fields, trench sanitary landfill, dwellings, small commercial buildings, and local roads and streets. Tables 9 and 10 contain additional information regarding factors that can affect urban development.

The sandy surface is a slight to moderate limitation affecting recreational development. Table 7 contains additional information regarding factors that can affect recreational development.

The capability subclass is IIs.

42—Lucy sand, 2 to 5 percent slopes

This well drained soil is on shoulders in the uplands. Areas of this soil are irregular in shape and range from 3 to 140 acres in size. Slopes are smooth to convex.

Typically, the surface layer is yellowish brown sand about 6 inches thick. The subsurface layer is brownish yellow and yellowish brown sand to a depth of 27 inches. The subsoil is red sandy clay loam to a depth of 80 inches or more.

In 80 percent of the areas of this map unit, the Lucy soil and similar soils make up 86 to 100 percent of the unit. The similar soils include Chipola soils.

Dissimilar soils make up 0 to 14 percent of the mapped areas. The dissimilar soils include Bonifay, Lakeland, Orangeburg, and Troup soils, all of which are in positions similar to those of the Lucy soil. Bonifay and Troup soils have a loamy subsoil at a depth of more than 40 inches. Orangeburg soils have a loamy subsoil within a depth of 20 inches. Lakeland soils are sandy throughout.

This map unit does not have a seasonal high water table within a depth of 72 inches. The available water capacity is low in the surface and subsurface layers and moderate in the subsoil.

Typically, this map unit supports the Mixed Hardwood and Pine ecological community, which has several variations. In mature, natural stands, the hardwoods replace the pines. The natural climax vegetation is thought to be a beech-magnolia-maple association. The trees that characterize this community are loblolly pine, white oak, pignut hickory, American beech, and flowering dogwood. The herbaceous plants and vines include aster, partridge pea, poison ivy, violet, Virginia creeper, and wild grape. Grasses include broomsedge bluestem, longleaf uniola, low panicum, and spike uniola.

This map unit is well suited to cultivated crops. It can be cultivated using ordinary, good farming methods. Droughtiness and rapid leaching of plant nutrients, however, limit the choice of crops and the potential yields. If good management is applied, such crops as corn, soybeans, peanuts, and cotton can be grown. Nutrient management helps to maximize yields. Row crops should be planted on the contour in alternating strips with cover crops. Where water is readily available, irrigation of some high-value crops is usually feasible.

The map unit is well suited to pasture and hay. Deep-rooted plants, such as improved bermudagrasses and improved bahiagrasses, grow well. Applications of fertilizer and lime are needed to obtain maximum yields. Controlled grazing is essential to maintain vigorous plants and good cover and to obtain maximum yields.

The potential productivity of this map unit is moderately high for slash pine. The main management concerns are equipment limitations, seedling mortality, and plant competition caused by the sandy surface, low available water capacity, and seasonal wetness. Site preparation should include removing the larger debris to facilitate mechanical operations and chopping the woody understory vegetation to help control immediate plant competition. Planting trees that are adapted to the local conditions and planting during the wetter months can reduce the seedling mortality rate. Prescribed burning in established stands can help to control the competing vegetation and help to maintain ease of access.

Seepage is a severe limitation affecting area sanitary landfills and sewage lagoons. Cutbanks caving and droughtiness are moderate limitations affecting shallow excavations, lawns, and landscaping. This map unit has slight limitations affecting septic tank absorption fields, trench sanitary landfills, dwellings, small commercial buildings, and local roads and streets. Tables 9 and 10 contain additional information regarding factors that can affect urban development.

The sandy surface and the slope are slight to moderate limitations affecting recreational development. Table 7 contains additional information regarding factors that can affect recreational development.

The capability subclass is IIs.

43—Lucy sand, 5 to 8 percent slopes

This well drained soil is on side slopes in the uplands. Areas of this soil are irregular or elongated in shape and range from 3 to 40 acres in size. Slopes are smooth to convex.

Typically, the surface layer is brown sand about 5 inches thick. The subsurface layer is strong brown and yellowish red sand to a depth of 34 inches. The subsoil is red sandy clay loam to a depth of 80 inches or more.

In 80 percent of the areas of this map unit, the Lucy soil and similar soils make up 75 to 100 percent of the unit.

Dissimilar soils make up 0 to 25 percent of the mapped areas. The dissimilar soils include Bonifay, Lakeland, Orangeburg, and Troup soils, all of which are in positions similar to those of the Lucy soil. Bonifay and Troup soils have a loamy subsoil at a depth of more than 40 inches. Orangeburg soils have a loamy subsoil within a depth of 20 inches. Lakeland soils are sandy throughout.

This map unit does not have a seasonal high water table within a depth of 72 inches. The available water capacity is low in the surface and subsurface layers and moderate in the subsoil.

Typically, this map unit supports the Mixed Hardwood and Pine ecological community, which has several variations. In mature, natural stands, the hardwoods replace the pines. The natural climax vegetation is thought to be a beech-magnolia-maple association. The trees that characterize this community are loblolly pine, white oak, pignut hickory, American beech, and flowering dogwood. The herbaceous plants and vines include aster, partridge pea, poison ivy, violet, Virginia creeper, and wild grape. Grasses include broomsedge bluestem, longleaf uniola, low panicum, and spike uniola.

This map unit is moderately well suited to cultivated crops. It can be cultivated using ordinary, good farming methods. Droughtiness and rapid leaching of plant nutrients, however, limit the choice of crops and the potential yields. The slope further limits the suitability of crops by making cultivation more difficult and by increasing the hazard of erosion. Row crops should be planted on the contour in alternating strips with cover crops. The cover crops and all crop residue should be left on the land to help control erosion. Good seedbed preparation and applications of fertilizer and lime are needed for maximum yields.

This map unit is moderately well suited to pasture and hay. Deep-rooted plants, such as improved bermudagrasses and bahiagrasses, grow well. The slope increases the hazard of erosion, which reduces potential yields. Good stands of grass can be produced by applying fertilizer and lime. Controlled grazing is essential to maintain vigorous plants and good cover and to obtain maximum yields.

The potential productivity of this map unit is moderately high for slash pine. The main management concerns are equipment limitations, seedling mortality, and plant competition caused by the sandy surface, low available water capacity, and seasonal wetness. Site preparation should include removing the larger debris to facilitate mechanical operations and chopping the woody understory vegetation to help control immediate plant competition. Planting trees that are adapted to the local conditions and planting during the wetter months can reduce the seedling mortality rate. Prescribed burning in established stands can help to control the competing vegetation and help to maintain ease of access.

Seepage is a severe limitation affecting area sanitary landfills and sewage lagoons. Cutbanks caving, the sandy texture, droughtiness, and the slope are moderate limitations affecting shallow excavations, lawns, landscaping, and small commercial buildings. This map unit has slight limitations affecting septic tank absorption fields, trench sanitary landfills, and dwellings. Tables 9 and 10 contain additional information regarding factors that can affect urban development.

The slope and the sandy surface are slight to moderate limitations affecting recreational development. Table 7 contains additional information regarding factors that can affect recreational development.

The capability subclass is IIIs.

44—Orangeburg loamy sand, 0 to 2 percent slopes

This well drained soil is on summits in the uplands. Areas of this soil are irregular in shape and range from 5 to 900 acres in size. Slopes are smooth to concave.

Typically, the surface layer is very dark grayish brown loamy sand about 9 inches thick. The subsoil is strong brown fine sandy loam to a depth of 16 inches, red sandy clay loam to a depth of 50 inches, and red sandy clay loam that has mottles in shades of gray, yellow, and red to a depth of 80 inches or more.

In 95 percent of the areas of this map unit, the Orangeburg soil and similar soils make up 100 percent of the unit. The similar soils include Dothan soils, which have a yellow subsoil and contain plinthite. Also included in mapping are soils that have yellow mottles in the lower part of the subsoil.

Dissimilar soils make up less than 5 percent of the mapped areas. The dissimilar soils include Lucy soils, which have a loamy subsoil at a depth of 20 to 40 inches.

This map unit does not have a seasonal high water table within a depth of 72 inches. The available water capacity is low in the surface layer and moderate in the subsoil.

Typically, this map unit supports the Mixed Hardwood and Pine ecological community, which has several variations. In mature, natural stands, the hardwoods replace the pines. The natural climax vegetation is thought to be a beech-magnolia-maple association. The trees that characterize this community are loblolly pine, white oak, pignut hickory, American beech, and flowering dogwood. The herbaceous plants and vines include aster, partridge pea, poison ivy, violet, Virginia creeper, and wild grape. Grasses include broomsedge bluestem, longleaf uniola, low panicum, and spike uniola.

This map unit is well suited to a wide variety of cultivated crops (fig. 9). Such crops as corn, soybeans, peanuts, and cotton grow well without special erosion-control or water-control measures. Such practices as good seedbed preparation, nutrient management, and crop rotation are all that are needed to keep the soil in good condition. Cover crops should be alternated with row crops. All crop residues should be returned to the soil.

This map unit is well suited to pasture and hay. Improved bahiagrasses and improved bermudagrasses grow well if properly managed. Applications of lime and fertilizer and controlled grazing are needed to maintain vigorous plants and adequate cover.

The potential productivity of this map unit is moderately high for slash pine. No serious limitations affect woodland management.

This map unit has slight limitations affecting most urban and recreational development. Seepage is a moderate limitation affecting sewage lagoons. Tables 7, 9, and 10 contain additional information regarding factors that can affect urban and recreational development.

The capability class is I.

45—Orangeburg loamy sand, 2 to 5 percent slopes

This well drained soil is on shoulders in the uplands. Areas of this soil are irregular in shape and range from 5 to 20 acres in size. Slopes are smooth to convex.

Typically, the surface layer is brown loamy sand about 6 inches thick. The subsoil is reddish yellow sandy loam to a depth of 12 inches and red sandy clay loam to a depth of 80 inches or more.

In 95 percent of the areas of this map unit, the Orangeburg soil and similar soils make up 100 percent of the unit. The similar soils include Dothan soils, which have a yellow subsoil and contain plinthite. Also included in mapping are soils that have yellow mottles in the lower part of the subsoil.

Dissimilar soils make up less than 5 percent of the mapped areas. The dissimilar soils include Lucy soils, which have a loamy subsoil at depth of 20 to 40 inches.

This map unit does not have a seasonal high water table within a depth of 72 inches. The available water capacity is low in the surface layer and moderate in the subsoil.

Typically, this map unit supports the Mixed Hardwood and Pine ecological community, which has several variations. In mature, natural stands, the hardwoods replace the pines. The natural climax vegetation is thought to be a beech-magnolia-maple association. The trees that characterize this community are loblolly pine, white oak, pignut hickory, American beech, and flowering dogwood. The herbaceous plants and vines include aster, partridge pea, poison ivy, violet, Virginia creeper, and wild grape. Grasses include broomsedge bluestem, longleaf uniola, low panicum, and spike uniola.

This map unit is well suited to a variety of cultivated crops. It is highly productive for a wide variety of crops if good management is applied. Erosion can be controlled by contour cultivation, terraces, and stabilized waterways. A cropping sequence that

Figure 9.—Sorghum growing in a field of Orangeburg loamy sand, 0 to 2 percent slopes.

includes close-growing crops and winter cover crops helps to help control erosion. Good seedbed preparation and applications of fertilizer and lime are needed for maximum yields.

This map unit is well suited to pasture and hay. Improved bahiagrasses and improved bermudagrasses grow well if properly managed. Clovers and other legumes are also adapted to the local conditions. Applications of lime and fertilizer and controlled grazing are needed to maintain vigorous plants and adequate cover.

The potential productivity of this map unit is moderately high for slash pine. No serious limitations affect woodland management.

This map unit has slight limitations affecting most urban and recreational development. The slope and seepage are moderate limitations affecting sewage lagoon areas and playgrounds. Tables 7, 9, and 10 contain additional information regarding factors that can affect urban and recreational development.

The capability subclass is IIe.

46—Orangeburg sandy loam, 5 to 8 percent slopes

This well drained soil is on side slopes in the uplands. Areas of this soil are irregular in shape and range from 5 to 20 acres in size. Slopes are smooth to convex.

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

In 95 percent of the areas of this map unit, the

Orangeburg soil and similar soils make up 100 percent of the unit. The similar soils include Dothan soils, which have a yellow subsoil and contain plinthite. Also included in mapping are soils that have yellow mottles in the lower part of the subsoil.

Dissimilar soils make up less than 5 percent of the mapped areas. The dissimilar soils include Lucy soils, which have a loamy subsoil at depth of 20 to 40 inches.

This map unit does not have a seasonal high water table within a depth of 72 inches. The available water capacity is low in the surface layer and moderate in the subsoil.

Typically, this map unit supports the Mixed Hardwood and Pine ecological community, which has several variations. In mature, natural stands, the hardwoods replace the pines. The natural climax vegetation is thought to be a beech-magnolia-maple association. The trees that characterize this community are loblolly pine, white oak, pignut hickory, American beech, and flowering dogwood. The herbaceous plants and vines include aster, partridge pea, poison ivy, violet, Virginia creeper, and wild grape. Grasses include broomsedge bluestem, longleaf uniola, low panicum, and spike uniola.

This map unit is well suited to cultivated crops. Because of the hazard of erosion, however, intensive erosion-control measures are needed. Measures include installing a system of terraces that have stabilized outlets and alternating row crops in strips with cover crops. Soil-improving cover crops and all residue should be left on ground. Good seedbed preparation and applications of fertilizer and lime are needed for maximum yields.

This map unit is well suited to pasture and hay. Tall fescue, improved bermudagrasses, improved bahiagrasses, and clovers are well adapted to the local conditions. Yields are good if the pasture is well managed. Applications of fertilizer and lime and controlled grazing are needed to maintain vigorous plants and good cover and to obtain maximum yields.

The potential productivity of this map unit is moderately high for slash pine. No serious concerns affect woodland management.

This map unit has slight limitations affecting most urban and recreational development. The slope, however, is a severe limitation affecting playgrounds, and the slope and seepage are moderate limitations affecting sewage lagoon areas and small commercial buildings. This map unit has slight limitations affecting other urban development. Tables 9 and 10 contain additional information regarding factors that can affect urban development.

The slope is a severe limitations affecting playgrounds. Table 7 contains additional information regarding factors that can affect recreational development.

The capability subclass is IIIe.

48—Pansey sandy loam

This poorly drained soil is on flats and in depressions in interstream divides in the uplands. Areas of this soil are irregular in shape and range from 3 to 225 acres in size. Slopes are smooth to concave and range from 0 to 2 percent.

Typically, the surface layer is very dark gray sandy loam about 8 inches thick. The subsoil is light brownish gray sandy loam that has mottles in shades of gray, yellow, and red to a depth of 14 inches; is light gray sandy clay loam that has mottles in shades of gray, yellow, and red to a depth of 23 inches; is sandy clay loam that has plinthite and is variegated in shades of gray, yellow, and red to a depth of 50 inches; and is gray clay to a depth of 80 inches or more.

In 95 percent of the areas of this map unit, the Pansey soil and similar soils make up 100 percent of the unit. The similar soils include Bladen and Pantego soils, which have a loamy subsoil. Also included are soils that have less than 5 percent plinthite, are 20 to 30 percent silt, or are clay in the lower part of the argillic horizon.

Dissimilar soils make up less than 5 percent of the mapped areas. The dissimilar soils include Alapaha and Robertsdale soils. Alapaha soils have a loamy subsoil and have plinthite at a depth of 20 to 40 inches. Robertsdale soils are better drained than the Pansey soil, are in higher positions, have a loamy subsoil, and have mottles related to wetness at a depth of 12 to 18 inches.

The seasonal high water table is at or near the surface from December through March and from June through September. The available water capacity is moderate in the surface layer and the upper part of the subsoil and very high in the lower part of the subsoil.

Typically, this map unit supports the North Florida Flatwoods ecological community, which has only slight variations in composition. Slash pine and water oak are the main trees. Herbaceous plants and shrubs include blackberry, dogfennel, gallberry, greenbrier, saw palmetto, and wax-myrtle. Grasses and grasslike plants include chalky bluestem, yellow Indiangrass, low panicum, pineland threeawn, and sedges.

This map unit is not suited to cultivated crops, pasture, or hay because of excessive wetness.

The potential productivity of this map unit is moderately high for slash pine. The main management concerns are equipment limitations, seedling mortality, windthrow hazard, and plant competition because of excessive wetness. Site preparation should include bedding to reduce the seedling mortality rate and chopping the woody understory vegetation to help control immediate plant competition. The installation of shallow surface ditches may also be necessary to remove excess water during wet periods. Limiting mechanical operations to the drier periods can help to overcome the equipment limitations. Windthrow hazard can be reduced by intermittently leaving unharvested rows of mature trees to act as windbreaks. Prescribed burning in established stands can help to control the competing vegetation and help to maintain ease of access. During harvesting, site preparation, and road building, care should be taken not to impede the flow of the creeks and drainageways that remove excess water from the area.

This map unit has severe limitations affecting urban and recreational development. Wetness and slow percolation are the main limitations. Tables 7, 9, and 10 contain additional information regarding factors that can affect urban and recreational development.

The capability subclass is IVw.

51—Plummer sand, 0 to 5 percent slopes

This poorly drained soil is on flats and in poorly defined drainageways in the Coastal Plain uplands. Areas of this soil are elongated or irregular in shape and range from 3 to 1,000 acres in size. Slopes are mostly smooth to concave but are convex in places.

Typically, the surface layer is very dark gray sand about 8 inches thick. The subsurface layer is sand. It is grayish brown to a depth of 16 inches and is light gray and has mottles in shades of gray, yellow, and red to a depth of 68 inches. The subsoil is light gray sandy loam that has mottles in shades of gray, yellow, and red to a depth of 80 inches or more.

In 80 percent of the areas of this map unit, the Plummer soil and similar soils make up 75 to 95 percent of the unit. The similar soils include Alapaha, Pottsburg, Rutlege, and Surrency soils. Alapaha and Surrency soils have a loamy subsoil at a depth of 20 to 40 inches. Pottsburg and Rutlege soils do not have a loamy subsoil.

Dissimilar soils make up 10 to 25 percent of the mapped areas. The dissimilar soils include Albany, Chipley, Leefield, and Pansey soils. Albany, Chipley, and Leefield soils are better drained than the Plummer soil and are in higher positions. Also, Chipley soils are sandy throughout and Leefield soils have a subsoil within a depth of 20 to 40 inches. Pansey soils have a subsoil within a depth of 20 inches and are in positions similar to those of the Plummer soil.

This map unit has a seasonal high water at or near the surface from December through March and from June through September. The available water capacity is very low or low in the surface and subsurface layers and low or moderate in the subsoil.

Typically, this map unit supports the North Florida Flatwoods ecological community, which has only slight variations in composition. Slash pine and water oak are the main trees. Herbaceous plants and shrubs include blackberry, dogfennel, gallberry, greenbrier, saw palmetto, and wax-myrtle. Grasses and grasslike plants include chalky bluestem, yellow Indiangrass, low panicum, pineland threeawn, and sedges.

This map unit is not suited to cultivated crops, pasture, or hay because of excessive wetness.

The potential productivity of this map unit is moderately high for slash pine. The main management concerns are equipment limitations, seedling mortality, and plant competition because of the sandy surface and wetness. Site preparation should include removing the larger debris to facilitate mechanical operations, bedding to reduce the seedling mortality rate, and chopping the woody understory vegetation to help control immediate plant competition. Limiting mechanical operations to the drier periods can help to overcome the equipment limitations. Prescribed burning in established stands can help to control the competing vegetation and help to maintain ease of access.

This map unit has severe limitations affecting urban and recreational development. Wetness is the main limitation. Tables 7, 9, and 10 contain additional information regarding factors that can affect urban and recreational development.

The capability subclass is IVw.

54—Croatan, Surrency, and Pantego soils, depressional

These very poorly drained soils are in depressions in the uplands. Areas of this map unit are irregular in shape and range from 3 to 750 acres in size. Slopes are less than 2 percent.

In 95 percent of the areas of this map unit, Croatan, Surrency, Pantego, and similar soils make up 100 percent of the unit. Each of the soils is not necessarily present in every mapped area, and the relative proportion of each soil varies. Although the areas of each individual soil are generally large enough to be mapped separately, they were mapped as one unit because of present and predicted use.

Typically, the surface layer of the Croatan soil is black muck about 19 inches thick. The substratum is very dark brown mucky sandy loam to a depth of 42 inches, dark brown sandy loam to a depth of 47 inches, and light brownish gray sandy clay loam to a depth of 80 inches or more.

In areas of the Croatan soil, the seasonal high water table is either above the surface or near the surface during most of the year. The available water capacity is very high in the surface layer.

Typically, the surface layer of the Surrency soil is black mucky sand to a depth of 5 inches and very dark grayish brown sand to a depth of 8 inches. The subsurface layer is grayish brown sand to a depth of 35 inches. The subsoil is grayish brown sandy loam that has mottles in shades of gray, yellow, and red to a depth of 80 inches or more.

In areas of the Surrency soil, the seasonal high water table is either at or above the surface during most of the year. The available water capacity is high or very high in the surface layer and low in the subsurface layer and subsoil.

Typically, the surface layer of the Pantego soil is black mucky fine sandy loam about 14 inches thick. The subsoil is sandy clay loam. It is very dark gray to a depth of 39 inches and gray to a depth of 80 inches or more.

In areas of the Pantego soil, the seasonal high water table is either at or above the surface for most of the year. The available water capacity is moderate or high throughout.

Dissimilar soils make up less than 5 percent of the mapped areas. The dissimilar soils include Alapaha, Bladen, Dorovan, Pansey, Plummer, and Rutlege soils. Alapaha, Bladen, Pansey, and Plummer soils are poorly drained and are in higher positions than those of the Croatan, Surrency, and Pantego soils. Dorovan soils are organic to a depth of more than 51 inches. Rutlege soils do not have a loamy subsoil. Also included are small areas of very poorly drained soils that have a dark, sandy surface layer that is more than 24 inches thick, have a subsoil that is more than 35 percent clay, and/or are stratified and are in positions similar to those of the Croatan, Surrency, and Pantego soils.

Typically, this map unit supports the Swamp Hardwoods ecological community. Many areas may have been dominated by cypress, but when the large cypress were cut down, the hardwoods became dominant. Trees that commonly are dominant include red maple, blackgum, water tupelo, and cypress. Common shrubs are buttonbush and dahoon holly. Herbaceous plants and vines are cinnamon fern, lizard’s tail, royal fern, and wild pine.

This map unit is not suited to cultivated crops, pasture, or hay because of excessive wetness and ponding.

This map unit is not suited to pine production because of seedling mortality and equipment limitations caused by excessive wetness and ponding.

This map unit is not suited to urban and recreational development because of excessive wetness, ponding, and subsidence. Tables 7, 9, and 10 contain additional information regarding factors that can affect urban and recreational development.

The capability subclass is VIIw.

55—Pottsburg sand

This poorly drained soil is on flats in areas of flatwoods, on rises, and on knolls in the coastal lowlands. Areas of this soil are irregular in shape and range from 3 to 250 acres in size. Slopes range from 0 to 2 percent.

Typically, the surface layer is gray sand about 7 inches thick. The subsurface layer is dark grayish brown sand to a depth of 14 inches; is light gray sand that has mottles in shades of gray, yellow, and red to a depth of 22 inches; is white sand that has mottles in shades of gray, yellow, and red to a depth of 52 inches; and is light brownish gray loamy sand to a depth of 58 inches. The subsoil is black sand to a depth of 80 inches or more.

In 80 percent of the areas of this map unit, the Pottsburg soil and similar soils make up 86 to 100 percent of the unit. The similar soils include Leon soils, which have an organic-stained subsoil within a depth of 30 inches.

Dissimilar soils make up 0 to 14 percent of the mapped areas. The dissimilar soils include Hurricane soils that are better drained than the Pottsburg soil, are in higher positions, and have mottles related to wetness at a depth of 18 to 42 inches. Also included are soils that have a sandy profile, do not have a black, organic-stained subsoil of sand within a depth of 80 inches, and are in positions similar to those of the Pottsburg soil.

The seasonal high water table is at a depth of 6 to 18 inches from December through March and from June through September. The available water capacity is low or moderate in the surface layer, very low or low in the subsurface layer, and moderate to very high in the subsoil.

Typically, this map unit supports the North Florida Flatwoods ecological community, which has only slight variations in composition. Slash pine, water oak, and live oak are the main trees. Herbaceous plants and shrubs include blackberry, dogfennel, gallberry, greenbrier, saw palmetto, and wax-myrtle. Grasses and grasslike plants include chalky bluestem, yellow Indiangrass, low panicum, pineland threeawn, and sedges.

This map unit is poorly suited to cultivated crops because of wetness. A good water-control system is needed before the soil can be made suitable for most crops. The system should be designed to remove excess surface water during heavy rains as well as to remove excess subsurface water. Seedbed preparation should include bedding the rows. Fertilizing, liming, and using a close-growing, soil-improving crop are critical.

This map unit is moderately suited to pasture and hay. A seasonal high water table and rapid leaching of plant nutrients limit the choice of plants and reduce the potential yields of those crops that are adapted to the local conditions. Intensive management of soil fertility and water is required to fully utilize this soil for pasture and hay.

The potential productivity of this map unit is moderate for slash pine. The main management concerns are equipment limitations, seedling mortality, windthrow hazard, and plant competition because of the sandy surface and wetness. Site preparation should include removing the larger debris to facilitate mechanical operations, bedding to reduce the seedling mortality rate, and chopping the woody understory vegetation to help control immediate plant competition. The installation of shallow surface ditches may also be necessary to remove excess water during wet periods. Limiting mechanical operations to the drier periods can help to overcome the equipment limitations. Windthrow hazard can be reduced by intermittently leaving unharvested rows of mature trees to act as windbreaks. Prescribed burning in established stands can help to control the competing vegetation and help to maintain ease of access. During harvesting, site preparation, and road building, care should be taken not to impede the flow of the creeks and drainageways that remove excess water from the area.

This map unit has severe limitations affecting urban and recreational development. Wetness is the main limitation. Tables 7, 9, and 10 contain additional information regarding factors that can affect urban and recreational development.

The capability subclass is IVw.

57—Stilson loamy sand, 0 to 2 percent slopes

This moderately well drained soil is on summits in the uplands. Areas of this soil are irregular in shape and range from 3 to 90 acres in size. Slopes are smooth to concave.

Typically, the surface layer is dark gray loamy sand to a depth of 6 inches. The subsurface layer is loamy sand. It is light yellowish brown to a depth of 11 inches and is olive yellow and has mottles in shades of gray, yellow, and red to a depth of 26 inches. The subsoil is brownish yellow sandy loam that has mottles in shades of gray, yellow, and red to a depth of 34 inches; is brownish yellow sandy clay loam that has mottles in shades of gray, yellow, and red to a depth of 62 inches; and is sandy clay loam that has plinthite and is variegated in shades of gray, yellow, and red to a depth of 80 inches or more.

In 95 percent of the areas of this map unit, the Stilson soil and similar soils make up 88 to 91 percent of the unit. The similar soils include Leefield and Florala soils. Leefield soils have mottles related to wetness in the upper 5 inches of the loamy subsoil. Florala soils have a loamy subsoil within a depth of 20 inches. Also included in mapping are soils that have less than 5 percent, by volume, plinthite within a depth of 60 inches.

Dissimilar soils make up 9 to 12 percent of the mapped areas. The dissimilar soils include Albany, Blanton, Dothan, and Robertsdale soils. Albany and Blanton have a loamy subsoil below a depth of 40 inches. Dothan and Robertsdale soils have a subsoil within a depth of 20 inches. Also, Dothan soils are in more elevated positions than the Stilson soil.

The seasonal high water table is at a depth of 30 to 42 inches from December through March and from June through September. The available water capacity is low in the surface and subsurface layers and moderate or low in the subsoil.

Typically, this map unit supports the Mixed Hardwood and Pine ecological community, which has several variations. In mature, natural stands, the hardwoods replace the pines. The natural climax vegetation is thought to be a beech-magnolia-maple association. The trees that characterize this community are loblolly pine, white oak, pignut hickory, American beech, and flowering dogwood. The herbaceous plants and vines include aster, partridge pea, poison ivy, violet, Virginia creeper, and wild grape. Grasses include broomsedge bluestem, longleaf uniola, low panicum, and spike uniola.

This map unit is well suited to cultivated crops. The variety of crops that are adapted to the local conditions is somewhat limited because the water table is in the lower root zone much of the time. Tile drains are needed to protect nonadapted crops from wetness. Crop residue and cover crops need to be left on the land to help control erosion. Good seedbed preparation and applications of fertilizer and lime are needed for maximum yields.

This map unit is well suited to pasture and hay. Pasture plants, such as improved bermudagrasses and improved bahiagrasses, are well adapted to the local conditions. They grow well if the pasture is properly managed. Applications of fertilizer and lime are needed. Controlled grazing is needed to maintain vigorous plants and to obtain maximum yields.

The potential productivity of this map unit is high for slash pine. The main management concerns are equipment limitations, seedling mortality, and plant competition caused by the sandy surface, low available water capacity, and seasonal wetness. Site preparation should include removing the larger debris to facilitate mechanical operations and chopping the woody understory vegetation to help control immediate plant competition. Planting trees that are adapted to the local conditions and planting during the wetter months can reduce the seedling mortality rate. Prescribed burning in established stands can help to control the competing vegetation and help to maintain ease of access.

Wetness, slow percolation, seepage, and cutbanks caving are severe limitations affecting septic tank absorption fields, area sanitary landfills, sewage lagoons, and shallow excavations. Wetness and droughtiness are moderate limitations affecting dwellings with basements, trench type sanitary landfills, lawns, and landscaping. The map unit has slight limitations affecting dwellings without basements, small commercial buildings, and local roads and streets. Tables 9 and 10 contain additional information regarding factors that can effect urban development.

The sandy surface and droughtiness are moderate limitations affecting most recreational development. Table 7 contains additional information regarding factors that can affect recreational development.

The capability subclass is IIw.

58—Stilson loamy sand, 2 to 5 percent slopes

This moderately well drained soil is on shoulders in the uplands. Areas of this soil are irregular in shape and range from 3 to 25 acres in size. Slopes are mostly smooth to convex but are concave in places.

Typically, the surface layer is dark gray loamy sand to a depth of 10 inches. The subsurface layer is brownish yellow loamy sand that has mottles in shades of gray, yellow, and red to a depth of 24 inches. The subsoil is sandy clay loam. It is brownish yellow and has mottles in shades of gray, yellow, and red to a depth of 57 inches and has plinthite and is variegated in shades of gray, yellow, and red to a depth of 80 inches.

In 80 percent of the areas of this map unit, the Stilson soil and similar soils make up 86 to 100 percent of the unit. The similar soils include Leefield and Florala soils. Leefield soils have mottles related to wetness in the upper 5 inches of the loamy subsoil. Florala soils have a loamy subsoil within a depth of 20 inches. Also included in mapping are soils that have less than 5 percent, by volume, plinthite within a depth of 60 inches.

Dissimilar soils make up 0 to 14 percent of the mapped areas. The dissimilar soils include Albany, Blanton, Dothan, and Robertsdale soils. Albany and Blanton have a loamy subsoil below a depth of 40 inches. Dothan and Robertsdale soils have a subsoil within a depth of 20 inches. Also, Dothan soils are in more elevated positions than the Stilson soil.

The seasonal high water table is at a depth of 30 to 42 inches from December through March and from June through September. The available water capacity is low in the surface and subsurface layers and moderate or low in the subsoil.

Typically, this map unit supports the Mixed Hardwood and Pine ecological community, which has several variations. In mature, natural stands, the hardwoods replace the pines. The natural climax vegetation is thought to be a beech-magnolia-maple association. The trees that characterize this community are loblolly pine, white oak, pignut hickory, American beech, and flowering dogwood. The herbaceous plants and vines include aster, partridge pea, poison ivy, violet, Virginia creeper, and wild grape. Grasses include broomsedge bluestem, longleaf uniola, low panicum, and spike uniola.

This map unit is well suited to cultivated crops. Wetness and the hazard of erosion are the main management concerns. The variety of crops that are adapted to the local conditions is somewhat limited because the water table is in the lower root zone much of the time. Tile drains are needed to protect nonadapted crops from wetness. Row crops should be planted on the contour in alternating strips with cover crops. Nutrient management helps to maximize yields.

This map unit is well suited to pasture and hay. Pasture plants, such as improved bermudagrasses and improved bahiagrasses, are well adapted to the local conditions. They grow well if the pasture is properly managed. Applications of fertilizer and lime are needed. Controlled grazing is needed to maintain vigorous plants and to obtain maximum yields.

The potential productivity of this map unit is high for slash pine. The main management concerns are equipment limitations, seedling mortality, and plant competition caused by the sandy surface, low available water capacity, and seasonal wetness. Site preparation should include removing the larger debris to facilitate mechanical operations and chopping the woody understory vegetation to help control immediate plant competition. Planting trees that are adapted to the local conditions and planting during the wetter months can reduce the seedling mortality rate. Prescribed burning in established stands can help to control the competing vegetation and help to maintain ease of access.

Wetness, slow percolation, seepage, and cutbanks caving are severe limitations affecting septic tank absorption fields, area sanitary landfills, sewage lagoons, and shallow excavations. This map unit has moderate limitations affecting dwellings with basements, trench sanitary landfills, lawns, and landscaping. It has slight limitations affecting dwellings without basements, small commercial buildings, and local roads and streets. Tables 9 and 10 contain additional information regarding factors that can effect urban development.

The sandy surface, slope, and droughtiness are moderate limitations affecting most recreational development. Table 7 contains additional information regarding factors that can affect recreational development.

The capability subclass is IIs.

60—Croatan, Rutlege, and Surrency soils, depressional

These very poorly drained soils are in depressions in the uplands. Areas of this map unit are irregular in shape and range from 3 to 500 acres in size. Slopes are less than 2 percent.

In 95 percent of the areas of this map unit, the Croatan, Rutlege, Surrency, and similar soils make up 100 percent of the unit. Each of the soils is not necessarily present in every mapped area, and the relative proportion of each soil varies. Although the areas of each individual soil are generally large enough to be mapped separately, they were mapped as one unit because of present and predicted use. The similar soils include Dorovan soils, which are organic to a depth of 51 inches or more. Also included are small areas of very poorly drained soils that have a dark, sandy surface layer that is more than 24 inches thick, have a subsoil that is more than 35 percent clay, or are stratified.

Dissimilar soils make up less than 5 percent of the mapped areas. The dissimilar soils include small areas of hydric Alapaha, Pansey, Plummer, and Pottsburg soils on flats. All of these included soils are better drained than the Croatan, Rutlege, and Surrency soils and are in higher positions.

Typically, the surface layer of the Croatan soil is black muck about 19 inches thick. The substratum is very dark brown mucky sandy loam to a depth of 42 inches, dark brown sandy loam to a depth of 47 inches, and light brownish gray sandy clay loam to a depth of 80 inches or more.

In areas of the Croatan soil, the seasonal high water table is at or above the surface during most of the year. The available water capacity is very high in the surface layer and moderate or high in the subsurface layers and substratum.

Typically, the surface layer of the Rutlege soil is black mucky sand about 17 inches thick. The substratum is grayish brown loamy sand to a depth of 80 inches or more.

In areas of the Rutlege soil, the seasonal high water table is at or above the surface during most of the year. The available water capacity is very high in the surface layer and very low or low in the substratum.

Typically, the surface layer of the Surrency soil is black mucky sand to a depth of about 5 inches and very dark grayish brown sand to a depth of 8 inches. The subsurface layer is grayish brown loamy sand to a depth of 35 inches. The subsoil is grayish brown sandy clay loam that has mottles in shades of gray, yellow, and red to a depth of 80 inches or more.

In areas of the Surrency soil, the seasonal high water table is either above the surface or within a depth of 6 inches during most of the year. The available water capacity is moderate.

Typically, this map unit supports the Swamp Hardwoods ecological community. Many areas may have been dominated by cypress, but when the large cypress were cut down, the hardwoods became dominant. Trees that commonly are dominant include red maple, blackgum, water tupelo, and cypress. Common shrubs are buttonbush and dahoon holly. Herbaceous plants and vines are cinnamon fern, lizard's tail, royal fern, and wild pine.

This map unit is not suited to cultivated crops, pasture, or hay because of excessive wetness and ponding.

This map unit is not suited to the production of pine trees because of seedling mortality and equipment limitations caused by excessive wetness and ponding. This map unit is suited to hardwood production through natural regeneration.

This map unit is not suited to urban and recreational development because of excessive wetness and subsidence. Tables 7, 9, and 10 contain additional information regarding factors that can affect urban and recreational development.

The capability subclass is VIIw.

61—Troup sand, 0 to 5 percent slopes

This somewhat excessively drained soil is on summits and shoulders in the uplands. Areas of this soil are irregular in shape and range from 20 to 1,200 acres in size. Slopes are mostly smooth to convex but are concave in places.

Typically, the surface layer is dark grayish brown sand about 6 inches thick. The subsurface layer is sand. It is yellowish brown to a depth of 25 inches and brownish yellow to a depth of 46 inches. The subsoil is red sandy loam to a depth of 63 inches and is red sandy clay loam to a depth of 80 inches or more.

In 95 percent of the areas of this map unit, the Troup soil and similar soils make up 75 to 100 percent of the unit. The similar soils include Bonifay and Lucy soils. Bonifay soils have a yellow subsoil that contains plinthite. Lucy soils have a loamy, reddish subsoil at a depth of 20 to 40 inches.

Dissimilar soils make up 0 to 25 percent of the mapped areas. The dissimilar soils include Blanton, Foxworth, Lakeland, and Orangeburg soils. Blanton soils are more poorly drained than the Troup soil, are in lower positions, and have a yellow subsoil. Foxworth and Lakeland soils are sandy throughout. Foxworth soils are in lower positions than the Troup soil. Lakeland soils are in positions similar to those of the Troup soil. Orangeburg soils have a subsoil within a depth of 20 inches and are in positions similar to those of the Troup soil.

This map unit does not have a seasonal high water table within a depth of 72 inches. The available water capacity is low in the surface and subsurface layers and moderate in the subsoil.

Typically, this map unit supports the Longleaf Pine-Turkey Oak Hills ecological community, which has several variations. Scattered longleaf pine are the overstory in mature, natural stands of trees. Areas from which pines have been removed are dominated by oaks. The trees that characterize this community are longleaf pine, turkey oak, blackjack oak, and post oak. Herbaceous plants and vines include aster, blazingstar, brackenfern, butterfly pea, elephantsfoot, grassleaf goldaster, partridge pea, pineland beggarweed, sandhill milkweed, showy crotalaria, and wild indigo. Grasses and grasslike plants include Curtis' dropseed, hairy panicum, yellow Indiangrass, low panicum, and pineywoods dropseed.

This map unit is poorly suited to cultivated crops. Droughtiness and rapid leaching of plant nutrients limit the choice of plants and reduce the potential yields of those crops that are adapted to the local conditions. Soil management should include row crops planted on the contour in alternating strips with close-growing, soil-improving crops. The cover crops and crop residue left on the soil help control erosion. Applications of lime and fertilizer are needed. Irrigation of high-value crops, such as watermelons, is usually feasible where water is readily available.

This map unit is moderately suited to pasture and hay. Deep-rooted plants, such as improved bermudagrasses and improved bahiagrasses, are well adapted to the local conditions. These plants grow well and produce good ground cover if lime and fertilizer are applied. Controlled grazing is needed to maintain vigorous plants and to obtain maximum yields. Yields are occasionally reduced by extended, severe droughts.

The potential productivity of this map unit is moderate for slash pine. The main management concerns are equipment limitations and seedling mortality caused by the sandy surface and low available water capacity. Site preparation should include removing the larger debris to facilitate mechanical operations. Planting trees that are adapted to the local conditions and planting during the wetter months can reduce the seedling mortality rate.

Seepage and the sandy surface are severe limitations affecting sewage lagoons, sanitary landfills, and shallow excavations. Droughtiness is a moderate limitation affecting lawns and landscaping. Tables 9 and 10 contain additional information regarding factors that can affect urban development.

This map unit has severe limitations affecting most recreational development because of the sandy surface. It has moderate limitations affecting lawns and landscaping because of droughtiness. Table 7 contains additional information regarding factors that can affect recreational development.

The capability subclass is IIIs.

62—Troup sand, 5 to 8 percent slopes

This somewhat excessively drained soil is on side slopes in the uplands. Individual areas of this soil are irregular or elongated in shape and range from 5 to 120 acres in size. Slopes are smooth to convex.

Typically, the surface layer is dark brown sand about 4 inches thick. The subsurface layer is sand. It is brownish yellow to a depth of 36 inches and light yellowish brown to a depth of 60 inches. The subsoil is red sandy loam to a depth of 80 inches or more.

In 90 percent of the areas of this map unit, the Troup soil and similar soils make up 75 to 100 percent of the unit. The similar soils include Bonifay and Lucy soils. Bonifay soils have a yellow subsoil that contains plinthite. Lucy soils have a loamy, reddish subsoil at a depth of 20 to 40 inches.

Dissimilar soils make up 0 to 10 percent of the mapped areas. The dissimilar soils include Blanton, Foxworth, Lakeland, and Orangeburg soils. Blanton soils are more poorly drained than the Troup soil, are in lower positions, and have a yellow subsoil. Foxworth and Lakeland soils are sandy throughout. Foxworth soils are in lower positions than the Troup soil. Lakeland soils are in higher positions than the Troup soil. Orangeburg soils have a subsoil at a depth of less than 20 inches and are in positions similar to those of Troup soil.

This map unit does not have a seasonal high water table within a depth of 72 inches. The available water capacity is low in the surface and subsurface layers and moderate in the subsoil.

Typically, this map unit supports the Longleaf Pine-Turkey Oak Hills ecological community, which has several variations. Scattered longleaf pine are the overstory in mature, natural stands of trees. Areas from which pines have been removed are dominated by oaks. The trees that characterize this community are longleaf pine, turkey oak, blackjack oak, and post oak. Herbaceous plants and vines include aster, blazingstar, brackenfern, butterfly pea, elephantsfoot, grassleaf goldaster, partridge pea, pineland beggarweed, sandhill milkweed, showy crotalaria, and wild indigo. Grasses and grasslike plants include Curtis' dropseed, hairy panicum, yellow Indiangrass, low panicum, and pineywoods dropseed.

This map unit is poorly suited to cultivated crops. Droughtiness and rapid leaching of plant nutrients limit the choice of crops and reduce the potential yields of those crops that are adapted to the local conditions. Erosion is also a management concern. Row crops should be planted on the contour in alternating strips with close-growing, soil-improving cover crops. The cover crops and crop residues left on the soil help to control erosion. Applications of lime and fertilizer are needed.

This map unit is moderately suited to pasture and hay. Deep-rooted plants, such as improved bermudagrasses and improved bahiagrasses, are well adapted to the local conditions. These plants grow well and produce good ground cover if lime and fertilizer are applied. Controlled grazing is needed to maintain vigorous plants and to obtain maximum yields. Yields are occasionally greatly reduced by extended, severe droughts.

The potential productivity of this map unit is moderate for slash pine. The main management concerns are equipment limitations and seedling mortality caused by the sandy surface and low available water capacity. To facilitate mechanical operations, site preparation should include the removal of the larger debris. Planting trees that are adapted to the local conditions and planting during the wetter months can reduce the seedling mortality rate.

The sandy surface and cutbanks caving are severe limitations affecting sanitary landfills and shallow excavations. Droughtiness is a moderate limitation affecting lawns and landscaping. Tables 9 and 10 contain additional information regarding factors that can affect urban development.

The sandy surface is a severe limitation affecting most recreational development, and droughtiness is a moderate limitations affecting lawns and landscaping. Table 7 contains additional information regarding factors that can affect recreational development.

The capability subclass is IVs.

64—Pamlico, Bibb, and Rutlege soils, frequently flooded

This map unit consists of very poorly drained Pamlico and Rutlege soils and poorly drained Bibb soils. It is on flood plains along creeks and streams. Areas are elongated in shape and range from 5 to 900 acres in size. Slopes are less than 2 percent.

In 95 percent of the areas of this map unit, Pamlico, Bibb, Rutlege, and similar soils make up 100 percent of the unit. Each of the soils is not necessarily present in every mapped area, and the relative proportion of each soil varies. Although the areas of each individual soil are generally large enough to be mapped separately, they were mapped as one unit because of present and predicted use. The similar soils include small areas of Dorovan and Surrency soils. Dorovan soils are organic to a depth of 51 inches or more. Surrency soils have a loamy subsoil at depth of 20 to

40 inches. Also included are small areas of very poorly drained soils that have a dark, sandy surface layer that is more than 24 inches thick, have a subsoil that is more than 35 percent clay, or are stratified.

Dissimilar soils make up less than 5 percent of the mapped areas. The dissimilar soils include small areas of the poorly drained Alapaha, Kinston, Pansey, Plummer, and Pottsburg soils on flats.

Typically, the surface layer of the Pamlico soil is very dark brown mucky peat to a depth of 7 inches and black muck to a depth of 31 inches. The substratum is light brownish gray loamy sand to a depth of 80 inches or more.

In areas of the Pamlico soil, the seasonal high water table is at or above the surface during most of the year. The available water capacity is very high in the surface layer and medium to high in the substratum.

Typically, the surface layer of the Bibb soil is very dark gray sandy loam to a depth of 8 inches and dark gray sandy loam to a depth of 12 inches. The substratum is gray sandy loam that has thin strata of sand and loamy sand to a depth of 64 inches and is light gray loamy sand that has thin strata of sand and sandy loam to a depth of 80 inches or more.

In areas of the Bibb soil, the seasonal high water table is at the surface to a depth of 6 inches during most of the year. The available water capacity is moderate or high.

Typically, the surface layer of the Rutlege soil is black sand about 13 inches thick. The substratum is grayish brown sand to a depth of 80 inches or more.

In areas of the Rutlege soil, the seasonal high water table is at the surface to a depth of 6 inches during most of the year. The available water capacity is low.

In this map unit, flooding is likely to occur often under usual weather conditions. The chance of flooding is more than 50 percent in any year but less than 50 percent in all months in any year. On the average, flooding occurs more than 50 times in 100 years. The average duration of the flooding ranges from 7 to 30 days in areas of the Pamlico soil and from 2 to 7 days in areas of the Bibb and Rutlege soils. Meandering stream channels isolate many areas. Excess water ponds in low-lying areas for very long periods after heavy rains.

Typically, this map unit supports the Swamp Hardwoods ecological community. Many areas may have been dominated by cypress, but when the large cypress were cut down, the hardwoods became dominant. Trees that commonly are dominant include red maple, blackgum, water tupelo, and cypress. Common shrubs are buttonbush and dahoon holly. Herbaceous plants and vines are cinnamon fern, lizard's tail, royal fern, and wild pine.

This map unit is not suited to cultivated crops, pasture, or hay because of excessive wetness and the flooding.

This map unit is not suited to pine trees because of seedling mortality and equipment limitations caused by excessive wetness and flooding.

This map unit is not suited to urban and recreational development because of excessive wetness, subsidence, and flooding. Tables 7, 9, and 10 contain additional information regarding factors that can affect urban and recreational development.

The capability subclass is VIIw in areas of the Pamlico soil and Vw in areas of the Bibb and Rutlege soils.

66—Lakeland and Troup soils, 8 to 12 percent slopes

This map unit consists of strongly sloping, excessively drained Lakeland soils and somewhat excessively drained Troup soils on side slopes in the uplands. Areas of this map unit are elongated or irregular in shape and range from 5 to 400 acres in size. Areas of each individual soil range from 3 to 100 acres in size. Slopes are smooth to convex.

The Lakeland or Troup soil or both make up about 60 to 80 percent of each mapped area. Each of the soils is not necessarily present in every mapped area, and the relative proportion of each soil varies. Although the areas of each individual soil are generally large enough to be mapped separately, they were mapped as one unit because of present and predicted use.

The Bonifay and Lucy soils are similar to the Lakeland and Troup soils and are included in some mapped areas. Bonifay soils, however, have a yellow subsoil that contains plinthite. Lucy soils have a loamy, reddish subsoil at a depth of 20 to 40 inches. Bonifay and Lucy soils are in positions similar to those of the Lakeland and Troup soils. Also included are soils that have slopes of more than 12 percent and small seepage spots.

Dissimilar soils make up 10 to 25 percent of the mapped areas. The dissimilar soils include Blanton, Foxworth, Fuquay, and Stilson soils, which are more poorly drained than the Lakeland and Troup soils and are in lower positions.

This map unit does not have a seasonal high water table within a depth of 72 inches. In areas of the Lakeland soil, the available water capacity is low in the surface layer and very low or low in the substratum. In areas of the Troup soil, the available water capacity is low in the surface and subsurface layers and moderate in the subsoil.

Typically, the surface layer of the Lakeland soil is very dark grayish brown sand about 5 inches thick. The substratum is sand. It is dark yellowish brown to a depth of 40 inches, yellowish brown to a depth of 65 inches, and brownish yellow to a depth of 80 inches or more.

Typically, the surface layer of the Troup soil is dark grayish brown sand about 6 inches thick. The subsurface layer is sand. It is yellowish brown to a depth of 25 inches and brownish yellow to a depth of 46 inches. The subsoil is red sandy loam to a depth of 60 inches and is red sandy clay loam to a depth of 80 inches or more.

Typically, this map unit supports the Longleaf Pine-Turkey Oak Hills ecological community, which has several variations. Scattered longleaf pine are the overstory in mature, natural stands of trees. Areas from which pines have been removed are dominated by oaks. The trees that characterize this community are longleaf pine, turkey oak, blackjack oak, and post oak. Herbaceous plants and vines include aster, blazingstar, brackenfern, butterfly pea, elephantsfoot, grassleaf goldaster, partridge pea, pineland beggarweed, sandhill milkweed, showy crotalaria, and wild indigo. Grasses and grasslike plants include Curtis' dropseed, hairy panicum, yellow Indiangrass, low panicum, and pineywoods dropseed.

This map unit is not suited to cultivated crops because of poor soil quality, the slope, and the hazard of gully erosion.

This map unit is moderately suited to pasture and hay. Deep-rooted plants, such as improved bermudagrasses and improved bahiagrasses, are well adapted to the local conditions, but yields are reduced by periodic droughts. The slope increases the hazard of erosion and reduces potential yields. Applications of fertilizer and lime and controlled grazing are needed to maintain vigorous plants and adequate ground cover.

The potential productivity of this map unit for longleaf pine is moderately high in areas of the Troup soil and very low in areas of the Lakeland soil. The main management concerns are equipment limitations and seedling mortality caused by the sandy surface and low available water capacity. Site preparation should included the removal of the larger debris to facilitate mechanical operations. Planting trees that are adapted to the local conditions and planting during the wetter months can reduce the seedling mortality rate.

This map unit has severe limitations affecting sewage lagoons, sanitary landfills, and shallow excavations. It has moderate limitations affecting septic tank absorption fields, dwellings with basements, local roads and streets, lawns, and landscaping. The slope, the sandy surface, seepage, and droughtiness are the main limitations. Tables 9 and 10 contain additional information regarding factors that can affect urban development.

The slope and the sandy surface are severe limitations affecting recreational development. Table 7 contains additional information regarding factors that can affect recreational development.

The capability subclass is VIs.

67—Alapaha loamy sand, 0 to 2 percent slopes

This poorly drained soil is on flats, on footslopes, and in poorly defined drainageways in the Coastal Plain uplands. Areas of this soil are irregular in shape and range from 3 to 400 acres in size. Slopes are smooth to concave.

Typically, the surface layer is very dark gray loamy sand about 6 inches thick. The subsurface layer is loamy sand. It is dark gray to a depth of 16 inches and is gray and has mottles in shades of gray, yellow, and red to a depth of 28 inches. The subsoil is gray sandy loam to a depth of 48 inches; is gray sandy loam that has plinthite and has mottles in shades of gray, yellow, and red to a depth of 62 inches; and is gray sandy clay loam that has plinthite and has mottles in shades of gray, yellow, and red to a depth of 80 inches or more.

In 90 percent of the areas of this map unit, the Alapaha soil and similar soils make up 85 to 100 percent of the unit. The similar soils include Bladen and Pansey soils, neither of which contains plinthite. Also included are soils that have less than 10 percent plinthite or that are sandy clay in the lower part of the loamy subsoil.

Dissimilar soils make up 0 to 15 percent of the mapped areas. The dissimilar soils include Albany, Croatan, Leefield, Pantego, Plummer, Robertsdale, and Surrency soils. Albany, Leefield, and Robertsdale soils are better drained than the Alapaha soil and are in higher positions. Also, Albany soils have a loamy subsoil below a depth of 40 inches, Leefield soils have plinthite, and Robertsdale soils have a loamy subsoil within a depth of 20 inches. Croatan, Pantego, and Surrency soils are more poorly drained than the Alapaha soil and are in lower positions. Plummer soils have a loamy subsoil below a depth of 40 inches and do not have plinthite.

The seasonal high water table is at the surface to a depth of 7 inches from December through March and from June through September. The available water capacity is low in the surface and subsurface layers, moderate in the upper part of the subsoil, and low in the lower part of the subsoil.

Typically, this map unit supports the North Florida Flatwoods ecological community, which has only slight variations in composition. Slash pine and water oak are the main trees. Herbaceous plants and shrubs include blackberry, dogfennel, gallberry, greenbrier, saw palmetto, and wax-myrtle. Grasses and grasslike plants include chalky bluestem, yellow Indiangrass, low panicum, pineland threeawn, and sedges.

This map unit is not suited to cultivated crops, pasture, or hay because of excessive wetness.

The potential productivity of this map unit is moderately high for slash pine. The main management concerns are equipment limitations, seedling mortality, and plant competition caused by wetness. Site preparation should include chopping the woody understory vegetation to help control immediate plant competition and bedding to minimize the seedling mortality caused by wetness. The installation of shallow surface ditches may also be necessary to remove excess water during wet periods. Limiting mechanical operations to the drier periods can help to overcome the equipment limitations and usually results in less soil compaction and less damage to roots during thinning operations. Prescribed burning in established stands can help to control the competing vegetation and help to maintain ease of access. During harvesting, site preparation, and road building, care should be taken not to impede the flow of the creeks and drainageways that remove excess water from the area.

This map unit is not suited to urban and recreational development. Excessive wetness is the main limitation. Tables 7, 9, and 10 contain additional information regarding factors that can affect urban and recreational development.

The capability subclass is Vw.

68—Croatan, Kinston, and Surrency soils, frequently flooded

This map unit consists of very poorly drained Croatan and Surrency soils and poorly drained Kinston soils on flood plains along creeks and streams. Areas of this map unit are elongated in shape and range from 5 to 900 acres in size. Slopes are less than 2 percent.

In 95 percent of the areas of this map unit, the Croatan, Kinston, Surrency, and similar soils make up 100 percent of the unit. Each of the soils is not necessarily present in every mapped area, and the relative proportion of each soil varies. Although the areas of each individual soil are generally large enough to be mapped separately, they were mapped as one unit because of present and predicted use. The similar soils include small areas of Dorovan, Pantego, and Rutlege soils. Dorovan soils are organic to a depth of 51 inches or more. Pantego soils have a loamy subsoil within a depth of 20 inches. Rutlege soils are sandy throughout. Also included are small areas of very poorly drained soils that have a dark, sandy surface layer that is more than 24 inches thick, have a subsoil that is more than 35 percent clay, or are stratified and are in positions similar to those of the Croatan, Kinston, and Surrency soils.

Dissimilar soils make up less than 5 percent of the mapped areas. The dissimilar soils include Alapaha, Bladen, Pansey, Plummer, and Pottsburg soils. All of these soils are poorly drained, are on flats, and have mottles related to wetness within a depth of 12 inches.

Typically, the surface layer of the Croatan soil is black muck to a depth of 28 inches. The substratum is gray sandy loam to a depth of 40 inches and is gray sandy clay loam to a depth of 80 inches or more.

In areas of the Croatan soil, the seasonal high water table is at or near the surface during most of the year. The available water capacity is very high in the surface layer and moderate or high in the layers below.

Typically, the surface layer of the Kinston soil is very dark gray fine sandy loam about 6 inches thick. The substratum is light brownish gray sandy clay loam to a depth of 27 inches, gray sandy clay loam to a depth of 47 inches, and light gray loamy sand to a depth of 80 inches or more.

In areas of the Kinston soil, the seasonal high water table is at or near the surface during most of the year. The available water capacity is moderate or high throughout.

Typically, the surface layer of the Surrency soil is very dark gray mucky sand about 6 inches thick. The subsurface layer is grayish brown loamy sand to a depth of 22 inches. The subsoil is light gray sandy loam to a depth 31 inches and is gray sandy clay loam that has mottles in shades of gray, yellow, and red to a depth of 80 inches or more.

In areas of the Surrency soil, the seasonal high water table is at or near the surface during most of the year. The available water capacity is low throughout.

In this map unit, flooding is likely to occur often under usual weather conditions. On the average, flooding occurs more than 50 times in 100 years. The chance of flooding is more than a 50 percent in any year but is less than 50 percent in all months in any year. The average duration of the flooding ranges from 7 to 30 days in areas of the Croatan soil, from 2 to 30 days in areas of the Kinston soil, and is more than 30 days in areas of the Surrency soil. Many areas are isolated by meandering stream channels. Excess water ponds in low-lying areas for very long periods after heavy rains.

Typically, this map unit supports the Bottomland Hardwoods ecological community, which is extremely diverse. Understory growth is profuse where light enters through the openings in the canopy. Common trees include black willow, green ash, river birch, swamp chestnut oak, sweetgum, American sycamore, water hickory, water oak, and willow oak. Common herbaceous vines include crossvine, greenbrier, peppervine, poison ivy, trumpet creeper, and wild grape.

This map unit is not suited to cultivated crops, pasture, or hay because of excessive wetness and the flooding.

This map unit is not suited to pine production because of seedling mortality and equipment limitations caused by excessive wetness and flooding.

This map unit is not suited to urban and recreational development because of excessive wetness, subsidence, and flooding. Tables 7, 9, and 10 contain additional information regarding factors that can affect urban and recreational development.

The capability subclass is VIIw in areas of Croatan soil and VIw in areas of the Kinston and Surrency soils.

69—Leefield loamy sand, 5 to 8 percent slopes

This somewhat poorly drained soil is on side slopes in the uplands. Areas of this soil are irregular or elongated in shape and range from 3 to 45 acres in size. Slopes are smooth to concave.

Typically, the surface layer is very dark gray loamy sand about 12 inches thick. The subsurface layer is pale yellow loamy sand that has mottles in shades of gray, yellow, and red to 34 inches. The subsoil is light gray fine sandy loam that has mottles in shades of gray, yellow, and red to a depth of 61 inches and is brownish yellow sandy clay loam that has plinthite and has mottles in shades of gray, yellow, and red to a depth of 80 inches or more.

In 95 percent of the areas of this map unit, the Leefield soil and similar soils make up 75 to 100 percent of the unit. The similar soils include Albany and Stilson soils. Albany soils have a loamy subsoil below a depth of 40 inches and do not have plinthite. Stilson soils are better drained than the Leefield soil, are in similar positions, and have mottles related to wetness at 5 to 14 inches below the top of the loamy subsoil. Also included in mapping are small areas of soils that have slopes of less than 5 percent or contain less than 5 percent plinthite.

Dissimilar soils make up 0 to 25 percent of the mapped areas. The dissimilar soils include Alapaha, Blanton, Chipley, Florala, Fuquay, Garcon, and Robertsdale soils. Alapaha soils are poorly drained and have a loamy subsoil within a depth of 20 inches. Blanton soils are moderately well drained. Fuquay soils are well drained. Chipley soils are sandy throughout. Florala soils have an argillic horizon within a depth of 20 inches. Garcon soils do not have plinthite and are sandy within a depth of 60 inches. Robertsdale soils have a loamy subsoil within a depth of 20 inches. Also included in mapping are small areas of soils that are poorly drained or very poorly drained, have slopes of more than 8 percent, or are stratified.

The seasonal high water table is at a depth of 18 to 30 inches from December through March and from June through September. The available water capacity is low in the surface and subsurface layers and low or moderate in the subsoil.

Typically, this map unit supports the Mixed Hardwood and Pine ecological community, which has several variations. In mature, natural stands, the hardwoods replace the pines. The natural climax vegetation is thought to be a beech-magnolia-maple association. The trees that characterize this community are loblolly pine, white oak, pignut hickory, American beech, and flowering dogwood. The herbaceous plants and vines include aster, partridge pea, poison ivy, violet, Virginia creeper, and wild grape. Grasses include broomsedge bluestem, longleaf uniola, low panicum, and spike uniola.

This map unit is poorly suited to cultivated crops because of poor soil quality, droughtiness, and the hazard of erosion. The slopes further limits the suitability by making cultivation more difficult and increasing the hazard of erosion. Droughtiness during periods of low rainfall, wetness in wet seasons, and the rapid leaching of plant nutrients limit the choice of plants and reduce the potential yields of those crops that are adapted to the local conditions. Erosion-control measures are needed. Nutrient management helps to maximize yields.

This map unit is moderately suited to pasture and hay. Pasture plants, such as improved bermudagrasses and improved bahiagrasses, grow well if the pasture is properly managed. White clovers and other legumes are moderately adapted to the local conditions. Applications of fertilizer and lime are needed to obtain maximum yields, and controlled grazing is needed to maintain vigorous plants.

The potential productivity of this map unit is moderately high for slash pine. The main management concerns are equipment limitations, seedling mortality, and plant competition because of the sandy surface, low available water capacity, and seasonal wetness. Site preparation should include removing the larger debris to facilitate mechanical operations and chopping the woody understory vegetation to help control immediate plant competition. Planting trees that are adapted to the local conditions and planting during the wetter months can reduce the seedling mortality rate. Prescribed burning in established stands can help to control the competing vegetation and help to maintain ease of access.

This map unit has severe limitations affecting most urban development. It has moderate limitations affecting dwelling without basements, small commercial buildings, lawns, and landscaping. Wetness, slow percolation, and the slope are the main limitations. Tables 9 and 10 contain additional information regarding factors that can affect urban development.

This map unit has moderate limitations affecting camp areas, picnic areas, paths, and trails. Wetness, the slope, and the sandy surface are the main limitations affecting these uses. Where slopes are more than 6 percent, this soil has severe limitations affecting playgrounds. Table 7 contains additional information regarding factors that can affect recreational development.

The capability subclass is IIIe.

70—Alapaha loamy sand, 2 to 8 percent slopes

This poorly drained soil is on footslopes and side slopes in the uplands. Areas of this soil are irregular or elongated in shape and range from 3 to 20 acres in size. Slopes are smooth to concave.

Typically, the surface layer is very dark gray loamy sand about 12 inches thick. The subsurface layer is gray loamy sand that has mottles in shades of gray, yellow, and red to a depth of 36 inches. The subsoil is light brownish gray sandy loam that has mottles in shades of gray, yellow, and red to a depth of 46 inches and is light brownish gray sandy clay loam that has plinthite nodules and has mottles in shades of gray, yellow, and red to a depth of 80 inches or more.

In 95 percent of the areas of this map unit, the Alapaha soil and similar soils make up 82 to 100 percent of the unit. The similar soils include Pansey and Plummer soils. Pansey soils have a clayey subsoil within a depth of 20 inches and do not have plinthite. Plummer soils have a loamy subsoil below a depth of 40 inches and do not have plinthite. Also included are small areas of soils that have slopes of less than 2 percent, contain less than 5 percent plinthite, are very poorly drained, or are stratified.

Dissimilar soils make up 0 to 18 percent of the mapped areas. The dissimilar soils include Leefield and Robertsdale soils, which are better drained than the Alapaha soil and are in more elevated positions. Also, Leefield soils have a loamy subsoil at a depth of 20 to 40 inches. Also included are soils that are sandy throughout, have a surface layer of muck, are somewhat poorly drained, or have strata that are more than 35 percent clay.

Because of seepage, the seasonal high water table is at or near the surface during most of the year. The available water capacity is low in the surface and subsurface layers, moderate in the upper part of the subsoil, and low in the lower part of the subsoil.

Typically, this map unit supports the Pitcher Plant Bogs ecological community. This community is maintained by fire and supports low-growing grasses, such as blue maidencane, Florida threeawn, pineland threeawn, toothache grass, and warty panicum. Herbaceous plants include pitcher plants, hat pin sedge, rush featherling, and sundews. Trees and shrubs are scattered and include slash pine, wax-myrtle, and myrtle-leafed holly. Where fire is eliminated for a long period, succession to shrub bogs occurs. The Shrub Bogs-Bay Swamps ecological community is dominated by buckwheat trees, sweetbay, titi, large gallberry, and myrtle-leafed holly.

This map unit is not suited to cultivated crops, pasture, or hay because of excessive wetness and the slope.

This map unit is not suited to the production of pines because of the slope and excessive wetness.

This map unit is not suited to urban and recreational development. Excessive wetness, slow percolation, and the slope are the main limitations affecting these uses. Tables 7, 9, and 10 contain additional information regarding factors that can affect urban and recreational development.

The capability subclass is Vw.

71—Dothan-Fuquay complex, 8 to 12 percent slopes

These well drained soils are on side slopes in the uplands. Areas of this map unit are elongated or irregular in shape and range from 3 to 200 acres in size. Individual areas of the soils range from less than 1 acre to 5 acres in size. Slopes are smooth to convex.

The soils in this map unit are so intermingled that mapping them separately was not possible at the scale used. In a few areas, either Dothan or Fuquay soils are not present. Included soils make up 10 to 15 percent of any one mapped area.

Dothan and similar soils make up about 45 to 55 percent of the map unit. Typically, the surface layer of the Dothan soil is very dark grayish brown loamy sand about 6 inches thick. The subsoil is brown sandy loam to a depth of 12 inches; is yellowish brown sandy loam to a depth of 18 inches; is strong brown sandy clay loam that has mottles in shades of gray, yellow, and red to a depth of 36 inches; and is sandy clay loam that has nodules and is variegated in shades of gray, yellow, and red to a depth of 80 inches or more.

In areas of the Dothan soil, the seasonal high water table is perched at a depth of 30 to 60 inches from December through March and from June through September. The available water capacity is low in the surface layer, moderate in the upper part of the subsoil, and low or moderate in the lower part of the subsoil.

Fuquay and similar soils make up about 30 to 35 percent of the map unit. Typically, the surface layer of the Fuquay soil is dark grayish brown loamy sand about 6 inches thick. The subsurface layer is brownish yellow loamy sand to a depth of 34 inches. The subsoil is reddish yellow sandy clay loam that has plinthite and has mottles in shades of gray, yellow, and red to a depth of 80 inches or more.

In areas of the Fuquay soil, the seasonal high water table is perched at a depth of 42 to 72 inches from December through March and from June through September. The available water capacity is low in the surface and subsurface layers and moderate in the subsoil.

Florala, Robertsdale, and Stilson soils are similar to the Dothan and Fuquay soils and are included in mapping. These included soils are more poorly drained than the Dothan and Fuquay soils and are in lower positions. Also, Florala soils have mottles related to wetness at a depth of 12 to 30 inches, Robertsdale soils have mottles related to wetness at a depth of 12 to 18 inches, and Stilson soils have mottles related to wetness at a depth of 30 to 40 inches and/or at 5 to 14 inches below the top of the loamy subsoil. Also included in mapping are areas of soils that are similar to Dothan and Fuquay soils but that have less than 5 percent plinthite, have more than 5 percent plinthite above a depth of 24 inches, have a subsoil of sandy clay or clay, or have slopes or more than 8 percent.

Dissimilar soils included in mapping are Blanton, Lucy, and Orangeburg soils. These dissimilar soils do not contain plinthite. Also, Blanton soils are more poorly drained than the Dothan and Fuquay soils and are in lower positions. Also included in a few mapped areas are small seepage spots.

Typically, this map unit supports the Mixed Hardwood and Pine ecological community, which has several variations. In mature, natural stands, the hardwoods replace the pines. The natural climax vegetation is thought to be a beech-magnolia-maple association. The trees that characterize this community are loblolly pine, white oak, pignut hickory, American beech, and flowering dogwood. The herbaceous plants and vines include aster, partridge pea, poison ivy, violet, Virginia creeper, and wild grape. Grasses include broomsedge bluestem, longleaf uniola, low panicum, and spike uniola.

This map unit is poorly suited to cultivated crops because of the hazard of erosion and the slope. Applications of fertilizer and lime are needed. Crop residue should be left on the land to help control erosion.

This map unit is moderately suited to pasture. Improved bermudagrasses and improved bahiagrasses are well adapted to the local conditions. The slope increases the hazard of erosion and reduces potential yields. Applications of fertilizer and lime and controlled grazing are needed to obtain maximum yields and to maintain a plant cover that is adequate to prevent severe erosion.

The potential productivity of this map unit is high for slash pine. The main management concern is plant competition caused seasonal wetness. Site preparation should include chopping the woody understory vegetation to help control immediate plant competition. Prescribed burning in established stands can help to control the competing vegetation and help to maintain ease of access. In areas of the Fuquay soil, equipment limitations and seedling mortality caused by the sandy surface and low available water capacity are also management concerns. Site preparation should included the removal of the larger debris to facilitate mechanical operations. Planting trees that are adapted to the local conditions and planting during the wetter months can reduce the seedling mortality rate.

This map unit has severe limitations affecting septic tank absorption fields, sewage lagoons, and small commercial buildings and has moderate limitations affecting shallow excavations, sanitary landfills, dwellings, local roads and streets, lawns, and landscaping because of wetness, slow permeability, seepage, and the slope. Tables 9 and 10 contain additional information regarding factors that can affect urban development.

This map unit has severe limitations affecting playgrounds. It has moderate limitations affecting camp areas, picnic areas, and golf fairways. Table 7 contains additional information regarding factors that can affect recreational development.

The capability subclass is IVe in area of the Dothan soil and IIIs in areas of the Fuquay soil.

72—Pits

This map unit consists of open excavations from which sand and loamy material have been removed. The excavations vary from 2 feet to more than 10 feet in depth. The material from these excavations is used mainly in the construction and repair of roads and as fill material for foundations. In some areas, mixtures of sandy, loamy, and clayey material are piled or scattered around the edges of the excavations. This material has been mixed to such an extent that identification of individual soils is not possible. Areas of this map unit are irregular to square in shape and range from 1 to 50 acres in size. Slopes range from 0 to 30 percent.

Pits occur throughout the county but have a small total acreage. Most areas are barren because the natural vegetation has not had sufficient time to reestablish. Some areas have been replanted to slash pine. A few areas are subject to ponding during periods of high rainfall.

This map unit is not suited to cultivated crops, pasture, or hay.

This map unit is highly variable. Individual areas may or may not be suited to the production of planted pine trees.

This map unit is not suited to urban or recreational development.

This map unit has not been assigned a capability subclass.

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 in predicting soil behavior.

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

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

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

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

Hydric Soils

In this section, hydric soils are defined and described. The map units that meet the definition of hydric soils and the map units that include hydric soils are listed.

The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology (Cowardin and others, 1979; Environmental Laboratory, 1987; National Research Council, 1995; Tiner, 1985). Criteria for each of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Hurt, Whited, and Pringle, 1996). These soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the high water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Hurt, Whited, and Pringle, 1996). These criteria are used to identify a phase of a soil series that normally is associated with wetlands. The criteria used are selected estimated soil properties that are described in “Soil Taxonomy” (USDA-SCS, 1975), “Keys to Soil Taxonomy” (Soil Survey Staff, 1998), “Soil Survey Manual” (Soil Survey Division Staff, 1993), and “Classification of Wetlands and Deep-Water Habitats of the United States” (Cowardin and others, 1979).

If soils are wet enough for a long enough period to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils in this survey area are specified in “Field Indicators of Hydric Soils in the United States” (Hurt, Whited, and Pringle, 1996).

Hydric soils are identified by examining and describing the soil to a depth of about 20 inches. This depth may be greater if determination of an appropriate indicator so requires. It is always recommended that soils be excavated and described to the depth necessary for an understanding of the redoximorphic processes. Then, using the completed soil descriptions, soil scientists can compare the soil features required by each indicator and specify which indicators have been matched with the conditions observed in the soil. The soil can be identified as a hydric soil if at least one of the approved indicators is present.

The following map units meet the definition of hydric soils and, in addition, have at least one of the hydric soil indicators. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site (National Research Council, 1995; Hurt, Whited, and Pringle, 1996)

4	Brickyard clay loam, frequently flooded
6	Bladen loam, rarely flooded
20	Dorovan-Pamlico-Rutlege association, depressional
48	Pansey sandy loam
51	Plummer sand, 0 to 5 percent slopes
54	Croatan, Surrency, and Pantego soils, depressional
60	Croatan, Rutlege, and Surrency soils, depressional
64	Pamlico, Bibb, and Rutlege soils, frequently flooded
67	Alapaha loamy sand, 0 to 2 percent slopes
68	Croatan, Kinston, and Surrency soils, frequently flooded
70	Alapaha loamy sand, 2 to 8 percent slopes

Map units that are made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

The following map units, in general, do not meet the definition of hydric soils because they do not have one of the hydric soil indicators. A portion of these map units, however, may include hydric soils. Onsite investigation is recommended to determine whether hydric soils actually occur and, if so, the location of the included hydric soils.

5	Robertsdale fine sandy loam
24	Dunbar fine sandy loam, rarely flooded
38	Wahee-Ochlockonee complex, commonly flooded
55	Pottsburg sand
72	Pits

Ecological Communities

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

The ecological community concept is based on the knowledge that a soil type commonly supports a specific vegetative community, which in turn provides the habitat needed by specific wildlife species.

These vegetative communities form recognizable units on the landscape, most of which are apparent to the casual observer after only a little training. Even without prior botanical training, an observer can quickly learn to distinguish between the Mixed Hardwood and Pine community and the Longleaf Pine-Turkey Oak Hills, between the Bottomland Hardwoods and the Swamp Hardwoods, and between the Pitcher Plant Bogs and the North Florida Flatwoods. Once a community is recognized, information can be found concerning the general characteristics of the soil on which it occurs and the types of plants and animals it supports.

Although some plants are found only within a very narrow range of conditions, many plants can survive throughout a wide range. Individual plants that have a wide tolerance level can occur in many different communities and on a variety of soils. When describing ecological communities, plant scientists study the patterns in which vegetation occurs. They study what species occur, the relative abundance of each species, the stage of plant succession, the dominance of species, the position of species on the landscape, and the soil or soils on which the patterns occur. Recognizable patterns of vegetation are usually found in a small group of soil types that have common characteristics. During many years of field observation while conducting soil surveys, the Natural Resources Conservation Service determined which vegetative communities commonly occur on which soils throughout Florida. This information is summarized in the booklet “26 Ecological Communities of Florida” (USDA-SCS, 1985a).

In the following paragraphs, the vegetative community occurring on individual map units during the climax state of plant succession is described. The community described is based on relatively natural conditions. Human activities, such as commercial production of pine, agriculture, urbanization, and fire suppression, can alter the community on specific site and should be considered. The miscellaneous map unit Pits is not assigned an ecological community.

Longleaf Pine-Turkey Oak Hills

The Longleaf Pine-Turkey Oak Hills ecological community is dominated by longleaf pine and by turkey oak, bluejack oak, and sand post oak. Common shrubs include Adam's needle, coontie, coralbean, shining sumac, and yaupon. Pricklypear cactus, partridge pea, blazingstar, elephantsfoot, wiregrass, grassleaf goldaster, yellow Indiangrass, and dropseed are common. The map units that support the Longleaf Pine-Turkey Oak Hills ecological community in Calhoun County are:

10 Bonifay sand, 0 to 5 percent slopes
12 Chipley sand, 0 to 5 percent slopes
31 Foxworth sand, 0 to 5 percent slopes
35 Hurricane sand
36 Lakeland sand, 0 to 5 percent slopes
37 Lakeland sand, 5 to 8 percent slopes
61 Troup sand, 0 to 5 percent slopes
62 Troup sand, 5 to 8 percent slopes
66 Lakeland and Troup soils, 8 to 12 percent slopes

Mixed Hardwood and Pine

The Mixed Hardwood and Pine ecological community is normally dominated by eastern hophornbeam, flowering dogwood, hawthorns, loblolly pine, mockernut hickory, pignut hickory, southern red oak, southern magnolia, sweetgum, white oak, and water oak and an understory of shining sumac and sparkleberry. Broomsedge bluestem, longleaf uniola, low panicum, and spike uniola are the common grasses. Other common plants are aster, common ragweed, partridgeberry, partridge pea, poison ivy, violet, Virginia creeper, and wild grape. The map units that support the Mixed Hardwood and Pine ecological community in Calhoun County are:

2 Albany loamy sand, 0 to 5 percent slopes
7 Blanton sand, 0 to 5 percent slopes
8 Blanton sand, 5 to 8 percent slopes
14 Chipola loamy sand, 0 to 5 percent slopes, very rarely flooded
17 Florala loamy sand, 0 to 2 percent slopes
18 Florala loamy sand, 2 to 5 percent slopes
21 Dothan sandy loam, 0 to 2 percent slopes
22 Dothan loamy sand, 2 to 5 percent slopes
23 Dothan loamy sand, 5 to 8 percent slopes
24 Dunbar fine sandy loam, rarely flooded
25 Duplin very fine sandy loam, very rarely flooded
29 Kenansville loamy sand, wet substratum, 0 to 5 percent slopes, rarely flooded
30 Garcon loamy sand, rarely flooded
32 Fuquay loamy sand, 0 to 2 percent slopes
33 Fuquay loamy sand, 2 to 5 percent slopes
34 Fuquay loamy sand, 5 to 8 percent slopes
39 Leefield loamy sand, 0 to 5 percent slopes
41 Lucy loamy sand, 0 to 2 percent slopes
42 Lucy sand, 2 to 5 percent slopes
43 Lucy sand, 5 to 8 percent slopes
44 Orangeburg loamy sand, 0 to 2 percent slopes
45 Orangeburg loamy sand, 2 to 5 percent slopes
46 Orangeburg sandy loam, 5 to 8 percent slopes
57 Stilson loamy sand, 0 to 2 percent slopes
58 Stilson loamy sand, 2 to 5 percent slopes
69 Leefield loamy sand, 5 to 8 percent slopes
71 Dothan-Fuquay complex, 8 to 12 percent slopes

North Florida Flatwoods

The North Florida Flatwoods ecological community is normally dominated by slash pine, live oak, and sand live oak and an understory of saw palmetto, gallberry, and grasses. Scattered pond pine, water oak, laurel oak, sweetgum, wax-myrtle, and several species of blueberry are also common. In Calhoun County, longleaf pine is also found. Chalky bluestem, broomsedge bluestem, lopsided Indiangrass, low panicums, switchgrass, and wiregrass are the common grasses. Other common plants include grassleafed goldenaster, blackberry, brackenfern, deertongue, gayfeather, milkworts, and a variety of seed producing legumes. The map units that support the North Florida Flatwoods ecological community in Calhoun County are:

5 Robertsdale fine sandy loam
6 Bladen loam, rarely flooded
48 Pansey sandy loam
51 Plummer sand, 0 to 5 percent slopes
55 Pottsburg sand
67 Alapaha loamy sand, 0 to 2 percent slopes

Bottomland Hardwoods

The Bottomland Hardwoods ecological community is dominated by American elm, American hornbean, black willow, green ash, overcup oak, river birch, swamp chestnut oak, Shumard's oak, sweetgum, American sycamore, water hickory, water oak, and willow oak and an understory of crossvine, greenbriers, peppervine, poison ivy, trumpet creeper, and wild grape. The map units that support the Bottomland Hardwoods ecological community in Calhoun County are:

4 Brickyard clay loam, frequently flooded
38 Wahee-Ochlockonee complex, commonly flooded
68 Croatan, Kinston, and Surrency soils, frequently flooded

Swamp Hardwoods

The Swamp Hardwoods ecological community is dominated by blackgum, red maple, Ogeechee lime, cypress, and bay trees. Common shrubs include fetterbush, Virginia willow, buttonbush, and wax-myrtle. Common herbaceous plants and vines include wild grape, greenbriers, and poison ivy. Maidencane grass, cinnamon fern, and sphagnum moss are also common. The map units that support the Swamp Hardwoods ecological community in Calhoun County are:

54 Croatan, Surrency, and Pantego soils, depressional
60 Croatan, Rutlege, and Surrency soils, depressional
64 Pamlico, Bibb, and Rutlege soils, frequently flooded

Shrub Bogs-Bay Swamps

The Shrub Bogs-Bay Swamps ecological community is dominated by gallberry, fetterbush lyonia, myrtleleaved holly, swamp cyrilla, greenbriers, sweetpepperbush, and sweetbay. Scattered cypress, slash pine, and pond pine are present. Cinnamon fern, maidencane, and spaghnum moss commonly grow in open areas. Shrub bogs are predominantly dense masses of evergreen shrubs that seldom exceed 25 feet in height. Bay swamps are forested wetlands dominated by one or two species of evergreen trees. The bay swamps are climax communities that have mature trees; the shrub bogs are in the earlier stages of plant succession. Some areas remain in the shrub bog, or subclimax, stage because of periodic fire. The shrubs have many stems and thick foliage and commonly appear impenetrable. The map units that support the Shrub Bogs-Bay Swamps ecological community in Calhoun County are:

20 Dorovan-Pamlico-Rutlege association, depressional
70 Alapaha loamy sand, 2 to 8 percent slopes

Pitcher Plant Bogs

The Pitcher Plant Bogs ecological community is dominated by slash pine. Common shrubs include wax-myrtle and myrtleleaved holly. Herbaceous plants and vines include hat pin sedge, pitcher plants, rush feathering, and sundews. Common grasses are blue maidencane, Florida threeawn, pineland threeawn, toothache grass, and warty panicum. The map unit that supports the Pitcher Plant Bogs ecological community in Calhoun County is:

70 Alapaha loamy sand, 2 to 8 percent slopes

The following map unit is a miscellaneous map unit and is not assigned an Ecological Community.

72 Pits

Crops and Pasture

General management needed for crops and pasture is suggested in this section. The system of land capability classification used by the Natural Resources Conservation Service is explained, and prime farmland is described. The estimated yields of the main crops and pasture plants are listed for each soil in table 5.

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.

Federal and State regulations require that any area designated as wetlands cannot be altered without prior approval as described in the Food Security Manual (USDA-SCS, 1985b). Contact the local office of the Natural Resources Conservation Service for identification of hydric soils and potential wetlands.

In 1992, about 33,200 acres in Calhoun County was used for crops and pasture (USDC, 1992). Of this, about 2,700 acres was pasture and 30,500 acres was cropland. The acreage used for crops and pasture has declined since the early 1980s because of a poor economic climate affecting the agricultural community. From 1986 to 1990, the Conservation Reserve Program (CRP) assisted the conversion of cropland and pasture to woodland.

The potential of the soils in Calhoun County to support increased food production is good. In 1987, about one-third of the approximately 50,000 acres of prime farmland was used for cropland. Most of the rest was used as pasture or woodland. This land could be converted to cropland, but intensive conservation measures would be needed to control erosion during the conversion. In addition to the reserve capacity represented by soils now used as woodland and pasture, extending the latest crop production technology to all of the cropland in the county could increase food production. This soil survey can help in the application of such technology.

Erosion caused by water is a problem on an estimated three-fifths of the cropland in the county. Where the slope is more than 2 percent, erosion is a hazard in areas of the well drained Dothan and Orangeburg soils and the moderately well drained

Florala soils. It is also a hazard where the slope is more than 5 percent in areas of the well drained and moderately well drained Blanton, Fuquay, Lucy, and Troup soils.

Erosion can reduce productivity and can result in pollution of streams. Productivity is reduced as the surface layer erodes and more of the subsoil is incorporated into the plow layer. Erosion on farmland results in sediment entering streams. Controlling this erosion minimizes the pollution of streams 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, increase the rate of water infiltration, and help to control runoff. A cropping system that keeps plant cover on the soil for extended periods can hold soil losses to amounts that do not reduce the productive capacity of the soils.

Minimizing tillage and leaving crop residue on the surface increase the rate of water infiltration and help to control runoff and erosion. Using a no-till system helps to control erosion in sloping areas. These practices can be adapted to most of the soils in the survey area.

Terraces, diversions, and stripcropping help to control runoff and erosion by reducing the length of slope. These practices are most practical on deep, well drained soils that have a regular slope. Diversions and sod waterways, which also help to control runoff and erosion, can be used on most of the soils in the county. Contour farming also helps to control erosion. It is most suited to soils that have smooth, uniform slopes.

Erosion caused by wind is currently not a significant problem in Calhoun County. The cropland in the county is intermixed with woodland areas. This mix of cropland and woodland precludes the large, unsheltered distances that are associated with wind erosion. Wind erosion can be a hazard where unsheltered distances leave the soils exposed and the soils have a sandy surface layer or a surface layer of loamy sand. Strong winds can damage soils and tender crops in a few hours in open, unprotected areas where the surface is dry and bare. Maintaining a plant cover and 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. Control of wind erosion minimizes dust storms and improves air quality, resulting in healthier living conditions.

Field windbreaks of adapted trees and shrubs, such as Carolina laurelcherry, slash pine, southern redcedar, and Japanese privet, and strip crops of small grains help to minimize wind erosion and crop damage. Field windbreaks and strip crops are narrow plantings made at right angles to the prevailing wind. The specific intervals depend on the erodibility of the soil and the susceptibility of the crop to damage from sandblasting.

Information regarding the design of erosion-control practices for each kind of soil is contained in “Water and Wind Erosion Control Handbook—Florida,” which is available at the local office of the Natural Resources Conservation Service.

Drainage is not a major management concern on the acreage currently used for crops and pasture in Calhoun County. Soils that are poorly drained or very poorly drained are not normally used for crops and pasture.

Fertility is naturally low in most of the soils in the county. Most of the soils have a surface layer of sand or loamy sand. Many of the soils have a loamy subsoil. Examples are the Albany, Blanton, Bonifay, Chipola, Dothan, Florala, Fuquay, Garcon, Kenansville, Leefield, Lucy, Orangeburg, Stilson, and Troup soils. The Chipley, Foxworth, and Lakeland soils have sandy material to a depth of 80 inches or more. The Hurricane and Pottsburg soils have an organic-stained subsoil. The Dunbar and Duplin soils have a surface layer of sandy loam and have a clayey subsoil.

Most of the soils in the county have a surface layer that is strongly acid or very strongly acid and require applications of lime to raise the pH level sufficiently for good crop growth. Nitrogen, potash, and available phosphorus levels are naturally low in most of these soils.

On all soils, applications of lime and fertilizer should be based on the results of soil tests, on the needs of crops, and on the expected level of yields. The Cooperative Extension Service can help in determining the kinds and amounts of fertilizer and lime to apply.

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

Most of the soils that are used for crops and pasture in the county have a low to moderate content of organic matter. Generally, the structure of the surface layer of these soils is weak. Soils that have a low content of organic matter form a slight crust following intense rainfall. The crust is slightly hard when dry and is impervious to water. Once the crust forms, it reduces infiltration and increases runoff. The increased runoff causes erosion.

Regular additions of crop residue, manure, and other organic material improve soil structure and minimize crust formation.

Field crops grown in the county include cotton, peanuts, soybeans, corn, wheat, oats, grain sorghum, and forage. Oats, ryegrass, rye, and wheat are the common close-growing crops that are sown for winter grazing.

Commercially grown specialty crops in the county are gladioli, nursery plants, and watermelons. Nursery production is container grown.

Deep soils that have good natural drainage are especially well suited to many vegetables and small fruits. Areas of the Chipola, Dothan, Fuquay, Lucy, Orangeburg, and Stilson soils that have slopes of less than 8 percent are examples. If irrigated, areas of the Blanton, Bonifay, Foxworth, Lakeland, and Troup soils that have slopes of less than 8 percent also are well suited to vegetables and small fruits. Also, where adequately drained, the Albany, Chipley, Florala, Hurricane, Leefield, and Robertsdale soils are well suited.

Most of the well drained and moderately well drained soils in the county are suited to orchards and nursery plants. In low areas that have poor air drainage and frequent frost pockets, however, these soils are not as well suited to early vegetables, small fruits, and orchards.

Pastures in the county are used to produce forage for beef and dairy cattle. Beef cattle cow-calf operations are the major cattle systems. Bahiagrass and coastal bermudagrass are the major pasture plants. Seeds can be harvested from bahiagrass for improved pasture plantings and for commercial purposes. Many cattle producers seed small grain on cropland and overseed ryegrass in pastures in the fall for winter and spring grazing. In pastures of improved bermudagrasses and improved bahiagrasses, excess grass is harvested as hay during the summer for feeding during the winter.

The well drained and moderately well drained Chipola, Dothan, Florala, Fuquay, Kenansville, Lucy, Orangeburg, and Stilson soils are well suited to bahiagrass, alfalfa, and improved bahiagrass. The somewhat poorly drained Albany, Chipley, Garcon, Hurricane, and Leefield soils are well suited to bahiagrass and improved bermudagrass if legumes, such as white, crimson, and arrowleaf clover, are also grown and if adequate amounts of lime and fertilizer are applied. Where irrigation is needed and used in areas of these soils, the total forage production increases.

Pastures in many parts of the county are greatly depleted by continuous excessive grazing. Pasture yields can be increased by properly applying lime and fertilizer, growing legumes, installing drainage, irrigating, and using other management practices.

Differences in pasture yields are related closely to differences in soils. Proper management of pasture is based on the interrelationship of soils, pasture plants, lime, fertilizer, and moisture.

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 land capability classification of each map unit also is shown in the table (USDA-SCS, 1961).

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.

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

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

Crops other than those shown in 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 most kinds of field crops (USDA-SCS, 1961). 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 woodland and for engineering purposes.

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

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

Class I soils have few limitations that restrict their use.

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

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

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

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

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

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

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

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

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

Capability units are soil groups within a subclass. The soils in a capability unit are enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity. Capability units are generally designated by adding an Arabic numeral to the subclass symbol, for example, IIe-4 and IIIe-6.

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

Prime Farmland

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the Nation’s short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation’s prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. The criteria for defining prime farmland are described in the National Soil Survey Handbook (USDA-SCS, 1993). Prime farmland could be cultivated land, pastureland, forest land, or other land, but it is not urban or built-up land or water areas. The soil qualities, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. It is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. The slope ranges mainly from 0 to 8 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

About 50,000 acres in the survey area, or nearly 14 percent of the total acreage, meets the soil requirements for prime farmland. Scattered areas of this land are throughout the county, but most are in the southern part, mainly in general soil map units 3, 6, and 9. About one-third of this prime farmland is used for crops. The crops grown on this land, mainly corn, wheat, cotton, peanuts, oats, and soybeans, account for an estimated two-thirds of the county's total agricultural income each year.

A recent trend in land use in some parts of the survey area has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

The map units in the survey area that are considered prime farmland are listed below. This list does not constitute a recommendation for a particular land use. On some soils included in the list, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures. The extent of each listed map unit is shown in table 4. The location is shown on the detailed soil maps at the back of this publication. The soil qualities that affect use and management are described under the heading "Detailed Soil Map Units."

The map units that meet the requirements for prime farmland are:

17 Florala loamy sand, 0 to 2 percent slopes (where drained)
18 Florala loamy sand, 2 to 5 percent slopes (where drained)
21 Dothan sandy loam, 0 to 2 percent slopes
22 Dothan loamy sand, 2 to 5 percent slopes
23 Dothan loamy sand, 5 to 8 percent slopes
25 Duplin very fine sandy loam, very rarely flooded
44 Orangeburg loamy sand, 0 to 2 percent slopes
45 Orangeburg loamy sand, 2 to 5 percent slopes
46 Orangeburg sandy loam, 5 to 8 percent slopes

Woodland Management and Productivity

The management of woodland is an extremely important agricultural activity in Calhoun County. About 302,000 acres, or 83 percent of the county, is woodland (USDA-FS, 1987). Of this total, 101,864 acres is privately owned and 200,136 acres is owned by large, wood using industries. The soils and climate are ideally suited to timber production, resulting in higher yields and faster growth in well managed stands. The eastern half of the county primarily produces quality slash pine, loblolly pine, and bottomland hardwoods. The southwestern quarter primarily produces slash pine. The northwestern quarter primarily produces slash pine and sand pine.

Slash pine, longleaf pine, loblolly pine, and sand pine are the main species grown in the county. Because the deep root system of sand pine and longleaf pine can collect water in dry sites, these species dominate areas of the Lakeland, Foxworth, and Troup soils. Sand pine has been planted extensively in areas of Lakeland soils on rises and knolls in the northwestern part of the county. Slash pine has been planted extensively throughout the county on poorly drained to moderately well drained soils and on well drained soils that have an argillic horizon within a depth of 2 to 5 feet. Examples are the Alapaha, Albany, Bladen, Blanton, Chipley, Chipola, Dothan, Dunbar, Duplin, Florala, Fuquay, Garcon, Hurricane, Kenansville, Leefield, Lucy, Orangeburg, Pansey, Plummer, Pottsburg, Robertsdale, and Stilson soils and some areas of the Bonifay, Foxworth, and Troup soils. Loblolly pine is planted on soils that have a subsoil that is close to the surface and that have a high content of clay. The Dunbar, Duplin, Dothan, Florala, Garcon, Orangeburg, and Robertsdale soils are examples. Longleaf pine can be planted on most soils.

Live oak, laurel oak, water oak, turkey oak, and blackjack oak are on rises and knolls in areas of the Albany, Blanton, Bonifay, Chipley, Foxworth, Hurricane, and Lakeland soils. These hardwoods have little commercial value but are valuable for wildlife. The river bottom along the Apalachicola River contains large-growth stands of bottomland hardwoods in areas of the Brickyard, Ocklockonee, and Wahee soils. The bottomland hardwoods that are harvested include various oaks, hickory, sycamore, tupelo, sweetgum, and cypress.

Timber management varies from intensive thinning, clearcutting, site preparation, and planting on corporate land to less intensive, selective cutting and harvesting on private land. Prescribed burning is important for removing unwanted vegetation and for exposing mineral soils as a seedbed for natural reproduction. Prescribed burning also improves conditions for grasses and forbs, which help support various wildlife, such as deer, turkey, dove, and quail.

Markets for wood crops are available in the area even though only one major wood-using industry is in the county. Two pulp and paper mills are the major outlets for timber. They are located in Port St. Joe and Panama City. Several sawmills in adjacent counties produce lumber, poles, and veneers. There are also some small sawmills in the county that do not significantly impact the economy.

More detailed information on woodland and woodland management can be obtained from local consulting foresters, the Florida Division of Forestry, and the Natural Resources Conservation Service.

Table 6 can be used by woodland owners or forest managers in planning the use of soils for wood crops. Only those soils suitable for wood crops are listed.

In the table, *slight, moderate,* and *severe* indicate the degree of the major soil limitations to be considered in management. Additional information is available in the National Forestry Manual (USDA-SCS, 1980).

Erosion hazard is the probability that damage will occur as a result of site preparation and cutting where the soil is exposed along roads, skid trails, and fire lanes and in log-handling areas. Forests that have been burned or overgrazed are also subject to erosion. Ratings of the erosion hazard are based on the percent of the slope. A rating of *slight* indicates that no particular prevention measures are needed under ordinary conditions. A rating of *moderate* indicates that erosion-control measures are needed in certain silvicultural activities. A rating of *severe* indicates that special precautions are needed to control erosion in most silvicultural activities.

Equipment limitation reflects the characteristics and conditions of the soil that restrict use of the equipment generally needed in woodland management or harvesting. The chief characteristics and conditions considered in the ratings are slope, soil wetness, and texture of the surface layer. A rating of *slight* indicates that under normal conditions the kind of equipment and season of use are not significantly restricted by soil factors. Soil wetness can restrict equipment use, but the wet period does not exceed 1 month. A rating of *moderate* indicates that equipment use is moderately restricted because of one or more soil factors. If the soil is wet, the wetness restricts equipment use for a period of 1 to 3 months. A rating of *severe* indicates that equipment use is severely restricted either as to the kind of equipment that can be used or the season of use. If the soil is wet, the wetness restricts equipment use for more than 3 months.

Seedling mortality refers to the death of naturally occurring or planted tree seedlings, as influenced by the kinds of soil, soil wetness, or topographic conditions. The factors used in rating the soils for seedling mortality are texture of the surface layer, depth to a seasonal high water table and the length of the period when the water table is high, effective rooting depth, and slope aspect. A rating of *slight* indicates that seedling mortality is not likely to be a problem under normal conditions. Expected mortality is less than 25 percent. A rating of *moderate* indicates that some problems from seedling mortality can be expected. Extra precautions are advisable. Expected mortality is 25 to 50 percent. A rating of *severe* indicates that seedling mortality is a serious problem. Extra precautions are important. Replanting may be necessary. Expected mortality is more than 50 percent.

Windthrow hazard is the likelihood that trees will be uprooted by the wind because the soil is not deep enough for adequate root anchorage. The main restrictions that affect rooting are a seasonal high water table and the depth to a fragipan or other limiting layers. A rating of *slight* indicates that under normal conditions no trees are blown down by the wind. Strong winds may damage trees, but they do not uproot them. A rating of *moderate* indicates that some trees can be blown down during periods when the soil is wet and winds are moderate or strong. A rating of *severe* indicates that many trees can be blown down during these periods.

Plant competition ratings indicate the degree to which undesirable species are expected to invade and grow when openings are made in the tree canopy. The main factors that affect plant competition are depth to the water table and the available water capacity. A rating of *slight* indicates that competition from undesirable plants is not likely to prevent natural regeneration or suppress the more desirable species. Planted seedlings can become established without undue competition. A rating of *moderate* indicates that competition may delay the establishment of desirable species. Competition may hamper stand development, but it will not prevent the eventual development of fully stocked stands. A rating of *severe* indicates that competition can be expected to prevent regeneration unless precautionary measures are applied.

The *potential productivity* of merchantable or *common trees* on a soil is expressed as a *site index* and as a *productivity class* (USDA-FS, 1976; USDA-SCS, 1980; Schumaker and Coile, 1960). The site index is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that woodland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability.

The *productivity class*, is the yield likely to be produced by the most important trees. This number, expressed as cubic meters per hectare per year, indicates the amount of fiber produced in a fully stocked, even-aged, unmanaged stand.

The first species listed under *common trees* for a soil is the indicator species for that soil. It generally is the most common species on the soil.

Trees to plant are those that are suitable for commercial wood production.

Woodland Understory Vegetation

Understory vegetation consists of grasses, forbs, shrubs, and other plants. If well managed, some woodland can produce enough understory vegetation to support grazing of livestock or wildlife, or both, without damage to the trees.

The quantity and quality of understory vegetation vary with the kind of soil, the age and kind of trees in the canopy, the density of the canopy, and the depth and condition of the litter. The density of the canopy determines the amount of light that understory plants receive.

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

Recreation

The soils of the survey area are rated in table 7 according to limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public 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 costly 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 mild slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes can greatly increase the cost of constructing campsites.

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

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

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

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. The best soils for use as golf fairways are firm when wet, are not dusty when dry, and are not subject to prolonged flooding during the period of use. They have moderate slopes. The suitability of the soil for tees or greens is not considered in rating the soils.

Wildlife Habitat

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, and flooding. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, wheat, oats, and millet.

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, flooding, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are fescue, cowpea, bahiagrass, clover, and alfalfa.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, and flooding. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are bluestem, goldenrod, partridge pea, and switchgrass.

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, wild grape, cherry, sweetgum, cabbage palm, hawthorn, dogwood, hickory, blackberry, and blueberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are wild plum and blueberry.

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, and slope. Examples of wetland plants are smartweed, wild millet, pickerelweed, saltgrass, cattail, 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 wetness, slope, and permeability. Examples of shallow water areas are depressions, 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, 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, bear, wild hog, and owl.

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

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities, construction materials, and water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the “Soil Properties” section.

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

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

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

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

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of 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 to overcome 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. A high water table, depth to a cemented pan, slope, and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 or 6 feet are not considered.

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

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

Sanitary Facilities

Table 10 shows the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations, if any, are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are somewhat restrictive 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 good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, a high water table, depth to a cemented pan, and flooding affect absorption of the effluent. A cemented pan interferes 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 is in contact with the seasonal high water table at 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, a high water table, depth to a cemented pan, flooding, large stones, and content of organic matter.

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

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 a cemented pan, a high water table, slope, and flooding affect both types of landfill. Texture, highly organic layers, and soil reaction 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 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 wind erosion.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over a cemented pan or the water table to permit revegetation. The soil material used as 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 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 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) and the thickness of suitable material. Acidity and stratification are given in the soil series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

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

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

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

Soils rated *good* have friable, loamy material to a depth of at least 40 inches. They have slopes of less than 8 percent. They 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, 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 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 nutrients for plant growth.

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, if any, are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are 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 and possibly increased maintenance or alteration are required.

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

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

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow (fig. 10). 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

Figure 10.—An aquaculture demonstration facility in an area of Dothan sandy loam, 0 to 2 percent slopes.

soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of organic matter. A high water table affects the amount of usable material. It also affects trafficability.

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

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to a cemented pan or to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; and subsidence of organic layers. Excavating and grading and the stability of ditchbanks are affected by depth to a cemented pan, 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. Availability of drainage outlets is not considered in the ratings.

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to the water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The construction of a system is affected by large stones and depth to a cemented pan. The performance of a system is affected by the depth of the root zone 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. Wetness, slope, and depth to a cemented pan affect the construction of grassed waterways. A hazard of wind erosion, low available water capacity, restricted rooting depth, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

Soil Properties

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

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

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. “Sandy clay loam,” for example, is soil that is 20 to 35 percent clay, less than 28 percent silt, and more than 45 percent sand. If the content of particles coarser than sand is as much as about 15 percent, an appropriate modifier is added, for example, “gravelly.” Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system (ASTM, 1993) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 1986).

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, CL-ML.

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.

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

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They determine the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, 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 downward movement of water when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

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

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

Salinity is a measure of soluble salts in the soil at saturation. It is expressed as the electrical conductivity of the saturation extract, in millimhos per centimeter at 25 degrees C. Estimates are based on field and laboratory measurements at representative sites of nonirrigated soils. Salinity affects the suitability of a soil for crop production, the stability of soil if used as construction material, and the potential of the soil to corrode metal and concrete.

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

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

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

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.02 to 0.64. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

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

Wind erodibility groups are made up of soils that have similar properties affecting their resistance to wind erosion in cultivated areas. The groups indicate the susceptibility of soil to wind erosion. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are as follows:

1. Coarse sands, sands, fine sands, and very fine sands.

2. Loamy coarse sands, loamy sands, loamy fine sands, loamy very fine sands, ash material, and sapric soil material.

3. Coarse sandy loams, sandy loams, fine sandy loams, and very fine sandy loams.

4L. Calcareous loams, silt loams, clay loams, and silty clay loams.

4. Clays, silty clays, noncalcareous clay loams, and silty clay loams that are more than 35 percent clay.

5. Noncalcareous loams and silt loams that are less than 20 percent clay and sandy clay loams, sandy clays, and hemic soil material.

6. Noncalcareous loams and silt loams that are more than 20 percent clay and noncalcareous clay loams that are less than 35 percent clay.

7. Silts, noncalcareous silty clay loams that are less than 35 percent clay, and fibric soil material.

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

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In 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 is determined by multiplying the content of organic carbon by 1.72

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 based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, 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 high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

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

Flooding, the temporary inundation of an area, is caused by overflowing streams or by runoff from adjacent slopes. Water standing for short periods after rainfall is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

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 is expressed as none, rare, occasional, and frequent. *None* means that there is no reasonable chance of flooding—that it occurs, on the average, less than 1 time in 500 years (the chance of flooding is near 0 percent in any year). *Very rare* means that flooding is very unlikely but possible under extremely unusual weather conditions—that it occurs, on the average, less than 1 time in 100 years but more than 1 time in 500 years (the chance of flooding is less than 1 percent in any year). *Rare* means that flooding is unlikely but possible under unusual weather conditions—that it occurs, on the average, 1 to 5 times in 100 years (the chance of flooding is 1 to 5 percent in any year). *Occasional* means that flooding is expected infrequently under unusual weather conditions—that it occurs, on the average, 5 to 50 times in 100 years (the chance of flooding is 5 to 50 percent in any year). *Frequent* means that flooding is likely to occur often under usual weather conditions—that it occurs, on the average, 50 times in 100 years (the chance of flooding is more than 50 percent in any year but less than 50 percent in all months). *Very frequent* means that flooding is likely to occur very often under usual weather conditions—that it occurs, on the average, more than 50 times in 100 years (the chance of flooding is more than 50 percent in in all months). *Common* is used when the occasional and frequent classes are grouped for certain purposes. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 days to 1 month, and *very long* if more than 1 month. Probable dates are expressed in months. About two-thirds to three-fourths of all flooding occurs during the stated period.

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

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

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. The estimates are based mainly on observations of the water table at selected sites and on the evidence of a saturated zone, namely grayish colors or yellow or red redoximorphic features in the soil. Redoximorphic features were formerly referred to as mottles. 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 high. 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.

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

In Calhoun County, the seasonal high water table typically occurs in late December through March (winter) and in June through early October (summer). These months correspond to the seasons of highest rainfall. Typically, more rain falls in the summer months than in the winter months and more evapotranspiration occurs in the summer months.

Typically, the water table is deepest during the driest time of the year, which is October, November, and the first part of December (fall). These months correspond to the lowest seasonal period of rainfall. The second driest time of the year, which corresponds to the second lowest seasonal period of rainfall, is typically April and May (spring). These months have greater evapotranspiration rates than the fall months.

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 amount of sulfates in the saturation extract.

Physical, Chemical, and Mineralogical Analyses of Selected Soils

This section is derived from materials prepared by Dr. Victor W. Carlisle (1994).

Physical, chemical, and mineralogical properties of representative pedons sampled in Calhoun County are presented in tables 16, 17, and 18. The analyses were conducted and coordinated by the Soil Characterization Laboratory at the University of Florida. Detailed descriptions of the analyzed soils are given in the section “Soil Series and Their Morphology.” Laboratory data and profile information for other soils in Calhoun County and throughout the State are on file at the University of Florida, Soil and Water Science Department.

Typical pedons were sampled from pits at carefully selected locations. Samples were air-dried, crushed, and sieved through a 2-millimeter screen. Most of the analytical methods that were used are outlined in “Soil Survey Investigations Report 1” (USDA-SCS, 1984).

Physical Properties

Results of physical analyses are shown in table 16. Most of the soils sampled in Calhoun County for laboratory analyses are inherently very sandy; however, many of the pedons have an argillic horizon in the lower part of the solum. All of the soils have three or more horizons in which the total content of sand is more than 85 percent, except for Bladen loam, Dunbar fine sandy loam, Duplin very fine sandy loam, Florala loamy sand, Fuquay loamy sand, Orangeburg loamy sand, and Stilson loamy sand. Chipley, Foxworth, Hurricane, and Lakeland soils have more than 93 percent sand to a depth of 2 meters or more.

Particle-size distribution was determined using a modified pipette method with sodium hexametaphosphate dispersion. Hydraulic conductivity and bulk density were determined on undisturbed soil cores. Water-retention parameters were obtained from duplicate undisturbed soil cores placed in tempe pressure cells. Weight percentages of water retained at 100-centimeters water ($^{1}/_{10}$-bar) and 345-centimeters water ($^{1}/_{3}$-bar) were calculated from volumetric water percentages divided by bulk density. Samples were ovendried and ground to pass a 2-millimeter sieve, and the 15-bar water retention was determined.

The content of clay in the soils that were sampled ranges from 0.3 percent in the Chipley and Hurricane soils to 51.3 percent in the Bladen soil. The content of clay in the deeper argillic horizons in the Albany, Florala, Fuquay, Leefield, Lucy, Orangeburg, Stilson, and Troup soils ranges from 10.5 to 30.5 percent. The content of clay in the argillic horizons in the Bladen, Dunbar, and Duplin soils ranges from 42.3 percent in Duplin very fine sandy loam to 51.3 percent in Bladen loamy sand.

The content of silt ranges from 1.9 percent in one horizon of Lakeland sand to 42.6 percent in one horizon of Bladen loam. All horizons in the Chipley, Foxworth, Hurricane, and Lakeland soils are 5.6 percent silt or less. All horizons in the Bladen, Dunbar, and Duplin soils are 22.3 percent silt or more.

Medium sand dominates the sand fractions in most of the soils that were sampled. However, the upper sandy horizons of the Albany, Bladen, Dunbar, Duplin, and Florala soils and practically the entire profile of the Fuquay, Leefield, and Orangeburg soils are dominated by fine sand, very fine sand, or both. All horizons of the Chipley, Foxworth, Hurricane, and Lakeland soils contain more than 51 percent medium sand. Lucy, Pottsburg, Stilson, and Troup soils also are dominated by medium sand but have less than 50 percent medium sand in some horizons. The content of very fine sand is 3.8 percent or less in the Chipley, Foxworth, Hurricane, Lakeland, and Pottsburg soils and more than 18 percent in the Duplin soils. The content of coarse sand is less than 4.5 percent in the Bladen and Duplin soils and most horizons of the Dunbar soils and more than 10 percent in some horizons in the Albany, Florala, Hurricane, Lakeland, Leefield, Lucy, Pottsburg, Stilson, and Troup soils. The content of very coarse sand is 3.4 percent or less in all the soils, except for the Bonifay soils, which have three horizons that are 3.4 to 8.2 percent. The content of very coarse sand is 1.0 percent or less in the Bladen, Chipley, Dunbar, Duplin, Foxworth, Hurricane, Lakeland, Orangeburg, and Pottsburg soils.

The sandy soils in Calhoun County rapidly become droughty during periods of low precipitation when rainfall is widely scattered. Conversely, they are rapidly saturated during periods of heavy rainfall. Soils that have inherently poor drainage, such as Bladen and Pottsburg soils, can remain saturated for long periods because the seasonal high water table is close to the surface.

Hydraulic conductivity exceeds 40 centimeters per hour throughout the profile in the Chipley, Foxworth, Hurricane, and Lakeland soils. It is 40 centimeters per hour or more in one or more horizons in the Florala, Lucy, Pottsburg, and Troup soils. It is 0.2 to 6.0 centimeters per hour in the argillic horizon in the Albany, Orangeburg, and Troup soils. It is about 0.2 centimeters per hour or less in one or more argillic horizons in the Bladen, Dunbar, and Duplin soils. Low hydraulic conductivity at a shallow depth can affect the design and function of septic tank absorption fields. In very sandy soils, such as the Chipley, Foxworth and Lakeland soils, the amount of water available to plants is low.

Chemical Properties

The results of chemical analyses of the soils that were sampled are in table 17. Extractable bases were obtained by leaching soils with 1-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 the ratio of extractable bases to cation-exchange capacity expressed as a percent. The pH measurements were made with a glass electrode in water using a soil-water ratio of 1:1, in 0.01-molar calcium chloride solution using a soil-solution ratio of 1:2, and in 1-normal potassium chloride solution using a soil-solution ratio of 1:1.

The soils in Calhoun County have a low content of extractable bases. All of the soils that were sampled have one or more horizons with less than 1 milliequivalent of extractable bases per hundred grams of soil. The Bladen, Dunbar, Florala, Foxworth, Fuquay, Leefield, Lucy, Orangeburg, Stilson, and Troup soils have one or more horizons with more than 1 milliequivalent per hundred grams to a depth of 2 meters or more. The Dunbar soils have one horizon with more than 10 milliequivalents per hundred grams. The relatively mild, humid climate of Calhoun County results in a rapid depletion of basic cations (calcium, magnesium, sodium, and potassium) through leaching.

Calcium is the dominant base in most of the soils that were sampled; however, levels of magnesium are higher than those of calcium in one or more horizons in the Albany, Bonifay, Dunbar, Duplin, and Troup soils. Chipley, Foxworth, Hurricane, Lakeland, and Pottsburg soils contain less than 0.30 milliequivalents of extractable calcium per hundred grams of soil throughout. Chipley, Foxworth, Hurricane, Lakeland, and Pottsburg soils contain 0.15 or less milliequivalents of extractable magnesium per hundred grams of soil. The combined content of extractable calcium and magnesium is usually not more than 0.50 milliequivalents per hundred grams in the surface soil, except where lime has been applied. The A or Ap horizon in the Albany, Duplin, Florala, Fuquay, Leefield, Lucy, Orangeburg, Stilson, and Troup soils contains more than 0.50 milliequivalents of extractable calcium and magnesium per hundred grams of soil. The content of sodium generally is less than 0.10 milliequivalents per hundred grams of soil, except for in the Dunbar soils, which have up to 0.45 milliequivalents per hundred grams of soil. The content of extractable potassium generally is 0.15 milliequivalents or less per hundred grams of soil. Albany, Chipley, Foxworth, Hurricane, Lakeland, and Pottsburg soils have one or more horizons with less than 0.01 milliequivalents of extractable potassium per hundred grams of soil.

Values for cation-exchange capacity (sum of cations), which is an indication of plant-nutrient capacity, are more than 10 milliequivalents of per hundred grams in the surface layer of the Bladen, Dunbar, Duplin, and Foxworth soils and in the argillic horizons of the Bladen, Dunbar, and Duplin soils. Enhanced cation-exchange capacities parallel the higher content of clay in the argillic horizon in the Albany, Bladen, Bonifay, Dunbar, Florala, Fuquay, Leefield, Lucy, Orangeburg, Stilson, and Troup soils. Soils that have a low cation-exchange capacity in the surface layer, such as Pottsburg sand, require only small amounts of lime or sulfur to significantly alter the base status and soil reaction. Generally, soils that have low inherent fertility are associated with low values for extractable bases and low cation-exchange capacity. Fertile soils are associated with high values for extractable base, high values for base saturation, and high cation-exchange capacity.

The content of organic carbon is 1 percent or less in all horizons of the Albany, Chipley, Florala, Foxworth, Fuquay, Hurricane, Lakeland, Leefield, Orangeburg, Stilson, and Troup soils. Only the Bladen, Dunbar, and Duplin soils have a horizon that contains more than 2 percent organic carbon. In most of the soils that were sampled, the content of organic carbon decreases rapidly as depth increases. The content of organic carbon increases, however, in the Bh horizon of the Hurricane and Pottsburg soils. Because nutrient- and water-holding capacities are directly related to the content of organic carbon in the surface soil of sandy soils, management practices that conserve organic carbon are highly desirable.

Electrical conductivity was determined with a conductivity bridge using a soil-water ratio of 1:1. Iron and aluminum extractable in sodium dithionite-citrate were determined by atomic absorption spectrophotometry. Aluminum, carbon, and iron were extracted from probable spodic horizons using 0.1-molar sodium pyrophosphate. Determination of aluminum and iron was by atomic absorption, and determination of extracted carbon was by a modified version of the Walkley-Black wet combustion method.

Electrical conductivity is low in all of the soils that were sampled. It ranges from 0.0 to 0.13 millimho per centimeter. It is 0.05 millimho per centimeter or less throughout the Albany, Bladen, Chipley, Dunbar, Duplin, Florala, Foxworth, Hurricane, Lakeland, Orangeburg, Pottsburg, and Troup soils. These values for electrical conductivity indicate that the content of soluble salts in the soils is insufficient to hinder the growth of salt-sensitive plants.

Reaction of the sampled soils in water generally ranges from pH 4.0 to 5.5. One or more horizons in the Fuquay, Lucy, Orangeburg, Pottsburg, Stilson, and Troup soils have pH outside this range. Generally, reaction is about 0.1 to 1.0 pH unit lower in calcium chloride and potassium chloride solutions than in water. Maximum availability of nutrients for plant is generally attained at pH 6.5 to 7.5. In Florida, however, maintaining pH at higher than 6.0 is not economically feasible for most kinds of agricultural production.

The ratio of sodium pyrophosphate extractable carbon and aluminum to clay in the Bh horizon of the Hurricane soil meets the chemical criteria established for spodic horizons. Field morphology establishes the spodic horizon in the Pottsburg soil. The Bh horizon in this soil does not meet all the chemical criteria established for spodic horizons. In the Hurricane soil, ratios of sodium pyrophosphate extractable iron and aluminum to citrate-dithionite extractable iron and aluminum meet the criteria for spodic horizons. Sodium pyrophosphate extractable iron ranges from 0.01 to 0.02 percent in the Bh horizon, and citrate-dithionite ranges from 0.06 to 0.09 percent.

The content of citrate-dithionite extractable iron in the Bt horizons of the sampled Albany, Bladen, Dunbar, Duplin, Florala, Fuquay, Leefield, Lucy, Orangeburg, Stilson, and Troup soils ranges from 0.25 to 4.9 percent. The content of iron is higher in the Bt horizons than in the Bh horizons. The content of extractable iron and aluminum in the soils in the county is not sufficient to restrict the availability of phosphorus.

Mineralogical Properties

Mineralogy of the clay fraction less than 2 microns in size was ascertained by x-ray diffraction. Peak heights at the 18-angstrom, 14-angstrom, 7.2-angstrom, and 4.31-angstrom positions represent smectite, interstratified expandable vermiculite or 14-angstrom intergrades, kaolinite, and quartz, respectively. Peaks were measured, added, and normalized to give the percentage of soil minerals identified in the x-ray diffractograms. This percentage is not an absolute quantity but a relative distribution of minerals in a particular mineral suite. The determination of absolute percentages would require additional knowledge of particle size, crystallinity, unit structure substitution, and matrix problems.

The mineralogy of the sand fractions is siliceous. The sand fractions are materials 0.05 to 2.0 millimeters in size. Quartz is overwhelmingly dominant in all of the soils sampled in the county. Varying amounts of heavy minerals are in most horizons. The greatest concentration is in the very fine sand fraction. The soils have no weatherable minerals. The crystalline mineral components of the clay fraction are reported in table 18 for the major horizons of the sampled pedons. The clay fraction consists of materials less than 0.002 millimeter in size. The clay mineralogical suite is mostly of smectite, a 14-angstrom intergrade, kaolinite, quartz, and gibbsite.

Smectite is present in less than one-half of the pedons sampled. The 14-angstrom intergrade mineral is present in all horizons of all of the soils. Kaolinite and quartz are present in all horizons of all the pedons sampled, except that quartz was not present in one horizon each of the Foxworth and Lucy soils. Gibbsite is present in less than one-half of the pedons sampled. The content of calcite and mica is insufficient for the assignment of numerical values.

In Calhoun County, the smectite appears to have been inherited from the sediments in which the soils formed. The stability of smectite is generally increased by a high pH or by alkaline conditions. Smectite generally occurs most abundantly in areas where the alkaline elements have not been leached by percolating rainwater; however, it can occur in moderate amounts regardless of drainage or chemical conditions.

The 14-angstrom intergrade, a mineral of uncertain origin, is widespread in the soils in Florida. It tends to be more prevalent under moderately acidic, relatively well drained conditions; however, it is present in a wide variety of soil environments. It is a major constituent of the coatings on sand grains in Albany, Chipley, Foxworth, Hurricane, Lakeland, Leefield, Lucy, Pottsburg, Stilson, and Troup soils. The abundance of these coatings in the Chipley, Foxworth, and Lakeland soils is sufficient to meet taxonomic criteria for coated Aquic or Typic Quartzipsamments.

The kaolinite is most likely inherited from the parent material, but it could have formed as a weathering product of other materials. Kaolinite is relatively stable in the acidic environment of the soils throughout most of the survey area. Kaolinite is the dominant clay mineral in many of the pedons sampled. The weathering environment becomes less severe as depth increases; therefore, the amount of kaolinite frequently increases in the lower part of the solum. The clay-sized quartz has primarily resulted from the weathering decrements of the silt fraction.

The gibbsite is present in the Florala, Foxworth, Leefield, Lucy, Orangeburg, and Stilson soils. The inconsistency of occurrence of gibbsite suggests inherited properties. Gibbsite and kaolinite form from each other. Gibbsite was not dominant in any pedon. The content of gibbsite in the subsoil of the Florala, Leefield, and Lucy soils, however, is as high as 26 to 33 percent.

Clay mineralogy can have a significant impact on soil properties, particularly in soils that have a higher content of clay. Soils that are dominated by smectite have a higher capacity for retention of plant nutrients than soils dominated by kaolinite, the 14-angstrom intergrade, or quartz. None of the soils sampled have an excessive amount of smectite clay; therefore, the amount of shrinking and swelling of these soils should not create problems for most types of construction. In Calhoun County, the use and management of the soils is more commonly influenced by the total content of clay than by the clay mineralogy.

Engineering Index Test Data

Table 19 shows laboratory test data for several pedons sampled at carefully selected sites in the survey area. The pedons are representative of the series described in the section “Soil Series and Their Morphology.” The soil samples were tested by the Soils Laboratory, Florida Department of Transportation, Bureau of Materials and Research.

The testing methods generally are those of the American Association of State Highway and Transportation Officials (AASHTO) or the American Society for Testing and Materials (ASTM).

The tests and methods are AASHTO classification—M 145 (AASHTO), D 3282 (ASTM); Unified classification—D 2487 (ASTM); Mechanical analysis—T 88 (AASHTO), D 422 (ASTM), D 2217 (ASTM); Liquid limit—T 89 (AASHTO), D 4318 (ASTM); Plasticity index—T 90 (AASHTO), D 4318 (ASTM); and Moisture density—T 99 (AASHTO), D 698 (ASTM).

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (USDA-SCS, 1975; Soil Survey Staff, 1994). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 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 Ultisol.

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 Udult (*Ud*, meaning humid, plus *ult*, from Ultisol).

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; type of saturation; 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 Kandiudults (*Kandi*, meaning low cation-exchange capacity, plus *udult*, the suborder of the Ultisols that has a udic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic subgroup 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 taxonomic class. 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 Kandiudults.

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, mineral content, soil temperature regime, soil depth, and reaction. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine-loamy, siliceous, thermic Typic Kandiudults.

SERIES. The series consists of soils within a family that have horizons similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. The soils of the Orangeburg series are fine-loamy, siliceous, thermic Typic Kandiudults.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. Characteristics of the soil and the material in which it formed are identified for each 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” (Soil Survey Division Staff, 1993). Many of the technical terms used in the descriptions are defined in “Soil Taxonomy” (USDA-SCS, 1975) and in “Keys to Soil Taxonomy” (Soil Survey Staff, 1994). Unless otherwise indicated, 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.”

Alapaha Series

The Alapaha series consists of very deep, poorly drained, moderately slowly permeable soils that formed in sandy and loamy marine sediments (fig. 11). These soils are on flats in the coastal lowlands and in seep positions of side slopes and footslopes in the uplands. Slopes range from 0 to 8 percent. These soils are loamy, siliceous, subactive, thermic Arenic Plinthic Paleaquults.

Alapaha soils are geographically associated with Albany, Bladen, Garcon, Leefield, Pansey, Plummer, Robertsdale, and Wahee soils. Albany and Plummer soils have an argillic horizon at a depth of 40 to 80 inches. Also, Albany soils are somewhat poorly drained. Bladen and Pansey soils have an argillic horizon within a depth of 20 inches. Garcon, Leefield, Robertsdale, and Wahee soils are somewhat poorly drained.

Typical pedon of Alapaha loamy sand, 0 to 2 percent slopes; about 20 feet east and 20 feet south of the northwest corner of sec. 34, T. 2 N., R. 9 W.

A—0 to 6 inches; very dark gray (10YR 3/1) loamy sand; weak medium granular structure; very friable; many fine roots; very strongly acid; clear smooth boundary.

Eg1—6 to 16 inches; dark gray (10YR 4/1) loamy sand; single grained; loose; common fine roots; very strongly acid; gradual smooth boundary.

Eg2—16 to 28 inches; gray (10YR 5/1) loamy sand; common fine prominent yellowish brown (10YR 5/6) masses of iron accumulation; single grained; loose; very strongly acid; gradual wavy boundary.

Btg—28 to 48 inches; gray (10YR 5/1) sandy loam; weak fine granular structure; friable; sand grains bridged and coated with clay; about 3 percent, by volume, plinthite; very strongly acid; gradual smooth boundary.

Btvg1—48 to 62 inches; gray (10YR 5/1) sandy loam; many coarse distinct light yellowish brown (10YR 6/4) and few fine prominent yellowish brown (10YR 5/6) masses of iron accumulation; moderate medium subangular blocky structure; firm; sand grains bridged and coated with clay; about 15 percent, by volume, plinthite; very strongly acid; gradual smooth boundary.

Btvg2—62 to 80 inches; gray (10YR 5/1) sandy clay loam; many medium prominent yellowish brown (10YR 5/6) and red (2.5YR 4/8) masses of iron accumulation; moderate medium subangular blocky structure; firm; sand grains bridged and coated with clay; about 20 percent, by volume, plinthite; very strongly acid, except where lime has been applied.

The solum is more than 70 inches thick. Reaction is very strongly acid or strongly acid throughout, except where lime has been applied.

The A or Ap horizon has hue of 10YR, value of 2 to 4, and chroma of 1; or it is neutral in hue and has value of 2 to 4.

The Eg horizon has hue of 10YR, value of 4 to 6, and chroma of 1; or it is neutral in hue and has value of 4 to 6. The quantity of masses of iron accumulation in shades of yellow and red ranges from none to common. The texture is sand, loamy sand, or loamy fine sand.

The BE horizon, where present, has hue of 10YR, value of 5 to 7, and chroma of 1 or 2; or it is neutral in hue and has value of 5 to 7. It is sandy loam. In some pedons it has pockets of loamy sand.

The Btg horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 or 2; or it is neutral in hue and has value of 5 to 7. The quantity of masses of iron accumulation in shades of yellow and red ranges from none to many. It is sandy loam or sandy clay loam. In some pedons, it has less than 5 percent plinthite.

The Btvg horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 or 2; or it is neutral in hue and has value of 5 to 7. It has common or many masses of iron accumulation in shades of yellow and red or iron depletions in shades of gray. The content of plinthite ranges from 5 to 35 percent, by volume. The upper 20 inches of the argillic horizon is 15 to 30 percent clay.

Albany Series

The Albany series consists of very deep, somewhat poorly drained, moderately permeable and moderately slowly permeable soils that formed in sandy and loamy marine sediments. These soils are in flat areas that are depressed relative to the surrounding upland landforms and on rises and knolls in the coastal lowlands. Slopes range from 0 to 5 percent. These soils are loamy, siliceous, subactive, thermic Grossarenic Paleudults.

Albany soils are geographically associated with Blanton, Bonifay, Chipley, Foxworth, Garcon, Hurricane, Leefield, Plummer, and Stilson soils. Blanton and Foxworth soils are moderately well drained. Bonifay soils are well drained. Chipley soils do not have an argillic horizon. Garcon, Leefield, and Stilson soils have an argillic horizon at a depth of 20 to 40 inches. Also, Garcon soils are sandy within a depth of 60 inches. Hurricane soils have an organic-stained subsoil below a depth of 50 inches. Plummer soils are poorly drained.

Typical pedon of Albany loamy sand, 0 to 5 percent slopes; about 300 feet west of Highway 71; about 1,900 feet west and 3,750 feet south of the northeast corner of sec. 24, T. 1 S., R. 9 W.

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) loamy sand; weak very fine granular structure; very friable; very strongly acid; clear smooth boundary.

E1—8 to 14 inches; brown (10YR 5/3) loamy sand; few medium distinct light gray (10YR 7/2) splotches of uncoated sand; single grained; loose; strongly acid; gradual wavy boundary.

E2—14 to 29 inches; very pale brown (10YR 7/4) loamy sand; common medium faint light gray (10YR 7/2) iron depletions; single grained; loose; strongly acid; diffuse wavy boundary.

E3—29 to 46 inches; pale brown (10YR 6/3) loamy sand; many medium and coarse faint white (10YR 8/2) iron depletions; few fine prominent strong brown (7.5YR 5/8) and few fine prominent yellow (10YR 7/8) masses of iron accumulations; single grained; loose; strongly acid; gradual wavy boundary.

BE—46 to 61 inches; light yellowish brown (10YR 6/4) loamy sand; common fine distinct white (10YR 8/1) iron depletions; many fine distinct yellowish brown (10YR 5/8) and yellow (10YR 7/8) and common medium prominent strong brown (7.5YR 4/6) masses of iron accumulation; weak medium subangular blocky structure; friable; very strongly acid; clear smooth boundary.

Btg—61 to 80 inches; variegated gray (10YR 6/1), yellowish brown (10YR 5/6), and red (2.5YR 4/6) sandy clay loam; the areas in shades of yellow and red are iron accumulations; the areas in shades of gray are iron depletions; weak medium subangular blocky structure; firm; sand grains bridged and coated with clay; very strongly acid.

The thickness of the solum ranges from 70 to more than 80 inches. Reaction ranges from extremely acid to slightly acid in the A or Ap horizon, except where lime has been applied, and from extremely acid to moderately acid in the E, BE, and Bt horizons. Some pedons have up to 5 percent ironstone pebbles in the lower part of the E horizon and in the Bt horizon.

The A or Ap horizon has hue of 10YR, value of 2 to 5, and chroma of 1 or 2.

The E horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 3 to 6. It has few to many masses of iron accumulation in shades of yellow and red and iron depletions in shades of gray. It has redoximorphic features within a depth of 30 inches. It is sand or loamy sand.

The Eg horizon, where present, has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 or 2. It has few to many masses of iron accumulation in shades of yellow and red and iron depletions in shades of gray. It is sand or loamy sand. The combined thickness of the A and E horizons ranges from 40 inches to less than 80 inches.

The BE horizon, where present, has hue of 10YR or 2.5Y, value of 4 to 8, and chroma of 4 to 6. It has few to many redoximorphic features in shades of gray, yellow, and red. It is sandy loam, fine sandy loam, loamy sand, or loamy fine sand.

The Bt horizon, where present, has hue of 10YR or 2.5YR, value of 4 to 8, and chroma of 4 to 8. It has common or many masses of iron accumulation in shades of yellow and red and iron depletions in shades of gray. It is fine sandy loam, sandy loam, or sandy clay loam.

The Btg horizon has hue of 10YR or 2.5Y, value of 4 to 8, and chroma of 1 or 2; or it is neutral in hue and has value of 4 to 8. It has common or many redoximorphic features in shades of yellow, red, and gray. In some pedons, the Btg horizon does not have a dominant matrix color and is variegated in shades of gray, yellow, and red. The texture is sandy loam, fine sandy loam, or sandy clay loam.

Bibb Series

The Bibb series consists of very deep, poorly drained, moderately permeable soils that formed in stratified loamy and sandy fluvial sediments. These soils are on flood plains along creeks and streams and are subject to frequent flooding of long duration. Slopes range from 0 to 2 percent. These soils are coarse-loamy, siliceous, active, acid, thermic Typic Fluvaquents.

Bibb soils are geographically associated with Croatan, Kinston, Pamlico, Plummer, Ochlockonee, Pottsburg, Rutlege, and Wahee soils. Plummer, Pottsburg, and Wahee soils are not stratified. Croatan and Pamlico soils have at least 16 inches of organic material. Kinston and Ochlockonee soils have more clay in the substratum than the Bibb soils. Rutlege soils are very poorly drained.

Typical pedon of Bibb sandy loam, in an area of Pamlico, Bibb, and Rutlege soils, frequently flooded; about 2,600 feet east and 700 feet south of the northwest corner of sec. 32, T. 1 N., R. 9 W.

A1—0 to 8 inches; very dark gray (10YR 3/1) sandy loam; weak fine granular structure; very friable; common fine and medium roots; strongly acid; clear wavy boundary.

A2—8 to 12 inches; dark gray (10YR 4/1) sandy loam; weak fine granular structure; friable; few fine and medium roots; strongly acid; clear wavy boundary.

Cg1—12 to 19 inches; gray (10YR 6/1) sandy loam; massive; friable; few strata of partly decomposed layered leaves and twigs; very strongly acid; clear wavy boundary.

Cg2—19 to 64 inches; gray (5Y 5/1) sandy loam; common medium prominent dark brown (10YR

3/3) splotches; massive; friable; common thin strata of sand and loamy sand; very strongly acid; clear wavy boundary.

Cg3—64 to 80 inches; light gray (10YR 6/1) loamy sand; weak fine granular structure; very friable; few mica flakes; common thin strata of sand and sandy loam; strongly acid.

Reaction ranges from extremely acid to strongly acid throughout, except where lime has been applied.

The A horizon has hue of 10YR, value of 2 to 4, and chroma of 1 or 2.

The Cg horizon has hue of 10YR to 5Y, value of 3 to 7, and chroma of 1 or 2; or it is neutral in hue and has value of 3 to 7. The 10- to 40-inch control section is sand, loamy sand, sandy loam, fine sandy loam, or loam. It is stratified and contains less than 18 percent clay.

Bladen Series

The Bladen series consists of very deep, poorly drained, slowly permeable soils that formed in clayey, fluvial or marine terrace deposits. These soils are on flats adjacent to flood plains along large streams and are subject to rare flooding of brief duration. Slopes range from 0 to 2 percent. These soils are fine, mixed, semiactive, thermic Typic Albaquults.

Bladen soils are geographically associated with Alapaha, Dunbar, Duplin, Pansey, Pantego, and Surrency soils. Alapaha soils contain plinthite and have less clay in the argillic horizon than the Bladen soils. Dunbar soils are somewhat poorly drained. Duplin soils are moderately well drained. Pansey soils have less clay in the argillic horizon than the Bladen soils. Pantego and Surrency soils are very poorly drained.

Typical pedon of Bladen loam, rarely flooded; about 1 mile west of Woods Cemetery; about 900 feet east and 1,000 feet north of the southwest corner of sec. 31, T. 1 S., R. 8 W.

Ap—0 to 7 inches; black (10YR 2/1) loam; weak fine granular structure; very friable; many fine roots; extremely acid; clear smooth boundary.

Eg—7 to 14 inches; gray (10YR 5/1) loam; many medium prominent brownish yellow (10YR 6/6) masses of iron accumulation; weak medium subangular blocky structure parting to weak fine granular; friable; common fine roots; extremely acid; clear wavy boundary.

Btg1—14 to 38 inches; gray (10YR 6/1) clay; many medium prominent red (2.5YR 4/8) and common fine prominent reddish yellow (7.5YR 6/8) masses of iron accumulation; strong coarse angular blocky structure; firm; sand grains bridged and coated with clay; very strongly acid; gradual smooth boundary.

Btg2—38 to 80 inches; gray (10YR 6/1) clay; many fine and medium prominent reddish yellow (7.5YR 6/8) masses of iron accumulation; strong coarse angular blocky structure; very firm; sand grains bridged and coated with clay; very strongly acid.

The solum is more than 60 inches thick. Reaction ranges from extremely acid to strongly acid throughout, except where lime has been applied.

The A or Ap horizon has hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 1 or 2; or it is neutral in hue and has value of 2 to 4.

The Eg horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 or 2; or it is neutral in hue and has value of 5 to 7. It has common or many masses of iron accumulation in shades of yellow and red and iron depletions in shades of gray. It is sandy loam, fine sandy loam, or loam.

The Btg horizon has hue of 10YR, 2.5Y, or 5Y, value of 5 to 7, and chroma of 1 or 2; or it is neutral in hue and has value of 5 to 7. It has common or many masses of iron accumulation in shades of yellow and red and iron depletions in shades of gray. It is clay loam, sandy clay, or clay. In some pedons, it has common thin lenses, tongues, and pockets of sandy loam or loamy sand in the lower part of the horizon. The average content of clay in the upper 20 inches of the Bt horizon ranges from 35 to 55 percent, and the content of silt is less than 30 percent.

The BCg horizon, where present, dominantly has colors and texture similar to those of the Btg horizon. In some pedons, however, the BCg horizon is sandy clay loam.

The Cg horizon, where present, is below a depth of 60 inches. It has colors similar to those of the Btg horizon. The texture is variable or stratified with sandy to clayey materials.

Blanton Series

The Blanton series consists of very deep, moderately well drained, moderately permeable and moderately slowly permeable soils that formed in sandy and loamy marine sediments. These soils are on summits, shoulders, and side slopes in the uplands and on stream terraces. Slopes range from 0 to 8 percent. These soils are loamy, siliceous, semiactive, thermic Grossarenic Paleudults.

Blanton soils are geographically associated with Albany, Bonifay, Chipley, Foxworth, Stilson, and Troup soils. Albany and Chipley soils are somewhat poorly drained. Bonifay soils are well drained. Foxworth and

Stilson soils are moderately well drained. Also, Foxworth soils are sandy throughout and Stilson soils have an argillic horizon at a depth of 20 to 40 inches. Troup soils are somewhat excessively drained and have an argillic horizon at a depth of 40 to 80 inches.

Typical pedon of Blanton sand, 0 to 5 percent slopes; about 1,800 feet north and 800 feet west of the southeast corner of sec. 7, T. 1 S., R. 11 W.

Ap—0 to 4 inches; dark grayish brown (10YR 4/2) sand; weak fine granular structure; very friable; many very fine and fine and common medium roots; strongly acid; abrupt wavy boundary.

E1—4 to 40 inches; light yellowish brown (2.5Y 6/4) sand; single grained; loose; common very fine and fine and few medium roots; strongly acid; gradual smooth boundary.

E2—40 to 60 inches; pale yellow (2.5Y 7/4) sand; single grained; loose; strongly acid; clear smooth boundary.

BE—60 to 68 inches; pale yellow (2.5Y 7/4) loamy sand; few fine prominent brownish yellow (10YR 6/6) masses of iron accumulation; single grained; loose; strongly acid; clear smooth boundary.

Bt—68 to 80 inches; yellowish brown (10YR 5/6) sandy loam; many medium prominent red (2.5YR 4/8) masses of iron accumulation and common medium prominent light gray (10YR 7/2) iron depletions; weak fine subangular blocky structure; friable; sand grains bridged and coated with clay; strongly acid.

The thickness of the solum ranges from 60 to more than 80 inches. Reaction ranges from very strongly acid to moderately acid throughout, except where lime has been applied. Redoximorphic features are within a depth of 42 to 72 inches. The content of plinthite is less than 5 percent within a depth of 60 inches and ranges up to 15 percent below this depth.

The A or Ap horizon has hue of 10YR, value of 3 to 6, and chroma of 1 to 3.

The E or Eg horizon has hue of 10YR or 2.5Y, value of 5 to 8, and chroma of 1 to 4. It is sand, fine sand, loamy fine sand, or loamy sand.

The BE horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 3 to 8. It is loamy sand, loamy coarse sand, loamy fine sand, or sandy loam.

The Bt horizon has hue of 7.5YR to 2.5Y, value of 5 to 7, and chroma of 3 to 8; or it is variegated in shades of gray, yellow, and red. In most pedons, iron depletions that have chroma of 2 or less are within the upper 10 inches of the horizon. The Bt horizon is loamy sand, loamy coarse sand, loamy fine sand, sandy loam, fine sandy loam, or sandy clay loam.

The Btg horizon, where present, has hue of 7.5YR to 5Y, value of 5 to 8, and chroma of 1 or 2; or it is dominated by chroma of 2 or less and has masses of iron accumulation in shades of yellow and red and iron depletions in shades of gray. The texture to a depth of about 60 inches is sandy loam, fine sandy loam, or sandy clay loam. Below 60 inches, the texture ranges to sandy clay.

Bonifay Series

The Bonifay series consists of very deep, well drained, moderately slowly permeable soils. These soils formed in sandy and loamy marine sediments on summits and shoulders in the uplands. Slopes range from 0 to 5 percent. These soils are loamy, siliceous, subactive, thermic Grossarenic Plinthic Paleudults.

Bonifay soils are geographically associated with Albany, Blanton, Chipola, Foxworth, Fuquay, Lakeland, Stilson, and Troup soils. Albany soils are somewhat poorly drained. Blanton soils are moderately well drained. Chipola and Troup soils contain less than 5 percent plinthite within a depth of 60 inches. Foxworth soils are sandy throughout and are moderately well drained. Fuquay and Stilson soils have an argillic horizon at a depth of 20 to 40 inches. Also, Stilson soils are moderately well drained. Lakeland soils are sandy throughout and are excessively drained.

Typical pedon of Bonifay sand, 0 to 5 percent slopes; about 1,000 feet west and 700 feet north of the southeast corner of sec. 33, T. 2 N., R. 9 W.

Ap—0 to 5 inches; very dark grayish brown (10YR 3/2) sand; weak fine granular structure; very friable; strongly acid; clear smooth boundary.

E—5 to 52 inches; yellowish brown (10YR 5/6) sand; single grained; loose; strongly acid; clear wavy boundary.

Btv1—52 to 64 inches; yellow (10YR 7/6) loamy sand; many coarse prominent strong brown (7.5YR 5/8) and few medium prominent red (2.5YR 4/6) masses of iron accumulation; weak medium angular blocky structure; friable; few ironstone pebbles; about 8 percent, by volume, firm plinthite nodules; strongly acid; clear wavy boundary.

Btv2—64 to 80 inches; strong brown (7.5YR 5/8) sandy loam; common medium prominent white (10YR 8/1) and red (2/5YR 5/8) and many medium and coarse prominent dark red (2.5YR 3/6) masses of iron accumulation; moderate medium angular blocky structure; firm; sand grains bridged and coated with clay; about 8 percent, by volume, firm plinthite nodules; strongly acid.

The thickness of the solum ranges from 60 to 80 inches. Reaction is very strongly acid or strongly acid throughout, except where lime has been applied. The content of ironstone pebbles 2 to 15 millimeters in diameter ranges from 0 to 5 percent, by volume, throughout. At a depth of 48 to 60 inches, Bonifay soils have common or many redoximorphic features in shades of yellow and red and iron depletions in shades of gray.

The A or Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 1 to 3.

The E horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 3 to 8. In some pedons, it has masses of uncoated sand grains that have hue of 10YR, value of 7 or 8, and chroma of 1 or 2. The texture is sand, fine sand, loamy fine sand, or loamy sand.

The Bt horizon, where present, has hue of 7.5YR or 10YR, value of 5 to 8, and chroma of 4 to 8. The texture is sandy loam, fine sandy loam, or sandy clay loam. In the upper 20 inches of the Bt horizon, the content of clay ranges from 15 to 35 percent and the content of silt is less than 20 percent.

The Btv horizon dominantly has colors and textures similar to those of the Bt horizon. In some pedons, however, the Btv horizon is variegated in shades of gray, yellow, and red. In some pedons, the lower part of the Btv horizon is firm and compact. The content of plinthite ranges from 5 to 25 percent, by volume.

Brickyard Series

The Brickyard series consists of very deep, very poorly drained, very slowly permeable soils that formed in loamy and clayey deposits. These soils are on flood plains along major rivers and their tributaries and are subject to frequent flooding of long or very long duration. Slopes are 0 to 2 percent. These soils are fine, smectitic, nonacid, thermic Typic Endoaquepts.

Brickyard soils are geographically associated with Pantego, Surrency, Ochlockonee, and Wahee soils. Pantego and Surrency soils are not stratified and have less clay than the Brickyard soils. Ochlockonee and Wahee soils are better drained than the Brickyard soils. Also, the Ochlockonee soils have less clay.

Typical pedon of Brickyard clay loam, frequently flooded; about 200 feet north of the Highway 20 bridge and 1.0 mile west along Highway 20 from the Apalachicola River, NE1/4NW1/4 sec. 35, T. 1 N., R. 8 W.

A—0 to 6 inches; dark brown (10YR 4/3) clay loam; weak fine subangular blocky structure; friable; few mica flakes; sticky and plastic; moderately acid; clear smooth boundary.

Bg1—6 to 15 inches; grayish brown (10YR 5/2) silty clay; many coarse distinct dark brown (7.5YR 3/4) masses of iron accumulation; weak medium subangular blocky structure; friable; sticky and plastic; few mica flakes; moderately acid; clear smooth boundary.

Bg2—15 to 28 inches; light brownish gray (10YR 6/2) silty clay; few medium prominent strong brown (7.5YR 4/6), few coarse prominent reddish brown (5YR 5/4), and few fine prominent strong brown (7.5YR 5/8) masses of iron accumulation; weak medium subangular blocky structure; firm; sticky and plastic; common mica flakes; moderately acid; clear smooth boundary.

Cg—28 to 80 inches; gray (10YR 6/1) silty clay; common fine prominent strong brown (7.5YR 5/8) masses of iron accumulation; massive; firm; sticky and plastic; moderately acid.

The thickness of the solum is typically 15 to 32 inches but ranges from 8 to 48 inches. The 10- to 40-inch control section contains 35 to 60 percent clay. Reaction ranges from moderately acid to neutral in the A and B horizons and from moderately acid to moderately alkaline in the C horizon. The quantity of mica flakes is few or common.

The A horizon has hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 2 to 4. The quantity of masses of iron accumulation in shades of yellow, brown, and red ranges from none to common.

The Bg horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 1 to 4. It has common or many masses of iron accumulation in shades of yellow and red and iron depletions in shades of gray. It is clay loam, silty clay loam, silty clay, or clay.

The Cg horizon has hue of 10YR to 5B, value of 3 to 7, and chroma of 1 to 2; or it is neutral in hue and has value of 3 to 7. It is silt loam, clay loam, silty clay loam, silty clay, clay, or the mucky analogs of those textures. Below a depth of 40 inches, the Cg horizon may contain organic strata. Below 60 inches, it may contain strata of loamy sand to sandy clay.

Chipley Series

The Chipley series consists of very deep, somewhat poorly drained, rapidly permeable soils that formed in sandy marine sediments. These soils are in flat areas that are depressed relative to the surrounding upland landforms and on rises and knolls in the coastal lowlands. Slopes range from 0 to 5 percent. These soils are thermic, coated Aquic Quartzipsamments.

Chipley soils are geographically associated with Albany, Blanton, Foxworth, Hurricane, Lakeland, Plummer, and Pottsburg soils. Albany, Blanton, and Plummer soils have an argillic horizon. Also, Blanton soils are moderately well drained and Plummer soils are poorly drained. Foxworth soils are moderately well drained. Hurricane soils have a spodic horizon and are somewhat poorly drained. Lakeland soils are excessively drained. Pottsburg soils are poorly drained and have a spodic horizon.

Typical pedon of Chipley sand, 0 to 5 percent slopes; about 1,100 feet south and 2,200 feet west of the northeast corner of sec. 16, T. 1 N., R. 11 W.

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) sand; weak very fine granular structure; very friable; few uncoated sand grains; extremely acid; clear smooth boundary.

C1—7 to 21 inches; brown (10YR 5/3) sand; single grained; loose; very strongly acid; clear smooth boundary.

C2—21 to 47 inches; brownish yellow (10YR 6/6) sand; few fine prominent strong brown (7.5YR 5/8) masses of iron accumulation; single grained; loose; very strongly acid; gradual smooth boundary.

C3—47 to 50 inches; very pale brown (10YR 7/4) sand; few fine prominent brownish yellow (10YR 6/8) masses of iron accumulation; single grained; loose; very strongly acid; clear smooth boundary.

Cg—50 to 80 inches; white (10YR 8/1) sand; single grained; loose; very strongly acid.

Reaction ranges from extremely acid to moderately acid in the A horizon, except where lime has been applied, and from very strongly acid to slightly acid in the C horizon. The texture is sand or fine sand throughout. Between depths of 10 and 40 inches, the content of silt plus twice the content of clay is 5 to 10 percent, by weight.

The A or Ap horizon has hue of 10YR, value of 2 to 5, and chroma of 1 or 2.

The C horizon has hue of 10YR or 2.5Y, value of 4 to 8, and chroma of 3 to 8. It has common or many masses of iron accumulation in shades of red and yellow at a depth of 18 to 42 inches. In some pedons, the upper part of the horizon has few splotches of gray or light gray, uncoated sand grains that are not indicative of wetness.

The Cg horizon has hue of 10YR or 2.5Y, value of 5 to 8, and chroma of 1 or 2; or it is neutral in hue and has value of 5 to 8.

Chipola Series

The Chipola series consists of very deep, well drained, moderately rapidly permeable soils that formed in loamy and sandy marine sediments. These soils are on broad stream terraces in the uplands and are subject to very rare flooding of brief duration. Slopes range from 0 to 5 percent. These soils are loamy, kaolinitic, thermic Arenic Kanhapludults.

Chipola soils are geographically associated with Bonifay, Fuquay, Garcon, Kenansville, Lakeland, Lucy, Orangeburg, and Troup soils. Bonifay and Troup soils have an argillic horizon at a depth of 40 to 80 inches. Fuquay, Lucy, and Orangeburg soils do not have a 20 percent decrease in clay content within a depth of 60 inches. Also, Orangeburg soils have a loamy subsoil within a depth of 20 inches. Garcon soils are somewhat poorly drained. Kenansville soils have an argillic horizon that has hue of 7.5YR to 2.5Y. Lakeland soils are sandy to a depth of 80 inches or more.

Typical pedon of Chipola loamy sand, 0 to 5 percent slopes, very rarely flooded; 1.2 miles west of the Apalachicola River and 3.2 miles south of the Jackson County line; about 2,400 feet west and 1,000 feet south of the northeast corner of sec. 24, T. 2 N., R. 8 W.

Ap—0 to 6 inches; yellowish brown (10YR 5/4) loamy sand; weak fine granular structure; very friable; many fine and few medium roots; few quartz pebbles; strongly acid; clear smooth boundary.

E—6 to 22 inches; light yellowish brown (10YR 6/4) loamy sand; single grained; loose; few fine and medium roots; strongly acid; clear smooth boundary.

Bt1—22 to 34 inches; yellowish red (5YR 5/6) sandy loam; weak fine subangular blocky structure; friable; sand grains bridged and coated with clay; few quartz pebbles; very strongly acid; gradual smooth boundary.

Bt2—34 to 41 inches; yellowish red (5YR 5/8) sandy clay loam; weak medium subangular blocky structure; friable; sand grains bridged and coated with clay; few quartz pebbles; very strongly acid; gradual smooth boundary.

BC—41 to 58 inches; yellowish red (5YR 5/8) sandy loam; weak fine subangular blocky structure; very friable; common quartz pebbles; very strongly acid; diffuse smooth boundary.

C—58 to 80 inches; yellowish red (5YR 5/8) sand; weak fine granular structure; very friable; common quartz pebbles; very strongly acid.

The thickness of the solum ranges from 40 to 60 inches. Reaction ranges from very strongly acid to moderately acid throughout, except where lime has been applied.

The A or Ap horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 to 4.

The E horizon has hue of 2.5YR to 10YR, value of 4 to 6, and chroma of 4 to 8. It is sand, loamy sand, or loamy fine sand. The quantity of quartz pebbles ranges from none to common.

The Bt horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 to 8. It is sandy loam or sandy clay loam. The quantity of quartz pebbles ranges from none to common.

The BC horizon has colors similar to those of the Bt horizon. The texture is sandy loam or loamy sand. The BC horizon has few or common quartz pebbles.

The C horizon has colors similar to those of the Bt horizon. The texture is sand or coarse sand. In some pedons, the horizon has pockets of finer textured materials. The C horizon has few or common quartz pebbles.

Croatan Series

The Croatan series consist of deep, very poorly drained, nearly level, slowly permeable to moderately rapidly permeable soils that formed in highly decomposed organic material underlain by loamy textured marine and fluvial sediments. The organic matter was derived from herbaceous plants. These soils are on flood plains and are subject to frequent flooding of very long duration, or they are in depressions and are subject to ponding of very long duration. Slopes are less than 2 percent. These soils are loamy, siliceous, dysic, thermic Terric Haplosaprists.

Croatan soils are geographically associated with Bibb, Dorovan, Kinston, Pamlico, Pansey, Pantego, Rutlege, and Surrency soils. Bibb, Kinston, Pansey, Pantego, Rutlege, and Surrency soils are mineral soils. The organic horizons in Dorovan soils have a combined thickness of more than 51 inches. The organic horizons in Pamlico soils have a combined thickness of 16 to 51 inches and are underlain by sandy materials.

Typical pedon of Croatan muck, in an area of Croatan, Rutlege, and Surrency soils, depressional; about 2,300 feet east and 1,200 feet north of the southwest corner of sec. 19, T. 1 S., R. 10 W.

Oa—0 to 19 inches; black (10YR 2/1) muck that remains black when rubbed and pressed; about 5 percent fiber unrubbed, less than 2 percent rubbed; moderate fine granular structure; very friable; common fine roots; extremely acid; gradual wavy boundary.

2Ag1—19 to 42 inches; very dark brown (10YR 2/2) mucky sandy loam; massive; very friable; few fine roots in the upper part; extremely acid; gradual wavy boundary.

2Ag2—42 to 47 inches; dark brown (10YR 4/3) sandy loam; massive; very friable; extremely acid; gradual wavy boundary.

2Cg—47 to 80; light brownish gray (2.5Y 6/2) sand; massive; very friable; extremely acid.

The thickness of the organic material is typically 16 to 35 inches but ranges to 51 inches. The organic materials are ultra acid or extremely acid, and the underlying materials are extremely acid to slightly acid. Woody materials, such as logs, stumps, and organic fragments, make up less than 10 percent of the organic layers, and the content of fiber ranges from 3 to 30 percent unrubbed and is less than 10 percent rubbed.

The Oa horizon has hue of 10YR or 7.5YR, value of 2 or 3, and chroma of 1 or 2; or it is neutral in hue and has value of 2 or 3.

The 2Ag horizon has hue of 10YR to 5Y, value of 2 to 7, and chroma of 1 to 3. It is mucky sandy loam, sandy loam, or fine sandy loam.

The 2Cg horizon has hue of 2.5Y to 5G, value of 4 to 7, and chroma of 1 or 2. The texture is variable and ranges from sand to clay.

Dorovan Series

The Dorovan series consists of very deep, very poorly drained, moderately permeable soils that formed from the decomposition of woody and herbaceous plants. These soils are in depressions in the uplands and in the coastal lowlands. They are subject to ponding of very long duration. Slopes are less than 1 percent. These soils are dysic, thermic Typic Haplosaprists.

Dorovan soils are geographically associated with Croatan, Pamlico, and Pantego soils. Croatan and Pamlico soils have less than 51 inches of organic material. Pantego soils are mineral soils.

Typical pedon of Dorovan muck, in an area of Dorovan-Croatan-Rutlege association, depressional; about 800 feet west and 100 feet south of the northeast corner of sec. 16, T. 1 S., R. 11 W.

Oa1—0 to 8 inches; black (10YR 2/1) muck that remains black when rubbed and pressed; about 15 percent fiber unrubbed, less than 5 percent rubbed; massive; nonsticky; many fine roots; extremely acid; gradual wavy boundary.

Oa2—8 to 80 inches; black (10YR 2/1) muck that remains black when rubbed and pressed; less than 5 percent fiber unrubbed and rubbed; massive; nonsticky; many fine roots in upper part; extremely acid.

The thickness of the organic material ranges from 51 to more than 80 inches. Reaction is extremely acid or very strongly acid in the organic horizons. It is very strongly acid or strongly acid in the 2C horizon, where present.

The Oa horizon has hue of 5YR to 2.5Y, value of 2 or 3, and chroma of 1 to 3; or it is neutral in hue and has value of 2 or 3. The content of fiber is generally less than 30 percent unrubbed and less than 16 percent rubbed.

The fibers that remain after rubbing are dominantly woody. Typically, a few logs and large fragments of wood are in the lower part of the Oa horizon.

The C horizon, where present, has hue of 10YR to 5Y, value of 2 to 5, and chroma of 1 or 2; or it is neutral in hue and has value of 2 to 5. It is sand, fine sand, loamy sand, sandy loam, fine sandy loam, clay, or the mucky analogs of those textures.

Dothan Series

The Dothan series consists of very deep, well drained, moderately slowly permeable soils that formed in loamy marine sediments (fig. 12). These soil are on summits, shoulder slopes, and side slopes in the uplands. Slopes range from 0 to 12 percent. These soils are fine-loamy, kaolinitic, thermic Plinthic Kandiudults.

Dothan soils are geographically associated with Duplin, Florala, Fuquay, Leefield, Orangeburg, Robertsdale, and Stilson soils. Duplin soils are moderately well drained and have more clay in the argillic horizon than the Dothan soils. Florala soils are somewhat poorly drained. Fuquay and Stilson soils have an argillic horizon at a depth of 20 to 40 inches. Leefield and Robertsdale soils are somewhat poorly drained. Orangeburg soils have redder colors in the argillic horizon than the Dothan soils.

Typical pedon of Dothan sandy loam, 0 to 2 percent slopes; about 2,050 feet west and 700 feet south of the northeast corner of sec. 22, T. 1 S., R. 10 W.

Ap—0 to 6 inches; very dark grayish brown (10YR 3/2) sandy loam; moderate medium granular structure; very friable; common coarse ironstone pebbles; strongly acid; abrupt smooth boundary.

Bt—6 to 25 inches; yellowish brown (10YR 5/8) sandy clay loam; many fine to coarse distinct brownish yellow (10YR 6/6) masses of iron accumulation; moderate medium subangular structure; friable; common coarse ironstone pebbles; strongly acid; gradual smooth boundary.

Btv1—25 to 45 inches; yellowish brown (10YR 5/8) sandy clay loam; common coarse distinct strong brown (7.5YR 5/8) masses of iron accumulation; moderate medium subangular blocky structure; friable; common faint clay films on ped faces; common plinthite nodules; few coarse ironstone pebbles; strongly acid; clear smooth boundary.

Btv2—45 to 65 inches; brownish yellow (10YR 6/6) sandy clay loam; common medium and coarse distinct very pale brown (10YR 7/3) and common medium and coarse prominent red (2.5YR 4/8) masses of iron accumulation; few fine distinct light gray (10YR 7/2) iron depletions; weak medium subangular blocky structure; friable; common faint clay films on ped faces; common plinthite nodules; few coarse ironstone pebbles; strongly acid; clear smooth boundary.

Btv3—65 to 80 inches; variegated reddish yellow (7.5YR 6/8), white (10YR 8/1), and red (10R 4/8) sandy clay loam; the reddish yellow areas are iron accumulations; the gray areas are iron depletions; weak coarse subangular blocky structure; firm; sand grains bridged and coated with clay; common plinthite nodules; strongly acid.

The thickness of the solum ranges from 60 to 80 inches. Reaction ranges from very strongly acid to moderately acid throughout, except where lime has been applied. The depth to a horizon that contain 5 percent or more plinthite ranges from 24 to 60 inches. The content of ironstone pebbles ranges from 0 to 5 percent, by volume, in the A horizon and the upper part of the B horizon.

The A or Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 2 or 3.

The E horizon, where present, has hue of 10YR, value of 5 or 6, and chroma of 3 or 4. It is sand, loamy sand, loamy fine sand, sandy loam, or fine sandy loam.

The BE or BA horizon, where present, has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 3 to 8. It is fine sandy loam or sandy loam.

The Bt horizon has hue of 7.5YR to 2.5Y, value of 5 or 6, and chroma of 6 to 8. Below a depth of 36 inches, it has few or common masses of iron accumulation in shades of yellow and red and iron depletions in shades of gray. The texture is fine sandy loam, sandy loam, or sandy clay loam. The upper 20 inches of the Bt horizon contains 18 to 35 percent clay and less than 20 percent silt.

The Btv horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 6 to 8 and has common or many masses of iron accumulation in shades of yellow and red and iron depletions in shades of gray; or the horizon is variegated in shades of gray, yellow, and red. In some pedons, the matrix hue is 2.5YR, 5YR, or 7.5YR below a depth of 40 inches. The texture is commonly sandy clay loam but includes clay loam or sandy clay. The content of nodular or platy plinthite ranges from 5 to 35 percent, by volume.

Dunbar Series

The Dunbar series consists of very deep, somewhat poorly drained, moderately slowly permeable soils that formed in fluvial or marine clayey deposits. These soils are on flats of interstream divides and low terraces adjacent to flood plains along large streams in the uplands. These soils are subject to rare flooding of brief duration. Slopes range from 0 to 2 percent. These soils are fine, kaolinitic, thermic Aeric Paleaquults.

Dunbar soils are geographically associated with Bladen, Duplin, Kenansville, Pantego, Ochlockonee, and Robertsdale soils. Bladen soils are poorly drained. Duplin and Ochlockonee soils are moderately well drained. Kenansville soils are sandy below a depth of 40 inches. Pantego soils are very poorly drained. Robertsdale soils have 18 to 35 percent clay in the argillic horizon.

Typical pedon of Dunbar fine sandy loam, rarely flooded; about 1.0 mile west of Woods Cemetery; about 20 feet north and 1,300 feet east of the southwest corner of sec. 31, T. 1 S., R. 8 W.

Ap—0 to 6 inches; black (10YR 2/1) fine sandy loam; weak fine granular structure; very friable; many fine roots; very strongly acid; clear smooth boundary.

Bt—6 to 14 inches; light olive brown (2.5Y 5/4) clay loam; few fine and medium prominent red (10R 4/8) masses of iron accumulation; few fine distinct grayish brown (2.5Y 5/2) iron depletions; weak medium subangular blocky structure; friable and firm; thin faint clay films on ped faces; many fine roots; very strongly acid; gradual smooth boundary.

Btg1—14 to 36 inches; light gray (10YR 6/1) clay; many fine and medium prominent reddish yellow (7.5YR 6/8), common fine prominent red (2.5YR 4/8), and common fine and medium prominent red (10R 4/8) masses of iron accumulation; strong medium and coarse angular blocky structure; very firm; thin faint clay films on ped faces; few fine roots; very strongly acid; diffuse smooth boundary.

Btg2—36 to 80 inches; gray (5Y 6/1) clay; many fine and medium prominent yellowish brown (10YR 5/6) and few fine prominent yellowish red (5YR 5/8) masses of iron accumulation; strong medium and coarse angular blocky structure; very firm; clay films and common slickensides on faces of peds; sticky and plastic; very strongly acid.

The solum is more than 60 inches thick. Reaction is very strongly acid or strongly acid throughout, except where lime has been applied.

The A or Ap horizon has hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 1 or 2.

The E horizon, where present, has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 to 4. It is fine sandy loam, sandy loam, or loam.

The Bt horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 8. It has common or many masses of iron accumulation in shades of yellow and red and iron depletion in shades of gray. It is sandy clay loam, sandy clay, or clay loam.

The Btg horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 1 or 2; or it is neutral in hue and has value of 4 to 6. It has few or common masses of iron accumulation in shades of yellow, brown, red. It is sandy clay, clay loam, or clay. The content of clay averages between 35 and 55 percent, and the content of silt is less than 30 percent.

The BCg horizon, where present, has hue of 10YR to 5Y, value of 4 to 6, and chroma of 1 or 2; or it is neutral in hue and has value of 4 to 6. It has few or common masses of iron accumulation in shades of yellow, brown, red. It is sandy clay, sandy clay loam, clay loam, or clay.

The Cg horizon, where present, has hue of 10YR to 5Y, value of 5 or 6, and chroma of 1. It is loamy sand, sandy loam, sandy clay loam, or sandy clay.

Duplin Series

The Duplin series consists of very deep, moderately well drained, moderately slowly permeable soils that formed in clayey marine sediments. These soils are on rises and knolls of terraces adjacent to flood plains along large streams in the uplands. These soils are subject to very rare flooding of brief duration. Slopes range from 0 to 2 percent. These soils are fine, kaolinitic, thermic Aquic Paleudults.

Duplin soils are geographically associated with Bladen, Dothan, Dunbar, Ochlockonee, and Robertsdale soils. Bladen soils are poorly drained. Dothan and Robertsdale soils have 18 to 35 percent clay in the argillic horizon. Dunbar soils are somewhat poorly drained. Ochlockonee soils have less than 18 percent clay in the argillic horizon.

Typical pedon of Duplin very fine sandy loam, very rarely flooded; about 100 feet west of County Road 69; about 600 feet west and 1,400 feet south of the northeast corner of sec. 30, T. 1 S., R. 8 W.

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) very fine sandy loam; moderate medium granular structure; very friable; many fine roots; strongly acid; clear smooth boundary.

Bt1—6 to 12 inches; yellowish brown (10YR 5/6) clay; common medium and coarse prominent red (2.5YR 4/6) and common fine distinct strong brown (7.5YR 5/6) masses of iron accumulation; moderate coarse and very coarse granular structure; firm; thin faint clay films on ped faces; common fine roots; strongly acid; gradual smooth boundary.

Bt2—12 to 29 inches; strong brown (7.5YR 5/6) clay; common fine distinct yellowish red (5YR 5/6) and few fine distinct light yellowish brown (10YR 6/4) masses of iron accumulation; moderate medium subangular blocky structure parting to moderate fine subangular blocky; friable; thin faint clay films on ped faces; strongly acid; gradual smooth boundary.

Bt3—29 to 50 inches; strong brown (7.5YR 5/8) clay; few medium distinct red (10R 4/8) and common fine prominent reddish brown (2.5YR 5/4) masses of iron accumulation and light gray (10YR 7/2) iron depletions; moderate coarse subangular blocky structure parting moderate medium subangular blocky; friable; thin faint clay films on ped faces; strongly acid; gradual wavy boundary.

Cg—50 to 80 inches; variegated light gray (10YR 7/1), strong brown (7.5YR 5/8), and red (10R 4/6) clay; the areas in shades of brown and red are iron accumulations; the areas in shades of gray are iron depletions; moderate very coarse subangular blocky structure; firm; clay films on ped faces; strongly acid.

The solum is more than 60 inches thick. Reaction is very strongly acid or strongly acid throughout, except where lime has been applied.

The A or Ap horizon dominantly has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 to 3. Where the horizon is less than 10 inches thick, however, value can be 2 or 3.

The E horizon, where present, has hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 2 to 4. It is sandy loam, fine sandy loam, very fine sandy loam, or loamy sand.

The BE horizon, where present, has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 4 to 8. It is loam or sandy clay loam.

The Bt horizon has hue of 7.5YR to 2.5Y, value of 4 to 7, and chroma of 3 to 8. It has few or common masses of iron accumulation in shades of yellow, brown, and red. Iron depletions are within a depth of 30 inches. The texture is sandy clay loam, clay loam, sandy clay, or clay. By weighted average, the control section is 35 to 55 percent clay and less than 30 percent silt. In some pedons, the lower part of the Bt horizon has few strong brown to red nodules of plinthite.

The Cg horizon has hue of 7.5YR to 2.5Y, value of 4 to 7, and chroma of 1 or 2 and has common or many masses of iron accumulation in shades of yellow, brown, red; or the horizon is variegated in shades of gray, yellow, and red. It is sandy clay loam, clay loam, sandy clay, or clay.

Florala Series

The Florala series consists of very deep, somewhat poorly drained, slowly permeable soils that formed in sandy and loamy marine or fluvial sediments. These soils are on toeslopes, shoulder slopes, and stream terraces in the uplands. Slopes range from 0 to 5 percent. These soils are coarse-loamy, siliceous, subactive, thermic Plinthaquic Paleudults.

Florala soils are geographically associated with Dothan, Garcon, Leefield, Pansey, Robertsdale, and Stilson soils. Dothan and Stilson soils are better drained than the Florala soils. Garcon and Leefield soils have an argillic horizon at a depth of 20 to 40 inches. Pansey soils are poorly drained or very poorly drained. Robertsdale soils have an argillic horizon that is 18 to 35 percent clay.

Typical pedon of Florala loamy sand, 0 to 2 percent slopes; about 1,400 feet west and 35 feet north of the southeast corner of sec. 3, T. 1 N., R. 9 W.

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) loamy sand; weak fine granular structure; very friable; many fine and common medium roots; few iron concretions; strongly acid; abrupt smooth boundary.

Bt—8 to 25 inches; brownish yellow (10YR 6/6) fine sandy loam; few medium distinct yellowish brown (10YR 5/8) and few medium prominent yellowish red (5YR 5/8) masses of iron accumulation; weak fine granular structure; friable; sand grains bridged and coated with clay; common fine and few medium roots; few iron concretions; 2 percent, by volume, plinthite nodules; strongly acid; gradual wavy boundary.

Btv1—25 to 43 inches; brownish yellow (10YR 6/6) sandy loam; few fine and medium prominent light gray (10YR 7/2) iron depletions; common medium prominent strong brown (7.5YR 5/8) and few fine and medium prominent red (2.5YR 4/6) masses of iron accumulation; weak fine subangular blocky structure parting to weak fine granular; friable; sand grains bridged and coated with clay; many iron concretions; 10 percent, by volume, plinthite nodules; strongly acid; gradual wavy boundary.

Btv2—43 to 67 inches; mixed light gray (10YR 7/2) and yellowish brown (10YR 5/8) sandy clay loam; common medium prominent red (2.5YR 4/8) masses of iron accumulation; weak medium subangular blocky structure; firm; sand grains bridged and coated with clay; common iron concretions; 10 percent, by volume, plinthite nodules; very strongly acid; gradual wavy boundary.

Btv3—67 to 80 inches; variegated light gray (10YR 7/1), yellowish brown (10YR 5/8), and dark yellowish brown (10YR 4/6) sandy clay loam; the areas in shades of yellow are iron accumulations; the areas in shades of gray are iron depletions; weak medium subangular blocky structure; firm; sand grains bridged and coated with clay; 5 percent, by volume, plinthite nodules; very strongly acid.

The thickness of the solum is 60 inches or more. The depth to a horizon that has 5 percent or more plinthite ranges from 20 to 42 inches. Reaction is very strongly acid or strongly acid throughout, except where lime has been applied.

The Ap or A horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 1 or 2.

The E horizon, where present, has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 to 4. It is fine sandy loam, sandy loam, or loamy fine sand.

The Bt horizon and the upper part of the Btv horizon have hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 3 to 6. The lower part of the Btv horizon is variegated in shades of gray, yellow, and red. The quantity of masses of iron accumulation in shades of red ranges from none to common. Common iron depletions are within a depth of 30 inches. The texture of the Bt horizon and the upper part of the Btv horizon is sandy loam or fine sandy loam. The texture ranges to sandy clay loam in the lower part of the Btv horizon. The upper 20 inches of the argillic horizon is less than 20 percent silt. The content of plinthite in the Btv horizon ranges from 5 to 20 percent, by volume.

Foxworth Series

The Foxworth series consists of very deep, moderately well drained, rapidly permeable or very rapidly permeable soils that formed in sandy marine sediments (fig. 13). These soils are on summits, shoulder slopes, and side slopes in the uplands. Slopes range from 0 to 5 percent. These soils are thermic, coated Typic Quartzipsamments.

Foxworth soils are geographically associated with Albany, Blanton, Bonifay, Chipley, Hurricane, Lakeland, and Troup soils. Albany, Blanton, Bonifay, and Troup soils have an argillic horizon. Chipley and Hurricane soils are somewhat poorly drained. Also, Hurricane soils have a spodic horizon. Lakeland soils are excessively drained.

Typical pedon of Foxworth sand, 0 to 5 percent slopes; about 2,500 feet south and 1,280 feet west of the northeast corner of sec. 14, T. 1 S., R. 11 W.

Ap—0 to 6 inches; brown (10YR 5/3) sand; single grained; loose; common fine roots; very strongly acid; clear smooth boundary.

C1—6 to 43 inches; yellowish brown (10YR 5/4) sand; few medium distinct light gray (10YR 7/1) splotches of uncoated sand grains; single grained; loose; few fine roots; very strongly acid; gradual wavy boundary.

C2—43 to 67 inches; yellowish brown (10YR 5/6) sand; many medium distinct strong brown (7.5YR 5/8) masses of iron accumulation; common medium prominent light gray (10YR 7/1) splotches of uncoated sand grains; single grained; loose; very strongly acid; clear wavy boundary.

Cg—67 to 80 inches; light gray (10YR 7/2) sand; few medium prominent brownish yellow (10YR 6/8) masses of iron accumulation; single grained; loose; very strongly acid.

The texture is sand or fine sand to a depth of 80 inches or more. Reaction ranges from very strongly acid to slightly acid throughout, except where lime has been applied. Between depths of 10 and 40 inches, the content of silt plus twice the content of clay is 5 to 10 percent, by weight.

The A or Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 1 to 3.

The C horizon has hue of 10YR, value of 5 to 7, and chroma of 3 to 8. In some pedons, it has few or common splotches of uncoated sand grains. The color of these splotches is due to uncoated sand grains and is not indicative of wetness. The quantity of masses of iron accumulation in shades of yellow and red is none or few above a depth of 42 inches and is common or many below a depth of 42 inches.

The Cg horizon has hue of 10YR, value of 6 to 8, and chroma of 1 or 2. It has common or many masses of iron accumulation in shades of yellow and red.

Fuquay Series

The Fuquay series consists of very deep, well drained, slowly permeable soils that formed in loamy marine sediments. These soils are on summits, shoulders, and side slopes in the uplands. Slopes range from 0 to 12 percent. These soils are loamy, kaolinitic, thermic Arenic Plinthic Kandiudults.

Fuquay soils are geographically associated with Blanton, Bonifay, Chipola, Dothan, Leefield, Kenansville, and Stilson soils. Blanton and Bonifay soils have an argillic horizon at a depth of 40 to 80 inches. Chipola soils have a decrease in clay content of 20 percent or more within a depth of 60 inches. Kenansville soils are sandy below a depth of 40 inches. Dothan soils have an argillic horizon within a depth of 20 inches. Leefield soils are somewhat poorly drained. Stilson soils are moderately well drained.

Typical pedon of Fuquay loamy sand, 0 to 2 percent slopes; about 100 feet north and 2,100 feet west of the southeast corner of sec. 25, T. 2 N., R. 9 W.

Ap—0 to 11 inches; dark grayish brown (2.5Y 4/2) loamy sand; weak fine granular structure; very friable; moderately acid; abrupt smooth boundary.

E1—11 to 23 inches; olive yellow (2.5Y 6/6) loamy fine sand; few fine prominent light gray (10YR 7/2) splotches of uncoated sand grains; weak fine granular structure; very friable; very strongly acid; gradual smooth boundary.

E2—23 to 32 inches; olive yellow (2.5Y 6/6) loamy fine sand; common medium distinct pale yellow (2.5Y 7/4) splotches of uncoated sand grains; weak fine granular structure; very friable; about 3 percent, by volume, plinthite nodules; few medium smooth ironstone pebbles; very strongly acid; clear wavy boundary.

Btv1—32 to 42 inches; olive yellow (2.5Y 6/6) fine sandy loam; few medium distinct light yellowish brown (2.5Y 6/4) masses of iron accumulation; moderate medium subangular blocky structure; very friable; sand grains bridged and coated with the clay; about 7 percent, by volume, plinthite; few medium ironstone pebbles; very strongly acid; clear wavy boundary.

Btv2—42 to 58 inches; yellowish brown (10YR 5/8) sandy loam; many medium and coarse prominent light gray (10YR 7/1) mottles; moderate coarse subangular blocky structure; friable; sand grains bridged and coated with clay; about 3 percent, by volume, plinthite nodules; few medium ironstone pebbles; very strongly acid; gradual wavy boundary.

Btv3—58 to 80 inches; variegated light gray (10YR 7/1), red (10R 4/8), yellowish brown (10YR 5/6), and strong brown (7.5YR 5/8) sandy clay loam; the areas in shades of yellow and red are iron accumulations; the areas in shades of gray are iron depletions; moderate coarse angular blocky structure; firm; few ironstone nodules; very strongly acid.

The thickness of the solum is 60 inches or more. The depth to a horizon containing more than 5 percent plinthite ranges from 35 to 60 inches. Reaction ranges from very strongly acid to moderately acid throughout, except were lime has been applied. In some pedons, few rounded ironstone nodules are on the surface, throughout the Ap horizon, and in the upper part of the Bt, E, and Btv horizons.

The A or Ap horizon has a hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 1 to 3.

The E horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 3 to 6. In most pedons, it has few to many splotches of light gray, uncoated, clean sand grains. The texture is sand, fine sand, loamy sand, or loamy fine sand.

The BE horizon, where present, has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 3 to 8. It is loamy sand, sandy loam, or the gravelly analogs of those textures.

The Bt horizon, where present, has hue of 7.5YR to 2.5Y, value of 4 to 8, and chroma of 3 to 8. It has few or common iron accumulations in shades of yellow and red. It has common or many iron depletions in shades of gray below a depth of 40 inches. The quantity of ironstone nodules is none or few.

The Btv horizon has hue of 10R to 2.5Y, value of 4 to 8, and chroma of 3 to 8. It has common or many iron depletions in shades of gray and masses of iron accumulation in shades of yellow and red in a variegated pattern. The bodies of reddish plinthite are hard and are surrounded by soft, strong brown and yellowish brown material. The reddish and brownish areas are sandy clay loam or sandy loam. The gray areas are heavy sandy clay loam or sandy clay. Generally, the redder parts of the plinthite are oriented horizontally. The average texture of the Btv horizon is sandy loam, fine sandy loam, or sandy clay loam.

The C horizon, where present, is variegated and has hue of 2.5YR to 2.5Y, value of 4 to 8, and chroma of 1 to 8. It has masses of iron accumulation in shades of yellow and red and has iron depletions in shades of gray. It is sandy loam or loamy sand.

Garcon Series

The Garcon series consists of very deep, somewhat poorly drained, moderately permeable soils that formed in sandy and loamy marine sediments. These soils are on stream terraces on the coastal lowlands adjacent to flood plains along large streams. These soils are subject to rare flooding of brief duration. Slopes range from 0 to 2 percent. These soils are loamy, siliceous, active, thermic Aquic Arenic Hapludults.

Garcon soils are geographically associated with Alapaha, Albany, Chipola, Florala, Kenansville, Kinston, Leefield, Rutlege, Stilson, and Surrency soils. Alapaha soils are poorly drained. Albany soils have a loamy argillic horizon at a depth of 40 to 80 inches. Chipola soils are well drained and are redder than the Garcon soils. Florala soils have an argillic horizon within a depth of 20 inches and do not have a decrease in clay content of 20 percent or more within a depth of 60 inches. Kenansville soils are moderately well drained. Kinston, Rutlege, and Surrency soils are more poorly drained than the Garcon soils and are more frequently subject to flooding. Leefield and Stilson soils do not have a decrease in clay content of 20 percent or more within a depth of 60 inches, and they contain plinthite. Also, Stilson soils are moderately well drained.

Typical pedon of Garcon loamy sand, rarely flooded; about 10 feet north and 500 feet east of the southwest corner of sec. 17, T. 1 N., R. 9 W.

A—0 to 5 inches; dark grayish brown (10YR 4/2) loamy sand; weak fine granular structure; very friable; many fine and few medium roots; strongly acid; clear smooth boundary.

E—5 to 21 inches; brown (10YR 5/3) loamy sand; single grained; loose; common fine and few medium roots; very strongly acid; gradual smooth boundary.

Bt1—21 to 28 inches; light yellowish brown (10YR 6/4) sandy loam; moderate medium subangular blocky structure; friable; sand grains bridged and coated with clay; very strongly acid; clear smooth boundary.

Bt2—28 to 34 inches; brown (10YR 5/3) sandy clay loam; few medium distinct light brownish gray (10YR 6/2) iron depletions; weak medium subangular blocky structure; friable; sand grains bridged and coated with clay; very strongly acid; clear smooth boundary.

Btg—34 to 47 inches; gray (10YR 6/1) sandy clay loam; many coarse prominent reddish yellow (7.5YR 6/6) masses of iron accumulation; weak medium subangular blocky structure; friable; sand grains bridged and coated with clay; very strongly acid; gradual smooth boundary.

C—47 to 80 inches; light gray (10YR 7/2) sand; common medium prominent strong brown (7.5YR 5/8) masses of iron accumulation; single grained; loose; very strongly acid.

The thickness of the solum ranges from 45 to more than 60 inches. Reaction ranges from extremely acid to strongly acid throughout, except where lime has been applied.

The A horizon has hue of 10YR, value of 2 to 4, and chroma of 1 or 2.

The E horizon has hue of 10YR, value of 5 to 7, and chroma of 3 to 6; or it has hue of 2.5Y, value of 6, and chroma of 4. The quantity of masses of iron accumulation in shades of yellow and red and iron depletions in shades of gray ranges from none to common below a depth of 18 inches. The texture is sand, fine sand, or loamy sand.

The Bt horizon has hue of 10YR, value of 5 or 6, and chroma of 3 to 6. At a depth of 18 to 36 inches, it has common or many masses of iron accumulation in shades of yellow and red and iron depletions in shades of gray. The texture is sandy loam, fine sandy loam, or sandy clay loam. By weighted average, the upper 20 inches of the argillic horizon is less than 18 percent clay and less than 20 percent silt.

The Btg horizon has hue of 10YR, value of 5 or 6, and chroma of 1 or 2. It has common or many masses of iron accumulation in shades of brown and red. It 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 masses of iron accumulation and iron depeletions in shades of gray, yellow, and red. It is sand or fine sand. In some pedons, it has mica flakes.

Hurricane Series

The Hurricane series consists of very deep, somewhat poorly drained, moderately rapidly permeable soils that formed in sandy marine sediments. These soils are on rises and knolls that are slightly higher than the interspersed flatwoods in the coastal lowlands and are on toeslopes in the uplands. Slopes range from 0 to 2 percent. These soils are sandy, siliceous, thermic Oxyaquic Alorthods.

Hurricane soils are geographically associated with Albany, Chipley, Foxworth, and Pottsburg soils. Albany soils have an argillic horizon at a depth of 40 to 80 inches and do not have a spodic horizon. Chipley and Foxworth soils do not have a spodic horizon. Also, Foxworth soils are moderately well drained. Pottsburg soils are poorly drained.

Typical pedon of Hurricane sand; about 1,400 feet west and 900 feet north of the southeast corner of sec. 32, T. 1 N., R. 10 W.

A—0 to 6 inches; dark gray (10YR 4/1) sand that is a mixture of organic matter and light gray (10YR 7/1) uncoated sand grains; single grained; loose and very friable; many fine roots; few medium roots; very strongly acid; diffuse smooth boundary.

E—6 to 23 inches; gray (10YR 5/1) sand; common coarse white (10YR 8/1) pockets that are splotches of uncoated sand grains; single grained; loose; few fine and medium roots; very strongly acid; gradual smooth boundary.

Eg1—23 to 37 inches; grayish brown (10YR 5/2) sand; few fine and medium prominent strong brown (7.5YR 5/8) masses of iron accumulation; single grained; loose; very strongly acid; gradual smooth boundary.

Eg2—37 to 48 inches; white (10YR 8/1) sand; common fine and medium prominent strong brown (7.5YR 5/8) and yellowish red (5YR 5/8) masses of iron accumulation; single grained; loose; very strongly acid; clear smooth boundary.

Eg3—48 to 72 inches; white (10YR 8/1) sand; few medium prominent strong brown (7.5YR 5/8) and yellowish red (5YR 5/8) masses of iron accumulation; single grained; loose; very strongly acid; clear smooth boundary.

Bh—72 to 80 inches; very dark gray (5YR 3/1) sand; single grained; loose; sand grains well coated with organic matter; very strongly acid.

The solum is more than 60 inches thick. Reaction ranges from extremely acid to moderately acid throughout, except where lime has been applied.

The A or Ap horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 1 to 3.

The E horizon has hue of 10YR or 2.5Y and value of 5 to 8. Chroma is 1 to 4 to a depth of 20 inches and 1 or 2 below a depth of 20 inches. The E horizon has few to many masses of iron accumulation in shades of yellow and red at a depth of 18 to 42 inches. The texture is sand or fine sand.

The Bh horizon has hue of 5YR to 10YR, value of 2 to 5, and chroma of 4 or less. It is sand, fine sand, or loamy sand. In some pedons, it is weakly cemented.

Kenansville Series

The Kenansville series consists of very deep, well drained, moderately rapidly permeable soils that formed in sandy and loamy marine sediments (fig. 14). These soils are on stream terraces in the uplands adjacent to the flood plains along large streams. These soils are subject to rare flooding of brief duration. Slopes range from 0 to 5 percent. These soils are loamy, siliceous, subactive, thermic Arenic Hapludults.

Kenansville soils are geographically associated with Chipola, Dunbar, Fuquay, Garcon, and Stilson soils. Chipola soils are well drained and have a redder argillic horizon than that of the Kenansville soils. Dunbar soils have an argillic horizon within a depth of 20 inches and do not have a decrease in clay content of 20 percent or more within a depth of 60 inches. Fuquay and Stilson soils do not have a decrease in clay content of 20 percent or more within a depth of 60 inches. Also, Fuquay soils are well drained. Garcon soils are somewhat poorly drained.

Typical pedon of Kenansville loamy sand, wet substratum, 0 to 5 percent slopes, rarely flooded; about 2,300 feet east and 2,000 feet north of the southwest corner of sec. 13, T. 2 S., R. 9 W.

A—0 to 7 inches; dark grayish brown (10YR 4/2) loamy sand; weak medium granular structure; very friable; many fine and few medium roots; strongly acid; clear smooth boundary.

E—7 to 22 inches; light yellowish brown (10YR 6/4) loamy sand; weak medium granular structure; very friable; few fine and medium roots; strongly acid; clear smooth boundary.

Bt—22 to 38 inches; yellowish brown (10YR 5/6) sandy clay loam; moderate medium subangular blocky structure; friable; sand grains bridged and coated with clay; strongly acid; gradual smooth boundary.

BC—38 to 52 inches; brownish yellow (10YR 6/6) sandy loam; weak medium subangular blocky structure; very friable; strongly acid; gradual smooth boundary.

C—52 to 80 inches; very pale brown (10YR 7/3) loamy sand; common medium prominent yellowish brown (10YR 5/8) masses of iron accumulation; single grained; loose; strongly acid.

The solum is more than 40 inches thick. Reaction ranges from very strongly acid to moderately acid throughout, except where lime has been applied.

The A horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 1 to 3.

The E horizon has hue of 10YR or 2.5Y, value of 5 to 8, and chroma of 3 to 8. It is sand, fine sand, loamy sand, or loamy fine sand.

The Bt horizon has hue of 7.5YR to 2.5Y, value of 5 to 7, and chroma of 4 to 8. It is sandy loam, fine sandy loam, or sandy clay loam.

The BC or B/C horizon has colors similar to those of the Bt horizon. The texture is loamy sand, sandy loam, or fine sandy loam.

The C horizon has hue of 7.5YR to 2.5Y, value of 4 to 8, and chroma of 1 to 8. At a depth of 48 to 72 inches, it has iron depletions in shades of gray and masses of iron accumulation in shades of yellow and red. The texture is sand or loamy sand.

Kinston Series

The Kinston series consists of very deep, poorly drained, moderately permeable soils that formed in stratified loamy fluvial sediments. These soils are on flood plains along creeks, streams, and rivers. These soils are subject to frequent flooding of long duration. Slopes range from 0 to 2 percent. These soils are fine-loamy, siliceous, semiactive, acid, thermic Fluvaquentic Endoaquepts.

Kinston soils are geographically associated with Bibb, Croatan, Garcon, Pamlico, Plummer, Pottsburg, Rutlege, Surrency, and Wahee soils. Bibb soils have less clay in the substratum than the Kinston soils. Croatan and Pamlico soils have 16 to 51 inches of organic material. Garcon, Plummer, Pottsburg, and Wahee soils are not stratified. Also, Garcon and Wahee soils are somewhat poorly drained. Rutlege and Surrency soils are very poorly drained.

Typical pedon of Kinston fine sandy loam, in an area of Croatan, Kinston, and Surrency soils, frequently flooded; about 2,100 feet east and 600 feet north of the southwest corner of sec. 18, T. 1 S., R. 9 W.

A—0 to 6 inches; very dark gray (10YR 3/1) fine sandy loam; weak fine granular structure; very friable; common fine and medium roots; strongly acid; clear wavy boundary.

Bg1—6 to 27 inches; light brownish gray (10YR 6/2) sandy clay loam; common fine prominent yellowish brown (10YR 5/8) masses of iron accumulation; massive; friable; strongly acid; gradual wavy boundary.

Bg2—27 to 47 inches; gray (10YR 5/1) sandy clay loam; common medium prominent yellowish brown (10YR 5/8) masses of iron accumulation; massive; friable; common thin strata of sand and loamy sand; strongly acid; gradual wavy boundary.

2Cg—47 to 80 inches; light gray (10YR 7/2) loamy sand; common medium prominent yellowish brown (10YR 5/8) masses of iron accumulation; single grained; loose; strongly acid.

Reaction is very strongly acid or strongly acid throughout, except where lime has been applied. Some pedons have common dark concretions.

The A horizon has hue of 10YR, value of 2 to 5, and chroma of 1 to 3.

The Bg horizon has hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 1 or 2. It has few or common masses of iron accumulation in shades of yellow and red. It is loam, sandy clay loam, or clay loam. The 10- to 40-inch control section has an average of 20 to 35 percent clay and has 15 percent or more fine sand or coarser particles.

The Cg horizon has hue of 10YR to 5Y, value of 3 to 7, and chroma of 1 to 2; has hue of 5GY to 5BG, value of 6, and chroma of 1; or is neutral in hue and has value of 4 to 6. It has few or common masses of iron accumulation in shades of yellow and red. The fine-earth fraction is sand, loamy sand, loamy fine sand, sandy loam, fine sandy loam, loam, sandy clay loam, or clay loam. Except for thin lenses in some pedons, the sandy textures are commonly below a depth of 40 inches.

The Ab horizon, where present, has hue of 7.5YR to 2.5Y, value of 3, and chroma of 1 or 2. It is sandy loam, fine sandy loam, loam, or sandy clay loam.

Lakeland Series

The Lakeland series consists of very deep, excessively drained, rapidly permeable soils that formed in marine sands (fig. 15). These soils are on summits, shoulders, and side slopes in the uplands. Slopes range from 0 to 12 percent. These soils are thermic, coated Typic Quartzipsamments.

Lakeland soils are geographically associated with Bonifay, Chipley, Chipola, Foxworth, and Troup soils. Bonifay, Chipola, and Troup soils have an argillic horizon below a depth of 40 inches. Chipley soils are somewhat poorly drained. Foxworth soils are moderately well drained.

Typical pedon of Lakeland sand, 0 to 5 percent slopes; about 4 miles west of Clarksville and 1,900 feet north of State Road 20; about 10 feet east and 1,900 feet north of the southwest corner of sec. 33, T. 1 N., R. 10 W.

A—0 to 6 inches; brown (10YR 5/3) sand; few uncoated sand grains; weak fine granular structure; very friable; common fine and few medium roots; very strongly acid; clear smooth boundary.

C1—6 to 37 inches; yellow (10YR 7/6) sand; single grained; loose; few fine roots; very strongly acid; diffuse smooth boundary.

C2—37 to 58 inches; brownish yellow (10YR 6/6) sand; single grained; loose; very strongly acid; diffuse smooth boundary.

C3—58 to 80 inches; very pale brown (10YR 7/4) sand; single grained; loose; very strongly acid.

Reaction ranges from very strongly acid to moderately acid throughout, except where lime has been applied. All horizons are sand or fine sand. In the control section, the content of silt plus twice the content of clay ranges from 5 to 10 percent, by weight. Some pedons have up to 5 percent, by volume, small quartz pebbles.

The A or Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 1 to 4.

The C horizon has hue of 10YR, value of 7 or 8, and chroma of 4 to 8; hue of 2.5YR, value of 5 or 6, and chroma of 6 to 8; or hue of 7.5YR, value of 5 or 6, and chroma of 6 to 8. In some pedons, it has small splotches of white or light gray, uncoated sand grains. The color of these splotches is due to the color of the uncoated sand grains and is not indicative of wetness.

Leefield Series

The Leefield series consists of very deep, somewhat poorly drained, moderately slowly permeable soils that formed in deposits of sandy and loamy marine sediments. These soils are on summits, shoulder slopes, and side slopes in the uplands. Slopes range from 0 to 8 percent. These soils are loamy, siliceous, subactive, thermic Arenic Plinthaquic Paleudults.

Leefield soils are geographically associated with Alapaha, Albany, Dothan, Florala, Fuquay, Garcon, Plummer, Robertsdale, and Stilson soils. Alapaha soils are poorly drained. Albany and Plummer soils have an argillic horizon at a depth of 40 to 80 inches. Dothan, Florala, and Robertsdale soils have an argillic horizon within a depth of 20 inches. Also, Dothan soils are well drained. Fuquay soils are well drained. Garcon soils have a decrease in clay content of 20 percent or more within a depth of 60 inches. Stilson soils are moderately well drained.

Typical pedon of Leefield loamy sand, 0 to 5 percent slopes; about 2,900 feet west and 40 feet north of the southeast corner of sec. 3, T. 1 N., R. 9 W.

Ap—0 to 12 inches; dark gray (10YR 4/1) loamy sand; weak fine granular structure; very friable; many fine and few medium roots; strongly acid; abrupt smooth boundary.

E1—12 to 21 inches; pale yellow (2.5Y 7/4) loamy sand; few splotches of white (10YR 8/1) uncoated sand grains; moderate medium granular structure; friable; common fine and few medium roots; very strongly acid; clear smooth boundary.

E2—21 to 34 inches; pale yellow (2.5Y 7/4) loamy sand; many fine and medium prominent yellowish red (5YR 5/8) masses of iron accumulation; few splotches of white (10YR 8/1) uncoated sand grains; moderate medium granular structure; friable; few fine roots; strongly acid; clear smooth boundary.

Btvg1—34 to 61 inches; light gray (10YR 7/2) fine sandy loam; many medium and coarse prominent strong brown (7.5YR 5/6) and common fine and medium prominent red (2.5YR 4/8) masses of iron accumulation; weak medium subangular blocky structure; friable; sand grains bridged and coated with clay; about 5 percent, by volume, firm plinthite nodules; very strongly acid; clear wavy boundary.

Btvg2—61 to 80 inches; light gray (2.5Y 7/2) sandy loam; many coarse prominent red (10R 5/8) and common medium distinct light yellowish brown (2.5Y 6/4) masses of iron accumulation; moderate medium subangular blocky structure; firm; sand grains bridged and coated with clay; about 10 percent, by volume, firm plinthite nodules; very strongly acid.

The thickness of the solum ranges from 60 to more than 90 inches. Reaction is very strongly acid or strongly acid throughout, except where lime has been applied. The depth to a horizon that has more than 5 percent plinthite ranges from 30 to 60 inches.

The A or Ap horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 1 or 2.

The E horizon has hue of 10YR or 2.5Y, value of 5 to 8, and chroma of 2 to 8. It has few or common masses of iron accumulation in shades of yellow and red and iron depletions in shades of gray. It is sand, fine sand, or loamy sand.

The BE horizon, where present, has hue of 10YR or 2.5Y, value of 6 or 7 and chroma of 3 to 8. It has common or many masses of iron accumulation in shades of yellow and red and iron depletions in shades of gray. It is loamy sand or sandy loam.

The Bt horizon, where present, has hue of 10YR or 2.5Y and value and chroma of 4 to 8. It has common or many masses of iron accumulation in shades of yellow and red and iron depletions in shades of gray. It is sandy loam, fine sandy loam, or sandy clay loam. The upper 20 inches of the Bt horizon is 15 to 25 percent clay.

The Btv horizon, where present, has hue of 10YR or 2.5Y, value of 4 to 8, and chroma of 3 to 8. The Btvg horizon has hue of 10YR or 2.5Y, value of 4 to 8, and chroma of 1 or 2; or it is neutral in hue and has value of 4 to 8. It is commonly variegated in shades of gray, brown, and red. It has common or many masses of iron accumulation in shades of yellow and red and iron depletions in shades of gray. It has the same range of textures as the Bt horizon.

Lucy Series

The Lucy series consists of very deep, well drained, moderately permeable soils that formed in loamy and sandy marine sediments. These soils are on summits, shoulders, and side slopes in the uplands. Slopes range from 0 to 8 percent. These soils are loamy, kaolinitic, thermic Arenic Kandiudults.

Lucy soils are geographically associated with Chipola, Lakeland, Orangeburg, and Troup soils. Chipola soils have a decrease in clay content of 20 percent or more within a depth of 60 inches. Lakeland soils are sandy throughout. Orangeburg soils have an argillic horizon at a depth of less than 20 inches. Troup soils have a loamy subsoil at a depth of 40 to 80 inches.

Typical pedon of Lucy loamy sand, 0 to 2 percent slopes; about 1,500 feet east and 25 feet north of the southwest corner of sec. 1, T. 2 N., R. 9 W.

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) loamy sand; weak fine granular structure; very friable; many fine and few medium roots; moderately acid; clear smooth boundary.

E1—6 to 18 inches; reddish yellow (7.5YR 6/6) loamy sand; weak fine granular structure; friable; few iron concretions; few fine and medium roots; moderately acid; clear smooth boundary.

E2—18 to 34 inches; strong brown (7.5YR 5/6) loamy sand; weak fine granular structure; friable; few iron concretions; few fine and medium roots; strongly acid; clear smooth boundary.

Bt1—34 to 52 inches; red (2.5YR 4/8) sandy loam; weak fine subangular blocky structure parting to weak fine granular; friable; sand grains bridged and coated with clay; strongly acid; gradual smooth boundary.

Bt2—52 to 57 inches; red (2.5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; friable; thin faint clay films on ped faces; strongly acid; clear smooth boundary.

Bt3—57 to 80 inches; red (2.5YR 4/6) sandy clay loam; common coarse distinct pink (7.5YR 7/4) splotches; weak coarse subangular blocky structure; friable; thin faint clay films on ped faces; many iron concretions in the upper part; strongly acid.

The solum is more than 60 inches thick. Reaction ranges from very strongly acid to moderately acid in the A and E horizons and is very strongly acid or strongly acid in the B horizon.

The A or Ap horizon has hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 2 or 3.

The E horizon has hue of 7.5YR or 10YR, value of 4 to 7, and chroma of 3 to 8. It is sand or loamy sand.

The Bt horizon dominantly has hue of 2.5YR or 5YR, value of 4 to 6, and chroma of 6 to 8. In some pedons where the upper part of the Bt horizon is less than 10 inches thick, however, the hue is 7.5YR or 10YR. The upper part of the Bt horizon has 10 to 30 percent clay and is sandy loam or sandy clay loam. The lower part has 20 to 35 percent clay and is sandy clay loam or clay loam. Splotches, where present, have chroma of 4 or higher. The content of plinthite is less than 5 percent, by volume. The content of rounded quartz pebbles plus ironstone nodules is less than 10 percent, by volume.

Ochlockonee Series

The Ochlockonee series consists of very deep, well drained, moderately rapidly permeable soils that formed in alluvium. These soils are on flood plains along the Apalachicola River and are subject to occasional flooding of brief duration. Slopes range from 0 to 2 percent. These soils are coarse-loamy, siliceous, active, acid, thermic Typic Udifluvents.

Ochlockonee soils are geographically associated with Bibb, Brickyard, Dunbar, Duplin, Kinston, Rutlege, Surrency, and Wahee soils. Bibb, Kinston, Rutlege, and Surrency soils have less clay in the substratum than the Ochlockonee soils and are very poorly drained. Brickyard soils are also very poorly drained. Dunbar and Duplin soils do not have a decrease in clay content of 20 percent or more within a depth of 60 inches. Also, Dunbar soils are somewhat poorly drained. Wahee soils have more clay in the substratum than the Ochlockonee soils and are somewhat poorly drained.

Typical pedon of Ochlockonee loam, in an area of Wahee-Ochlockonee complex, commonly flooded; about 1,100 feet east and 2,200 feet north of the southwest corner of sec. 18, T. 2 N., R. 7 W.

A—0 to 4 inches; very dark grayish brown (10YR 3/2) loam; weak fine subangular blocky structure; very friable; many fine and few medium roots; few fine flakes of mica; moderately acid; gradual smooth boundary.

C1—4 to 31 inches; dark yellowish brown (10YR 4/4) sandy loam; 2- to 4-inch-thick strata of light yellowish brown (10YR 6/4) loamy sand; massive; very friable; few fine roots; few fine flakes of mica; strongly acid; gradual smooth boundary.

C2—31 to 48 inches; dark yellowish brown (10YR 4/6)

Figure 11.—Typical profile of Alapaha loamy sand. The shovel is 42 inches long.

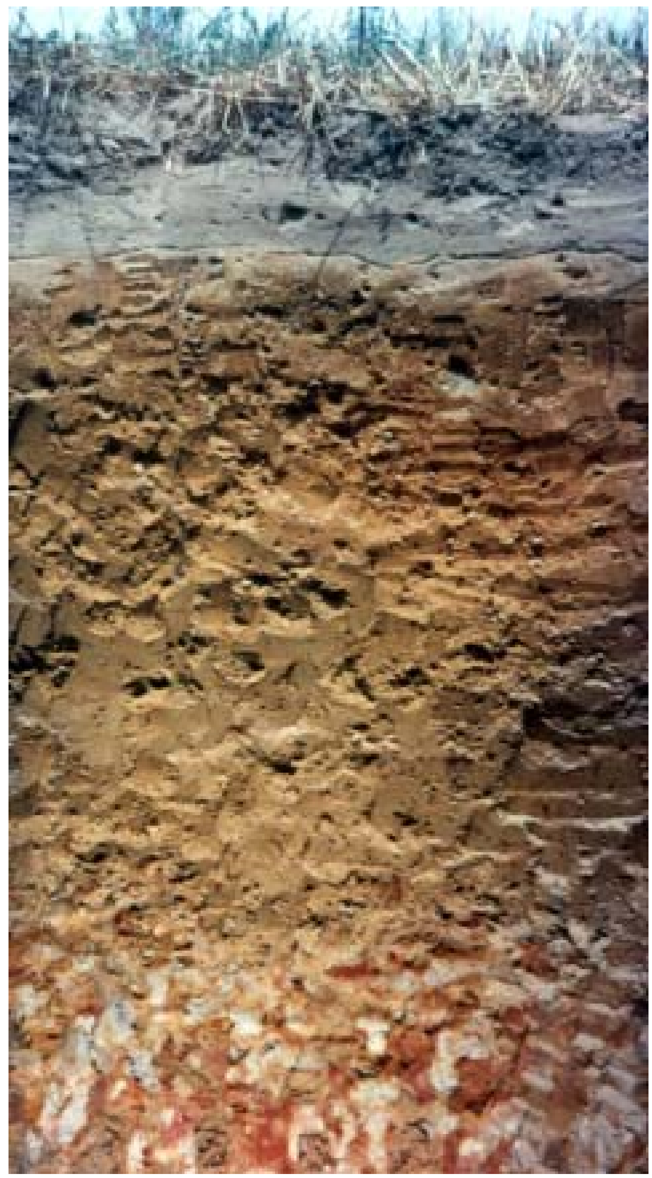

Figure 12.—Typical profile of Dothan sandy loam, 0 to 2 percent slopes.

Figure 13.—Typical profile of Foxworth sand, 0 to 5 percent slopes.

Figure 14.—Typical profile of Kenansville loamy sand. The shovel is 42 inches long.

Figure 15.—Typical profile of Lakeland sand. The shovel is 42 inches long.

Figure 16.—Typical profile of Orangeburg loamy sand, 0 to 2 percent slopes. The shovel is 42 inches long.

Figure 17.—Typical profile of Pantego mucky fine sandy loam. The shovel is 42 inches long.

Figure 18.—Typical profile of Plummer sand. The shovel is 42 inches long.

loamy sand; 4-inch-thick strata of sandy loam; massive; very friable; few fine and medium roots; few flakes of mica; strongly acid; gradual smooth boundary.

C3—48 to 61 inches; dark yellowish brown (10YR 4/6) loamy sand; few fine prominent strong brown (7.5YR 5/8) masses of iron accumulation; 2-inch-thick strata of light yellowish brown (10YR 6/4) sandy loam; massive; very friable; common fine flakes of mica; strongly acid; gradual smooth boundary.

C4—61 to 80 inches; dark brown (10YR 4/3) loam; few fine prominent yellowish brown (10YR 5/8) masses of iron accumulation and many fine distinct light gray (10YR 7/2) iron depletions; 4- to 6-inch-thick strata of light yellowish brown (10YR 6/4) loamy sand; massive; very friable; common flakes of mica; strongly acid.

Reaction ranges from very strongly acid to slightly acid in the A horizon and is very strongly acid or strongly acid below the A horizon, except where lime has been applied.

The A horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 to 4.

Some pedons have a buried horizon below a depth of 25 inches. The buried horizon has the same colors as the A horizon.

The C horizon dominantly has hue of 5YR to 10YR, value of 4 to 6, and chroma of 4 to 8. In places, however, the lower part of the horizon has value and chroma of 3. In some pedons, the C horizon has few to common iron depletions in shades of gray and masses of iron accumulation in shades of yellow and red below a depth of 20 inches. The C horizon has few or common flakes of mica. The texture is typically sandy loam or loamy sand. In some pedons, however, the C horizon has thin strata of sand, loam, fine sandy loam, sandy clay loam, or clay loam. The strata are less than 10 inches thick.

Orangeburg Series

The Orangeburg series consists of very deep, well drained, moderately permeable soils that formed in loamy and clayey sediments (fig. 16). These soils are on summits, shoulders, and side slopes in the uplands. Slopes range from 0 to 8 percent. These soils are fine-loamy, kaolinitic, thermic Typic Kandiudults.

Orangeburg soils are geographically associated with Chipola, Dothan, Lucy, and Troup soils. Chipola soils have a decrease in clay content of 20 percent or more within a depth of 60 inches. Dothan soils have yellower colors in the argillic horizon than the Orangeburg soils and have more than 5 percent plinthite. Lucy soils have an argillic horizon at a depth of 20 to 40 inches. Troup soils have an argillic horizon at a depth of 40 to 80 inches.

Typical pedon of Orangeburg loamy sand, 0 to 2 percent slopes; about 2,700 feet east and 2,030 feet south of the northwest corner of sec. 9, T. 2 N., R. 9 W.

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) loamy sand; weak fine granular structure; very friable; many fine and few medium roots; moderately acid; clear smooth boundary.

BE—9 to 16 inches; strong brown (7.5YR 5/6) fine sandy loam; few medium prominent red (2.5YR 5/8) splotches; weak fine granular structure; very friable; common fine roots; moderately acid; diffuse smooth boundary.

Bt1—16 to 24 inches; red (2.5YR 5/8) sandy clay loam; weak fine subangular blocky structure; friable; few faint clay films on ped faces; moderately acid; gradual smooth boundary.

Bt2—24 to 50 inches; red (2.5YR 4/8) sandy clay loam; moderate fine subangular blocky structure; friable; few faint clay films on ped faces; strongly acid; gradual smooth boundary.

Bt3—50 to 80 inches; red (2.5YR 4/8) sandy clay; few medium prominent brownish yellow (10YR 6/6) splotches; moderate fine subangular blocky structure; friable; few faint clay films on ped faces; very strongly acid.

The thickness of the solum typically is 72 to 96 inches but ranges from 70 to 120 inches. Reaction ranges from very strongly acid to moderately acid in the A, BE, and BA horizons and in the upper part of the Bt horizon, except where lime has been applied, and is very strongly acid or strongly acid in the lower part of the Bt horizon. The texture is sandy loam, fine sandy loam, or sandy clay loam. The content of ironstone nodules ranges from 0 to 10 percent throughout.

The A or Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 2 to 4.

The E horizon, where present, has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 3 to 6. It is sand, loamy sand, or sandy loam.

The BA or BE horizon has hue of 2.5YR to 10YR, value of 4 to 6, and chroma of 4 to 8. It is sandy loam or fine sandy loam.

The Bt horizon dominantly has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 to 8. In some pedons, however, the hue is 7.5YR within the upper 10 inches or is 10R in the lower part of the horizon. The upper part of the Bt horizon is sandy clay loam. The lower part is sandy clay loam or is sandy clay that is less than 45 percent clay. The quantity of brownish masses of iron accumulation in the lower part of the Bt horizon ranges from none to common. These masses are relic redoximorphic features. The upper 20 inches of the Bt horizon is 20 to 35 percent clay and less than 20 percent silt.

The BC horizon, where present, has hue of 2.5YR to 7.5YR, value of 4 or 5, and chroma of 6 to 8. It has few to many masses of iron accumulation in shades of yellow and red. It is sandy loam, sandy clay loam, or sandy clay.

Pamlico Series

The Pamlico series consists of deep, very poorly drained, slowly permeable to very rapidly permeable soils that formed in decomposed organic material underlain by sandy sediments. These soils are on nearly level flood plains that are subject to frequent flooding of very long duration, or they are in bays and depressions that are subject to ponding of long duration. Slopes are less than 1 percent. These soils are sandy or sandy-skeletal, siliceous, dysic, thermic Terric Haplosaprists.

Pamlico soils are geographically associated with Bibb, Croatan, Dorovan, Kinston, Pantego, and Rutlege soils. Bibb and Kinston soils are very poorly drained mineral soils that are stratified. Croatan soils have loamy materials below the organic horizon. The organic horizons in the Dorovan soils have a combined thickness of more than 51 inches. Pantego and Rutlege soils are very poorly drained mineral soils.

Typical pedon of Pamlico muck, in an area of Dorovan-Pamlico-Rutlege association, depressional; about 2,600 feet north and 500 feet east of the southwest corner of sec. 4, T. 1 S., R. 11 W.

Oe—0 to 7 inches; very dark brown (7.5YR 2/2) mucky peat; about 40 percent fiber after rubbing; friable; fibers are moss, leaves, twigs, and roots; extremely acid; gradual wavy boundary.

Oa—7 to 31 inches; black (10YR 2/1) muck; less than 10 percent fiber after rubbing; weak coarse granular structure; friable; common fine and few medium roots; extremely acid; gradual wavy boundary.

Cg—31 to 80 inches; light brownish gray (10YR 6/2) sand; single grained; loose; extremely acid.

The organic material is 16 to 51 inches thick and is over dominantly sandy sediments. Reaction is extremely acid (pH less than 4.5 in 0.01M calcium chloride) in the organic layers and ranges from extremely acid to strongly acid in the underlying mineral horizons.

The Oi or Oe horizon has hue of 7.5YR or 10YR, value of 2 or 3, and chroma of 1 or 2; or it is neutral in hue and has value of 2 or 3. The content of fiber is more than 33 percent after rubbing.

The Oa horizon has hue of 7.5YR or 10YR, value of 2 or 3, and chroma of 1 or 2; or it is neutral in hue and has value of 2 or 3. The content of fiber is 10 to 33 percent unrubbed and less than 10 percent after rubbing.

The Cg horizon has hue of 7.5YR or 10YR, value of 2 to 6, and chroma of 1 or 2; or it is neutral in hue and has value of 2 to 6. By weighted average, the upper 12 inches of the Cg horizon or the part of the Cg horizon that is within a depth of 51 inches, whichever is thicker, is sandy. It is typically sand, fine sand, loamy sand, or loamy fine sand. In some pedons, however, it is the mucky analogs of those textures. In places, a thin subhorizon of the Cg horizon within a depth of 51 inches is loamy. The texture of the subhorizon is typically sandy loam, fine sandy loam, or sandy clay loam. Below a depth of 51 inches, the texture of the Cg horizon is variable, typically ranging from sand to sandy clay loam.

Pansey Series

The Pansey series consists of very deep, poorly drained, slowly permeable soils that formed in loamy marine sediments. These soils are on flats and in depressions in interstream divides in the uplands. Slopes range from 0 to 2 percent. These soils are fine-loamy, siliceous, semiactive, thermic Plinthic Paleaquults.

Pansey soils are geographically associated with Alapaha, Bladen, Croatan, Florala, Pantego, Plummer, and Robertsdale soils. Alapaha soils have an argillic horizon at a depth of 20 to 40 inches. Bladen soils have 35 to 55 percent clay in the upper part of the argillic horizon. Croatan and Pantego soils are very poorly drained. Also, Pantego soils have an umbric epipedon. Florala and Robertsdale soils are somewhat poorly drained. Plummer soils have a subsoil at a depth of 40 to 80 inches.

Typical pedon of Pansey sandy loam; about 3,000 feet northeast of State Road 71; about 150 feet west and 300 feet south of the northeast corner of sec. 3, T. 1 N., R. 9 W.

A—0 to 8 inches; very dark gray (N 3/0) sandy loam; moderate medium granular structure; very friable; many fine roots; very strongly acid; clear wavy boundary.

Bg—8 to 14 inches; light brownish gray (10YR 6/2) sandy loam; many fine and medium prominent brownish yellow (10YR 6/8) masses of iron accumulation; weak fine and medium subangular blocky structure; friable; common fine roots; very strongly acid; gradual wavy boundary.

Btg—14 to 23 inches; light gray (10YR 7/1) sandy clay loam; many fine, medium, and coarse prominent yellow (10YR 7/6) and few fine and medium prominent yellowish red (5YR 5/6) masses of iron accumulation; moderate medium subangular blocky structure; firm; sand grains bridged and coated with clay; very strongly acid; gradual wavy boundary.

Btvg—23 to 50 inches; variegated reddish yellow (7.5YR 6/6), light gray (10YR 7/1), and red (10R 4/8) sandy clay loam; masses of iron accumulation are in shades of yellow and red; iron depletions are in shades of gray; moderate coarse subangular blocky structure; firm; sand grains bridged and coated with clay; about 7 percent, by volume, firm plinthite nodules; very strongly acid; gradual wavy boundary.

B´tg1—50 to 65 inches; gray (10YR 6/1) clay; common fine prominent strong brown (7.5YR 5/8) masses of iron accumulation; moderate coarse subangular blocky structure; firm; sand grains bridged and coated with clay; very strongly acid; abrupt wavy boundary.

B´tg2 —65 to 80 inches; gray (N 6/0) clay; weak coarse angular blocky structure; firm; sand grains bridged and coated with clay; very strongly acid.

The solum is more than 60 inches thick. Reaction is very strongly acid or strongly acid throughout, except where lime has been applied. The particle-size control section is less than 20 percent silt.

The A or Ap horizon has hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 1 or 2; or it is neutral in hue and has value of 2 to 4.

The E horizon, where present, has hue of 10YR, value of 4 to 6, and chroma of 1 or 2. It is fine sandy loam, sandy loam, loamy sand, or loamy fine sand.

The Bg horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2; or it is neutral in hue and has value of 5 to 7. It has common or many masses of iron accumulation in shades of yellow and red. It is sandy loam or sandy clay loam.

The Btg and B´tg horizons have hue of 10YR, value of 5 to 7, and chroma of 1 or 2; or they are neutral in hue and have value of 5 to 7. They have common or many masses of iron accumulation in shades of yellow and red and iron depletions in shades of gray. The texture of the Btg horizon is sandy clay loam.

The Btvg horizon is variegated in shades of gray, yellow, and red; or it has colors similar to those of the Btg horizon. The Btvg horizon is sandy clay loam or sandy clay.

Pantego Series

The Pantego series consists of very deep, very poorly drained, moderately permeable soils that formed in loamy marine sediments (fig. 17). These soils are in depressions in the uplands and on the coastal lowlands. These soils are subject to ponding of long duration. Slopes range from 0 to 2 percent. These soils are fine-loamy, siliceous, semiactive, thermic Umbric Paleaquults.

Pantego soils are geographically associated with Bladen, Brickyard, Croatan, Dorovan, Dunbar, Pamlico, Pansey, Robertsdale, and Surrency soils. Bladen and Pansey soils are poorly drained. Also, Pansey soils do not have an umbric epipedon. Brickyard soils have more clay in the argillic horizon than the Pantego soils. Croatan, Dorovan, and Pamlico soils have more than 16 inches of organic material. Dunbar and Robertsdale soils are somewhat poorly drained. Surrency soils have an argillic horizon at a depth of 20 to 40 inches.

Typical pedon of Pantego mucky fine sandy loam, in an area of Croatan, Surrency, and Pantego soils, depressional; about 20 feet north and 1,200 feet east of the southwest corner of sec. 34, T. 2 N., R. 9 W.

A—0 to 14 inches; black (10YR 2/1) mucky fine sandy loam; weak fine granular structure; friable; many fine roots; very strongly acid; clear smooth boundary.

Bt—14 to 39 inches; very dark gray (10YR 3/1) sandy clay loam; weak fine subangular blocky structure; friable; sand grains bridged and coated with clay; very strongly acid; gradual smooth boundary.

Btg—39 to 80 inches; gray (10YR 5/1) sandy clay loam; few medium prominent yellowish brown (10YR 5/6) masses of iron accumulation; weak medium subangular blocky structure; friable; sand grains bridged and coated with clay; very strongly acid.

The solum is more than 60 inches thick. Reaction ranges from extremely acid to strongly acid throughout.

The Oa horizon, where present, has hue of 10YR, value of 2 or 3, and chroma of 1; or it is neutral in hue and has value of 2. The content of fibers ranges from 10 to 33 percent unrubbed and is less than 10 percent after rubbing. The Oa horizon is less than 8 inches thick.

The A horizon has hue of 10YR or 2.5Y, value of 2 or 3, and chroma of 1 or 2; or it is neutral in hue and has value of 2 or 3.

The Eg horizon, where present, has hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 1 or 2; or it is neutral in hue and has value of 4 to 7. The quantity of masses of iron accumulation in shades of yellow and red ranges from none to common. The texture is sand, fine sand, loamy sand, or loamy fine sand.

The Bt horizon has hue of 10YR or 2.5Y, value of 3, and chroma of 1 or 2. It is sandy loam, sandy clay loam, clay loam, or sandy clay.

The Btg horizon has hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 1 or 2. It has few or common masses of iron accumulation in shades of red or yellow. It is sandy loam, sandy clay loam, clay loam, or sandy clay.

The BC horizon, where present, has hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 1 or 2. It is sandy loam, fine sandy loam, sandy clay loam, clay loam, or sandy clay.

The Cg horizon, where present, has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 or 2. It has few or common masses of iron accumulation in shades of red or yellow. It is sandy clay loam, clay loam, sandy loam, fine sandy loam, loamy fine sand, fine sand, loamy sand, or sand.

Plummer Series

The Plummer series consists of very deep, poorly drained, moderately permeable soils that formed in sandy and loamy marine sediments (fig. 18). These soils are on flats and in poorly defined drainageways in the coastal lowlands and on the uplands. Slopes range from 0 to 5 percent. These soils are loamy, siliceous, subactive, thermic Grossarenic Paleaquults.

Plummer soils are geographically associated with Alapaha, Albany, Bibb, Chipley, Kinston, Leefield, Pansey, Pottsburg, Rutlege, and Surrency soils. Alapaha and Leefield soils have an argillic horizon at a depth of 20 to 40 inches. Also, Leefield soils are somewhat poorly drained. Albany soils have an argillic horizon at a depth of 40 to 80 inches and are somewhat poorly drained. Bibb and Kinston soils are stratified and very poorly drained. Chipley and Pottsburg soils are sandy to a depth of at least 80 inches. Also, Chipley soils are somewhat poorly drained and Pottsburg soils have a spodic horizon. Pansey soils have an argillic horizon within a depth of 20 inches. Rutlege and Surrency soils are very poorly drained.

Typical pedon of Plummer sand, 0 to 5 percent slopes; about 950 feet north and 3,000 feet east of the southwest corner of sec. 21, T. 1 S., R. 11 W.

A—0 to 8 inches; very dark gray (10YR 3/1) sand; weak fine granular structure; very friable; common fine roots; extremely acid; clear smooth boundary.

Eg1—8 to 16 inches; grayish brown (10YR 5/2) sand; single grained; loose; few fine roots; very strongly acid; clear smooth boundary.

Eg2—16 to 31 inches; light gray (2.5Y 7/2) sand; few fine prominent strong brown (7.5YR 5/8) masses of iron accumulation; single grained; loose; very strongly acid; clear smooth boundary.

Eg3—31 to 41 inches; light gray (2.5Y 7/2) sand; common fine prominent brownish yellow (10YR 6/6) masses of iron accumulation; common splotches of white (10YR 8/1) uncoated sand; single grained; loose; very strongly acid; gradual smooth boundary.

Eg4—41 to 68 inches; light gray (2.5Y 7/2) sand; many medium distinct pale yellow (2.5Y 7/4) and many fine prominent brownish yellow (10YR 6/6) masses of iron accumulation; single grained; loose; very strongly acid; clear smooth boundary.

Btg—68 to 80 inches; light gray (10YR 7/2) sandy loam; few coarse distinct light yellowish brown (10YR 6/4) and few fine prominent brownish yellow (10YR 6/8) masses of iron accumulation; weak coarse subangular blocky structure; very friable; sand grains bridged and coated with clay; very strongly acid.

The thickness of the solum ranges from 72 to 100 inches. Reaction ranges from extremely acid to strongly acid throughout, except where lime has been applied.

The A or Ap horizon has hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 1 or 2; or it is neutral in hue and has value of 2 to 4. Where value is 2 or 3, the horizon is less than 8 inches thick.

The Eg horizon has hue of 10YR or 2.5Y, value of 5 to 8, and chroma of 1 or 2; or it is neutral in hue and has value of 5 to 8. It has few or common masses of iron accumulation in shades of yellow and red. It is sand, fine sand, or loamy sand.

The BEg horizon, where present, has hue of 10YR to 5Y, value of 5 to 7, and chroma of 1 or 2; or it is neutral in hue and has value of 5 to 7. It is loamy sand or loamy fine sand.

The Btg horizon has hue of 10YR to 5Y, value of 5 to 7, and chroma of 1 or 2; or it is neutral in hue and has value of 5 to 7. It has few to many masses of iron accumulation in shades of yellow and red. It is sandy loam, fine sandy loam, or sandy clay loam. In some pedons, it has pockets of loamy sand and sandy clay. The Btg horizon is 13 to 35 percent clay.

Pottsburg Series

The Pottsburg series consists of very deep, poorly drained, moderately permeable soils that formed in sandy marine deposits. These soils are on flats, in areas of flatwoods, on rises, and on knolls. They are in the coastal lowlands. Slopes range from 0 to 2 percent. These soils are sandy, siliceous, thermic Grossarenic Alaquods.

Pottsburg soils are geographically associated with Bibb, Chipley, Hurricane, Kinston, Plummer, and Rutlege soils. Bibb and Kinston soils are stratified and very poorly drained. Chipley and Hurricane soils are somewhat poorly drained. Also, Chipley soils do not have a spodic horizon. Plummer soils do not have a spodic horizon and have an argillic horizon at a depth of 40 to 80 inches. Rutlege soils are very poorly drained.

Typical pedon of Pottsburg sand; about 1,500 feet east and 20 feet south of the northwest corner of sec. 8, T. 1 S., R. 10 W.

Ap—0 to 7 inches; gray (10YR 5/1) sand; single grained; loose; many fine and few medium roots; extremely acid; clear smooth boundary.

Eg1—7 to 14 inches; dark grayish brown (10YR 4/2) sand; single grained; loose; few fine and medium roots; extremely acid; clear smooth boundary.

Eg2—14 to 22 inches; light gray (10YR 7/2) sand; few fine prominent strong brown (7.5YR 5/8) masses of iron accumulation; single grained; loose; very strongly acid; clear smooth boundary.

Eg3—22 to 52 inches; white (10YR 8/2) sand; many medium prominent brownish yellow (10YR 6/8) and strong brown (7.5YR 5/8) masses of iron accumulation; single grained; loose; strongly acid; clear smooth boundary.

EBg—52 to 58 inches; light brownish gray (10YR 6/2) loamy sand; single grained; loose; strongly acid; clear smooth boundary.

Bh—58 to 80 inches; black (10YR 2/1) sand; massive; friable; sand grains well coated with organic matter; very strongly acid.

Reaction ranges from extremely acid to slightly acid in the A and E horizons, except where lime has been applied, and from extremely acid to moderately acid in the Bh horizon.

The A or Ap horizon has hue of 10YR or 2.5Y, value of 2 to 5, and chroma of 1 or 2; or it is neutral in hue and has value of 2 to 5.

The E horizon, where present, has hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 3. It is sand or fine sand.

The Eg horizon has hue of 10YR or 2.5Y, value of 5 to 8, and chroma of 1 or 2. The quantity of masses of iron accumulation in shades of yellow and red and iron depletions in shades of gray ranges from none to common. The texture is sand or fine sand.

Some pedons have a transitional horizon between the E horizon and the Bh horizon. The transitional horizon does not meet the requirements of a spodic horizon. It can be an EB, BE, or B/E horizon. It has hue of 7.5YR, value of 4 to 6, and chroma of 2. It is sand, fine sand, loamy fine sand, or loamy sand.

The Bh horizon has hue of 5YR or 7.5YR, value of 2 or 3, and chroma of 1 to 3. It is sand or fine sand.

Robertsdale Series

The Robertsdale series consists of very deep, somewhat poorly drained, slowly permeable soils that formed in loamy marine sediments. These soils are in flat areas that are depressed relative to surrounding upland landforms. Slopes range from 0 to 2 percent. These soils are fine-loamy, siliceous, semiactive, thermic Plinthaquic Paleudults.

Robertsdale soils are geographically associated with Alapaha, Dothan, Dunbar, Duplin, Florala, Leefield, Pansey, Pantego, and Stilson soils. Alapaha soils are poorly drained. Dothan, Duplin, and Stilson soils are better drained than the Robertsdale soils. Dunbar soils have more than 35 percent clay in the upper 20 inches of the argillic horizon. Florala soils have less than 18 percent clay in the upper 20 inches of the argillic horizon. Leefield soils have an argillic horizon at a depth of 20 to 40 inches. Pansey soils are poorly drained or very poorly drained. Pantego soils are very poorly drained.

Typical pedon of Robertsdale fine sandy loam; about 2,000 feet west and 600 feet north of the southeast corner of sec. 7, T. 2 S., R. 9 W.

Acp—0 to 7 inches; very dark gray (10YR 3/1) fine sandy loam; weak fine granular structure; very friable; many fine and common medium roots; common medium iron concretions; moderately acid; clear wavy boundary.

Btc—7 to 13 inches; brown (10YR 5/3) sandy clay loam; common coarse prominent reddish yellow (7.5YR 6/6) masses of iron accumulation; weak coarse subangular blocky structure; friable; sand grains bridged and coated with clay; common fine and few medium roots; common fine and medium iron concretions; about 2 percent, by volume, plinthite nodules; strongly acid; gradual wavy boundary.

Btcv—13 to 32 inches; yellowish brown (10YR 5/6) sandy clay loam; common coarse distinct reddish yellow (7.5YR 6/6) masses of iron accumulation and common coarse prominent gray (10YR 5/1) iron depletions; weak coarse subangular blocky structure; friable; sand grains bridged and coated with clay; common fine and medium iron concretions; about 10 percent, by volume, plinthite nodules; strongly acid; clear wavy boundary.

Btcvg—32 to 80 inches; variegated strong brown (7.5YR 5/6), light gray (10YR 7/1), and red (2.5YR 4/6) sandy clay loam; the areas in shades of yellow, brown, and red are iron accumulations; the gray areas are iron depletions; moderate coarse subangular blocky structure; firm; sand grains bridged and coated with clay; common medium and coarse iron concretions; about 15 percent, by volume, plinthite nodules; strongly acid.

The solum is more than 60 inches thick. Reaction ranges from very strongly acid to moderately acid throughout, except where lime has been applied. Common or many iron depletions are within a depth of 20 inches. The upper 20 inches of the argillic horizon is 20 to 40 percent silt.

The A, Ap, Acp, or Ac horizon has hue of 10YR, value of 2 to 4, and chroma of 1 or 2. It has 4 to 12 percent, by volume, iron concretions that are up to 7.5 centimeters in diameter.

The EB and Btc horizons, where present, have hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 3 to 6. The quantity of iron depletions in shades of gray and masses of iron accumulation in shades of yellow or brown ranges from none to common. The texture is clay loam, sandy clay loam, or loam.

The Btcv, Btcvg, Btcg, and Btvg horizons, where present, have hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 or 2; or they are variegated in shades of gray, yellow, and red. The texture is loam, sandy clay loam, or clay loam. The content of plinthite ranges from 5 to 30 percent, by volume, in the Btcv and Btcvg horizons. All of the B horizons have 5 to 25 percent, by volume, iron concretions that are up to 2.5 centimeters in diameter.

The Cg horizon, where present, is variegated in shades of gray, yellow, and red. It is sandy clay loam, clay loam, or sandy clay.

Rutlege Series

The Rutlege series consists of very deep, very poorly drained, rapidly permeable soils that formed in sandy sediments. These soils are in depressions that are subject to ponding of very long duration and on flood plains that are subject to flooding of long duration. These soils are on uplands and in the coastal lowlands. Slopes range from 0 to 2 percent. These soils are sandy, siliceous, thermic Typic Humaquepts.

Rutlege soils are geographically associated with Bibb, Croatan, Garcon, Kinston, Pamlico, Plummer, Pottsburg, and Surrency soils. Bibb and Kinston soils are stratified. Croatan and Pamlico soils have more than 16 inches of organic material. Garcon soils are somewhat poorly drained. Plummer and Pottsburg soils are poorly drained. Surrency soils have a loamy subsoil.

Typical pedon of Rutlege sand, in an area of Dorovan-Pamlico-Rutlege association, depressional; about 1,900 feet west and 900 feet north of the southeast corner of sec. 10, T. 1 S., R. 11 W.

A—0 to 13 inches; black (10YR 2/1) sand; weak medium granular structure; very friable; many fine and few medium roots; strongly acid; gradual smooth boundary.

Cg—13 to 80 inches; grayish brown (10YR 5/2) sand; single grained; loose; few fine roots in the upper part; strongly acid.

Reaction ranges from extremely acid to strongly acid throughout, except where lime has been applied. In the 10- to 40-inch control section, the content of silt plus twice the content of clay ranges from 5 to 15 percent.

The A horizon has hue of 10YR to 5Y, value of 2 or 3, and chroma of 1 or 2; or it is neutral in hue and has value of 2 or 3. The quantity of stripped matrixes in shades of gray and masses of iron accumulation in shades of yellow and red ranges from none to many.

The Cg horizon has hue of 10YR to 5Y, value of 4 to 7, and chroma of 1 or 2; or it is neutral in hue and has value of 4 to 7. The quantity of stripped matrixes in shades of gray and masses of iron accumulation in shades of yellow and red ranges from none to many. The texture is sand, fine sand, loamy sand, or loamy fine sand.

Stilson Series

The Stilson series consists of very deep, moderately well drained, moderately permeable soils that formed in sandy and loamy marine sediments. These soils are on summits and shoulders in the uplands. Slopes range from 0 to 5 percent. These soils are loamy, siliceous, subactive, thermic Arenic Plinthic Paleudults.

Stilson soils are geographically associated with Albany, Blanton, Bonifay, Dothan, Florala, Fuquay, Kenansville, and Leefield soils. Albany, Blanton, and Bonifay soils have an argillic horizon at a depth of 40 to 80 inches. Dothan and Fuquay soils are better drained than the Stilson soils. Florala and Leefield soils are somewhat poorly drained. Also, Florala soils have an argillic horizon within a depth of 20 inches. Kenansville soils do not contain plinthite and are sandy below a depth of 40 inches.

Typical pedon of Stilson loamy sand, 0 to 2 percent slopes; about 1,700 feet south and 80 feet east of the northwest corner of sec. 34, T. 2 N., R. 9 W.

Ap—0 to 6 inches; dark gray (10YR 4/1) loamy sand; weak fine granular structure; very friable; many fine and common medium roots; moderately acid; abrupt smooth boundary.

E1—6 to 11 inches; light yellowish brown (2.5Y 6/4) loamy sand; weak fine granular structure; very friable; common fine roots; moderately acid; gradual smooth boundary.

E2—11 to 26 inches; olive yellow (2.5Y 6/6) loamy sand; few medium distinct yellowish brown (10YR 5/6) masses of iron accumulation; weak fine granular structure; very friable; strongly acid; gradual smooth boundary.

E3—26 to 34 inches; brownish yellow (10YR 6/6) loamy sand; many medium and coarse prominent light yellowish brown (2.5Y 6/4) and common medium prominent strong brown (7.5YR 5/8) masses of iron accumulation; weak medium granular structure; friable; about 2 percent, by volume, firm plinthite nodules; strongly acid; clear wavy boundary.

Btv1—34 to 62 inches; brownish yellow (10YR 6/6) sandy loam; many medium and coarse prominent white (N 8/0) iron depletions; many medium prominent red (10R 4/8) and strong brown (7.5YR 5/6) masses of iron accumulation; moderate medium angular blocky structure; firm; sand grains bridged and coated with clay; about 10 percent, by volume, firm plinthite nodules; very strongly acid; gradual wavy boundary.

Btv2—62 to 80 inches; variegated white (N 8/0), yellowish brown (10YR 5/6), light yellowish brown (10YR 6/4), and red (10R 4/8) sandy clay loam; the reddish yellow areas are iron accumulations; the gray areas are iron depletions; moderate medium angular blocky structure; firm; sand grains bridged and coated with clay; few iron concentrations; about 10 percent, by volume, firm plinthite nodules; very strongly acid.

The thickness of the solum ranges from 60 to 90 inches. Reaction is very strongly acid or strongly acid throughout, except where lime has been applied. The depth to a horizon that has 5 percent or more plinthite ranges from 30 to 50 inches. The content of weakly and strongly cemented ironstone pebbles ranges from 0 to 5 percent throughout the profile.

The A or Ap horizon has hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 1 or 2.

The E horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 3 to 6. It is sand or loamy sand.

The Bt horizon, where present, has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 4 to 8. It has few or common masses of iron accumulation in shades of yellow and red and iron depletions in shades of gray at a depth of 5 to 14 inches below the top of the argillic horizon, or it is variegated with the same colors. The texture is sandy loam or sandy clay loam, and the content of silt is less than 20 percent.

The Btv horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 4 to 8. It has common or many masses of iron accumulation in shades of yellow and red and iron depletions in shades of gray; or it is variegated in shades of gray, yellow, or red. The texture is sandy loam or sandy clay loam. The content of plinthite ranges from 5 to 25 percent, by volume.

The B´t horizon, where present, has hue of 7.5YR to 2.5Y, value of 5 to 7, and chroma of 4 to 8. It has common or many masses of iron accumulation in shades of yellow and red and iron depletions in shades of gray; or it is variegated in shades of gray, yellow, and red. The texture is clay loam or sandy clay loam.

The BC horizon, where present, has colors similar to those of the B´t horizon. The texture is sandy clay loam or sandy loam.

Surrency Series

The Surrency series consists of very deep, very poorly drained, moderately permeable soils that formed in sandy and loamy marine sediments. These soils are in depressions on uplands and are subject to ponding of very long duration. Slopes are 0 to 1 percent. These soils are loamy, siliceous, semiactive, thermic Arenic Umbric Paleaquults.

Surrency soils are geographically associated with Bladen, Brickyard, Croatan, Garcon, Kinston, Ochlockonee, Pantego, Plummer, Rutlege, and Wahee soils. Bladen and Plummer soils are poorly drained. Brickyard and Kinston soils are stratified. Croatan soils have more than 16 inches of organic material. Garcon, Ochlockonee, and Wahee soils are better drained than the Surrency soils. Pantego soils have an argillic horizon at a depth of less than 20 inches. Rutlege soils do not have an argillic horizon.

Typical pedon of Surrency mucky sand, in an area of Croatan, Rutlege, and Surrency soils, depressional;

about 1,700 feet west and 2,600 feet south of the northeast corner of sec. 27, T. 2 N., R. 10 W.

A1—0 to 5 inches; black (10YR 2/1) mucky sand; weak medium granular structure; very friable; many fine and medium roots; small bodies of uncoated sand grains; extremely acid; clear wavy boundary.

A2—5 to 8 inches; very dark grayish brown (10YR 3/2) sand; weak medium granular structure; very friable; common fine and medium roots; extremely acid; clear wavy boundary.

Eg—8 to 35 inches; grayish brown (10YR 5/2) sand; single grained; very friable; few fine and medium roots; extremely acid; gradual smooth boundary.

Btg—35 to 80 inches; grayish brown (10YR 5/2) sandy clay loam; common medium distinct yellowish brown (10YR 5/8) masses of iron accumulation; weak medium subangular blocky structure; friable; sand grains bridged and coated with clay; very strongly acid.

The thickness of the solum ranges from 60 to 90 inches. Reaction ranges from extremely acid to strongly acid throughout, except where lime has been applied.

The A horizon has hue of 10YR or 2.5Y, value of 2 or 3, and chroma of 1 or 2; or it is neutral in hue and has value of 2 or 3.

The Eg horizon has hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 1 or 2. The quantity of masses of iron accumulation in shades of yellow and red ranges from none to common. The texture is sand, fine sand, loamy sand, or loamy fine sand.

The Btg horizon has hue of 10YR to 5Y, value of 4 to 7, and chroma of 1 or 2. It has common or many masses of iron accumulation in shades of yellow and red. It is sandy loam or sandy clay loam. The control section is 10 to 18 percent clay above a depth of 50 inches and 23 to 35 percent below.

The Cg horizon, where present, has hue of 10YR to 5GY, value of 5 to 7, and chroma of 1 or 2. It is fine sand, loamy fine sand, fine sandy loam, or sandy clay loam.

Troup Series

The Troup series consists of very deep, somewhat excessively drained, moderately permeable soils that formed in sandy and loamy marine sediments. These soils are on summits, shoulders, and side slopes in the uplands. Slopes range from 0 to 12 percent. These soils are loamy, kaolinitic, thermic Grossarenic Kandiudults.

Troup soils are geographically associated with Blanton, Bonifay, Chipola, Foxworth, Lakeland, Lucy, and Orangeburg soils. Blanton soils are moderately well drained. Bonifay soils contain more than 5 percent plinthite. Chipola soils have a decrease in clay content of 20 percent or more within a depth of 60 inches. Foxworth and Lakeland soils are sandy throughout. Lucy soils have an argillic horizon at a depth of 20 to 40 inches. Orangeburg soils have an argillic horizon at a depth of less than 20 inches.

Typical pedon of Troup sand, 0 to 5 percent slopes; about 20 feet north and 2,200 feet east of the southwest corner of sec. 24, T. 1 S., R. 9 W.

A—0 to 6 inches; dark grayish brown (10YR 4/2) sand; weak fine granular structure; very friable; many fine and few medium roots; strongly acid; clear smooth boundary.

E1—6 to 11 inches; yellowish brown (10YR 5/6) sand; single grained; loose; common fine and few medium roots; moderately acid; gradual smooth boundary.

E2—11 to 25 inches; yellowish brown (10YR 5/4) sand; few fine and medium faint light gray (10YR 7/2) splotches of uncoated sand grains; single grained; loose; few fine roots; strongly acid; gradual smooth boundary.

E3—25 to 46 inches; brownish yellow (10YR 6/6) sand; many medium prominent white (10YR 8/1) vertically orientated splotches of uncoated sand grains; single grained; loose; few quartzite pebbles; strongly acid; clear smooth boundary.

Bt1—46 to 60 inches; red (2.5YR 4/8) sandy loam; weak fine subangular blocky structure; very friable; about 2 percent, by volume, plinthite nodules; very strongly acid; gradual wavy boundary.

Bt2—60 to 80 inches; red (2.5YR 4/8) sandy clay loam; weak fine subangular blocky structure; very friable; sand grains bridged and coated with clay; less than 2 percent, by volume, plinthite nodules; very strongly acid.

The solum is more than 80 inches thick. Reaction ranges from very strongly acid to moderately acid in the A and E horizons, except where lime has been applied, and is very strongly acid or strongly acid in the Bt, BC, and C horizons. The content of plinthite is less than 5 percent, by volume. Some pedons have few quartzite pebbles.

The A or Ap horizon has hue of 7.5YR or 10YR, value of 3 to 6, and chroma of 2 or 3.

The E horizon has hue of 7.5YR or 10YR, value of 4 to 7, and chroma of 4 to 8. It is sand, fine sand, or loamy sand.

The BE horizon, where present, has hue of 5YR or 7.5YR, value of 5 to 7, and chroma of 4 to 8. It is fine sandy loam or sandy loam.

The Bt horizon dominantly has hue of 2.5YR or 5YR, value of 4 to 7, and chroma of 4 to 8; in some pedons, however, it has hue of 7.5YR to 10YR. The Bt horizon has less than 5 percent plinthite. The texture is sandy loam, fine sandy loam, or sandy clay loam.

The C or BC horizon, where present, is thinly bedded and is variegated in shades of gray, yellow, and red. It is sandy or loamy.

Wahee Series

The Wahee series consists of very deep, somewhat poorly drained, slowly permeable soils that formed in fluvial clayey sediments. These soils are on flood plains along the Apalachicola River and are frequently flooded. Slopes range from 0 to 2 percent. These soils are fine, mixed, semiactive, thermic Aeric Endoaquults.

Wahee soils are geographically associated with Bibb, Brickyard, Kinston, Ochlockonee, Rutlege, and Surrency soils. Bibb, Kinston, Ochlockonee, Rutlege, and Surrency soils have less clay in the substratum than the Wahee soils. Also, Ochlockonee soils are moderately well drained. Brickyard soils are poorly drained or very poorly drained.

Typical pedon of Wahee clay loam, in an area of Wahee-Ochlockonee complex, commonly flooded; about 800 feet east and 1,000 feet south of the northwest corner of sec. 1, T. 3 S., R. 9 W.

A—0 to 4 inches; brown (10YR 4/3) clay loam; weak fine granular structure; friable; many fine and few medium roots; few fine flakes of mica; strongly acid; clear smooth boundary.

Bt1—4 to 18 inches; light yellowish brown (10YR 6/4) silty clay; weak very coarse subangular blocky structure; firm; few faint clay films on ped faces; few fine and medium roots; few fine black concretions; few fine flakes of mica; strongly acid; clear smooth boundary.

Bt2—18 to 24 inches; light yellowish brown (10YR 6/4) silty clay; common medium prominent light gray (10YR 7/1) iron depletions; weak very coarse subangular blocky structure; firm; few faint clay films on ped faces; few fine and medium roots; common fine black concretions; few fine flakes of mica; strongly acid; clear smooth boundary.

Btg1—24 to 42 inches; light brownish gray (2.5Y 6/2) silty clay; common medium distinct light gray (10YR 7/1) iron depletions; common medium prominent strong brown (7.5YR 5/6) masses of iron accumulation; weak very coarse subangular blocky structure; firm; sand grains bridged and coated with clay; few fine flakes of mica; strongly acid; clear smooth boundary.

Btg2—42 to 80 inches; light gray (2.5Y 6/1) clay; common medium distinct light gray (10YR 7/1) iron depletions; common medium prominent strong brown (7.5YR 5/6) masses of iron accumulation; massive; firm; few fine flakes of mica; strongly acid.

The thickness of the solum ranges from 30 to more than 40 inches. Reaction ranges from very strongly acid to moderately acid in the A horizon, except where lime has been applied, and is very strongly acid or strongly acid in the B, BC, and C horizons.

The A horizon has hue of 5Y to 10YR, value of 3 to 5, and chroma of 2 to 4

The E horizon, where present, has hue of 5Y to 10YR, value of 5 to 7, and chroma of 2 to 4. It is loam, fine sandy loam, sandy loam, or loamy sand.

The Bt horizon has hue of 5Y to 10YR, value of 5 to 7, and chroma of 3 to 8. It has common or many masses of iron accumulation in shades of yellow and red. It has common or many iron depletions in shades of gray within a depth of 24 inches. It is silty clay, silty clay loam, clay loam, or clay.

The Btg horizon has hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 1 or 2; or it is neutral in hue and has value of 4 to 7. It has common or many masses of iron accumulation in shades of yellow and red and iron depletions in shades of gray, or it is variegated in shades of gray, yellow, and red. It is silty clay, silty clay loam, clay loam, or clay.

The BC or CB horizon, where present, has colors similar to those of the Btg horizon. It has common or many masses of iron accumulation in shades of yellow and red and iron depletions in shades of gray. The texture is variable. In most pedons, it is fine sand or loamy fine sand; in some pedons, it is stratified.

The Cg horizon, where present, has hue of 5Y to 10YR, value of 5 to 7, and chroma of 1 or 2; or it is neutral in hue and has value of 5 to 7. It has common or many masses of iron accumulation in shades of yellow and red and iron depletions in shades of gray. The texture is variable.

Formation of the Soils

In this section, the factors of soil formation are discussed and related to the soils in Calhoun County. The processes of soil formation and the geology of the county are described.

Factors of Soil Formation

The kind of soil that develops depends on five major factors. These factors are the climate under which soil material exists after accumulation, the plant and animal life in and on the soil, the type of parent material, the relief or lay of the land, and the length of time that the forces of soil formation act on the soil material (Jenny, 1941).

The five soil forming factors are interdependent; each modifies the effect of the others. Any of the five factors, however, can have more influence than the others on the formation of a soil and can account for most of its properties. For example, if the parent material is quartz sand, the soil generally has only weakly expressed horizons. In some places, the effect of the parent material is modified greatly by the effects of climate, relief, and plants and animals. A difference in any of the factors results in a different soil.

Parent Material

Parent material is the unconsolidated mass in which a soil forms. It determines the limits of the chemical and mineralogical characteristics of the soil. Many differences between soils in Calhoun County appear to reflect original differences in the parent material.

The soils in the county formed in three major kinds of parent material. In the uplands and coastal lowlands, the sandy, loamy, and clayey deposits are sea-laid sediments of the upper Pliocene, Pleistocene, and Holocene ages. Along creeks and rivers, relatively new soils are still forming in water-deposited material. Where a considerable quantity of plant material accumulates and too much water limits decay, organic matter (muck) gradually develops.

Climate

The climate of Calhoun County is warm and humid and has been during most of the period of soil formation. Summers are long and warm, and winters are short and mild. Because the climate is fairly uniform throughout the county, the climate has caused few differences between the soils.

Rainfall and temperature are the climatic major factors that influence soil formation in the county. Because of the warm temperatures and abundant rainfall, chemical and biological actions are rapid. These conditions are favorable for the rapid decomposition of organic matter, and they hasten chemical reactions in the soil. The abundant rainfall leaches soluble bases, plant nutrients, and colloidal material downward. Consequently, most of the soils in the county have high acidity, low natural fertility, and a low content of organic matter.

Plants and Animals

Plants and animals have an important role in the formation of soils. The kinds and numbers of plants and animals that live in and on the soil are determined largely by climate. To lesser and varying degrees, they are influenced by the other soil forming factors.

Plants and animals furnish organic matter, mix and stir the soils, move plant nutrients from lower horizons to upper horizons, and help change the structure and porosity of the soils.

Microorganisms, including bacteria and fungi, help to weather and breakdown minerals and to decompose organic matter. They are most numerous in the upper few inches of the soil. Earthworms and small animals that live in the soil alter the chemical composition of the soil and mix the layers. Plants also act on the soil chemically, and roots churn the soil.

Relief

Relief, or topography, modifies the soil by influencing the quantity of precipitation absorbed and retained in the soil, by influencing the rate that erosion removes soil material, and by directing movement of material in suspension or solution from one area to another.

The poorly drained or very poorly drained soils are dominantly gray and generally are on flats, in areas of flatwoods, on flood plains, and in depressions. Water is received as runoff from adjacent higher areas. The absence of air in waterlogged soils results in the reduction of iron.

The well drained soils are on nearly level to sloping summits, shoulders, and side slopes on uplands where excess water readily drains away. As slope increases, runoff increases in intensity and erosion accelerates. The well drained soils are well aerated and are dominantly yellow, brown, or red.

Where relief and position are intermediate, moderately well drained and somewhat poorly drained soils are dominant. These soils are brown or yellow in the upper part and gray in the lower part. The gray color indicates a fluctuating high water table.

Time

The length of time required for a soil to form depends mainly on the combined influences of the other soil-forming factors. If the soil-forming factors have been active for a long time, horizonation is stronger than if the same factors have been active for a relatively short time. Some basic minerals weather fairly rapidly; other minerals are chemically inert and show little change over long periods. The rate of movement of fine particles within the soil to form various horizons varies under different conditions. In geologic terms, relatively little time has elapsed since the material in which the soils developed was laid down or emerged from the sea.

In Calhoun County, the dominant geological material is inactive. The sands are almost pure quartz and are highly resistant to weathering. The finer textured silts and clays are the products of earlier weathering.

Processes of Horizon Formation

The main processes involved in the formation of soil horizons are accumulation of organic matter; formation and translocation of silicate clay; oxidation, reduction, and transfer of iron; and leaching of calcium carbonate and bases. These processes can occur in combination or singularly, depending on the integration of the factors of soil formation.

Most of the soils in Calhoun County have an A, E, B, and C horizon.

The A horizon is the surface layer. It is the horizon of maximum accumulation of organic matter. Organic matter has accumulated in the surface layer of all soils in the county to form an A horizon. The content of organic matter varies between soils. It ranges from very low to high because of differences in relief and wetness. Low, wet soils accumulate much more organic matter than elevated, dry soils.

The E horizon is the subsurface layer. It is the horizon of maximum loss of soluble or suspended material, such as organic matter, iron, and clay. Plummer soils have both an A horizon and an E horizon.

The B horizon is the subsoil. It is directly below the E horizon or the A horizon. It is the horizon of maximum accumulation of organic complexes of iron and aluminum. In very young, sandy soils, such as the Lakeland soils, a B horizon has not yet developed.

The C horizon is the substratum or underlying material. It has been affected very little by the soil forming processes, but it may be somewhat modified by weathering.

The chemical reduction, transfer, and loss of iron is called oxidation-reduction or “redox.” It is evident in the county as gray colors in soils that have wet horizons. In loamy soils, these gray colors (iron depletions) were formed over long periods by a seasonal high water table that is in place for a few weeks or more at a time. In gray, sandy horizons, the fluctuating seasonal high water table forms redoximorphic features, such as iron masses or pore linings (formerly called reddish-brown iron segregated mottles) and stripped matrixes (splotches of clean sand grains). In yellow and brown E/C horizons in sandy soils, the splotches of gray, clean sand grains are not generally associated with a fluctuating seasonal high water table.

Leaching of carbonates and bases has occurred in all of the productive soils in the county. The leaching contributes to the development of horizons and to the inherent poor fertility of the soils.

Geology

Frank R. Rupert, professional geologist, Florida Geological Survey, prepared this section.

Geomorphology

Calhoun County is in the Northern Zone geomorphic province of White (1970). In this portion of the east-central Florida panhandle, the Northern Zone is divided into four geomorphic subzones based largely on topographic elevation. The subzones are the Gulf Coastal Lowlands, Fountain Slope, New Hope Ridge, and Grand Ridge (fig. 19).

The Gulf Coastal Lowlands comprise much of the

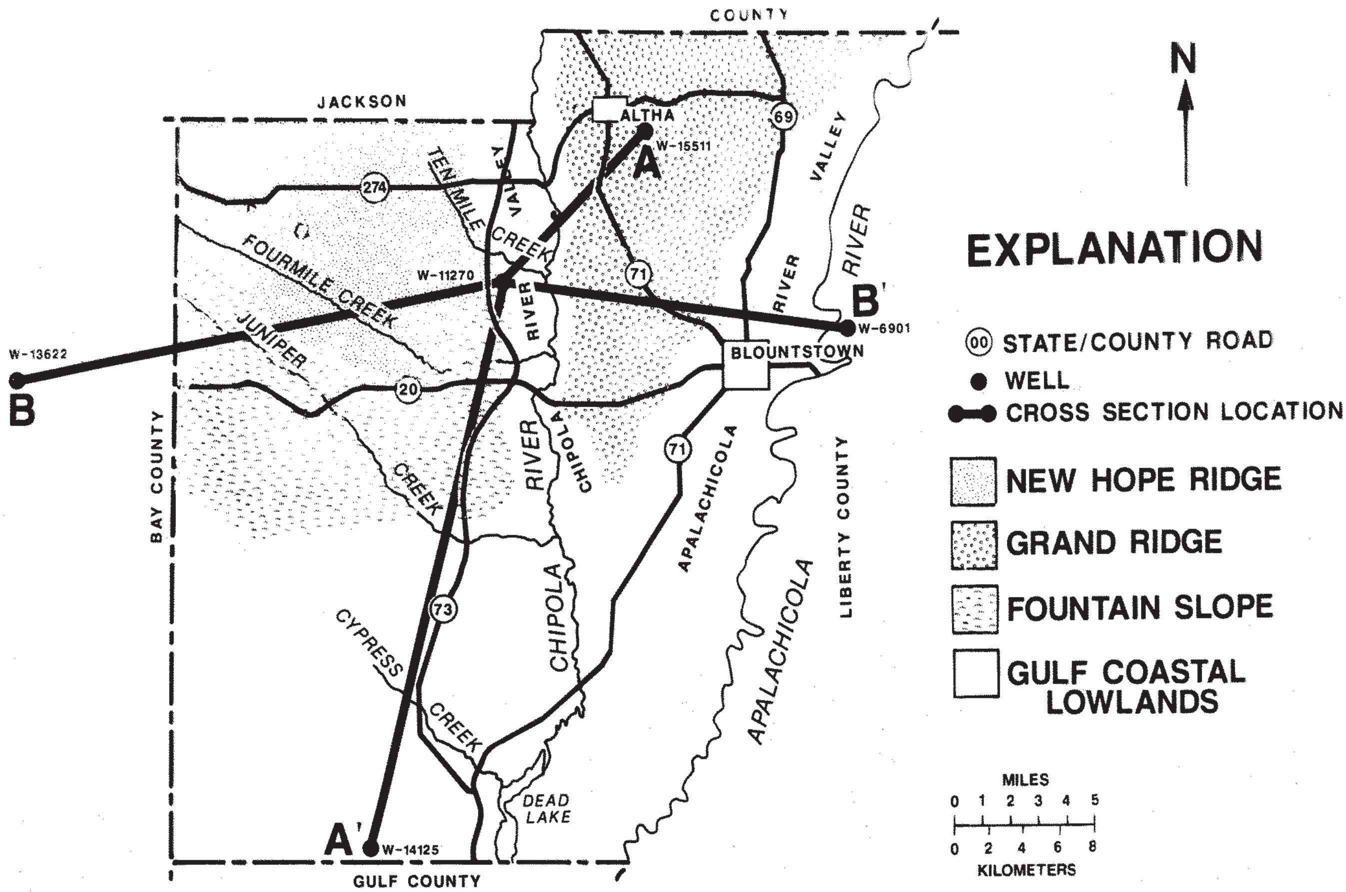

Figure 19.—Geomorphology of Calhoun County and location of cross sections.

lower half of Calhoun County. This subzone is characterized by a generally flat and commonly swampy, seaward sloping, sandy plain. Most of the coastal lowlands area has been sculpted into a series of marine terraces by high-standing Pleistocene seas. Elevations in the Gulf Coastal Lowlands in Calhoun County range from 25 to 65 feet above mean sea level (MSL) at the southern edge of the county to about 100 feet above MSL at the point where the lowlands meet the higher ridges in the middle part of the county.

Three topographically higher subzones are in the northern portion of the county. They are Fountain Slope, New Hope Ridge, and Grand Ridge. Fountain Slope is the name given by White, Puri, and Vernon (1964) to the ramplike, northward-rising topographic slope separating the Gulf Coastal Lowlands and New Hope Ridge. The elevations of Fountain Slope range from about 100 feet above MSL at its southern edge, adjacent to the coastal lowlands, to about 180 feet above MSL at New Hope Ridge to the north.

New Hope Ridge occupies northwestern Calhoun County, west of the Chipola River (White, Puri, and Vernon, 1964). The Chipola River valley separates New Hope Ridge from Grand Ridge, which has similar elevations and is in the eastern part of Calhoun County. Both ridges are believed to be stream-incised remnants of a once continuous highland spanning north Florida from the Alabama line eastward to Putnam County. New Hope Ridge and Grand Ridge are topographically high. They have elevations generally ranging between 150 and 250 feet above MSL. Both are comprised of resistant clayey-sands overlying limestone. Several collapse depressions and sinkhole lakes on New Hope Ridge belie a karstic nature of the underlying limestone.

The Apalachicola and Chipola Rivers are the major streams in Calhoun County. The Apalachicola River forms the eastern boundary of the county. In the northeastern part of the county, the elevation of the broad Apalachicola Valley averages about 50 feet above MSL. The valley forms a divide between the bluffs of the Tallahassee Hills to the east in Liberty County and the topographically lower, gently rolling hills of Grand Ridge. The river meanders

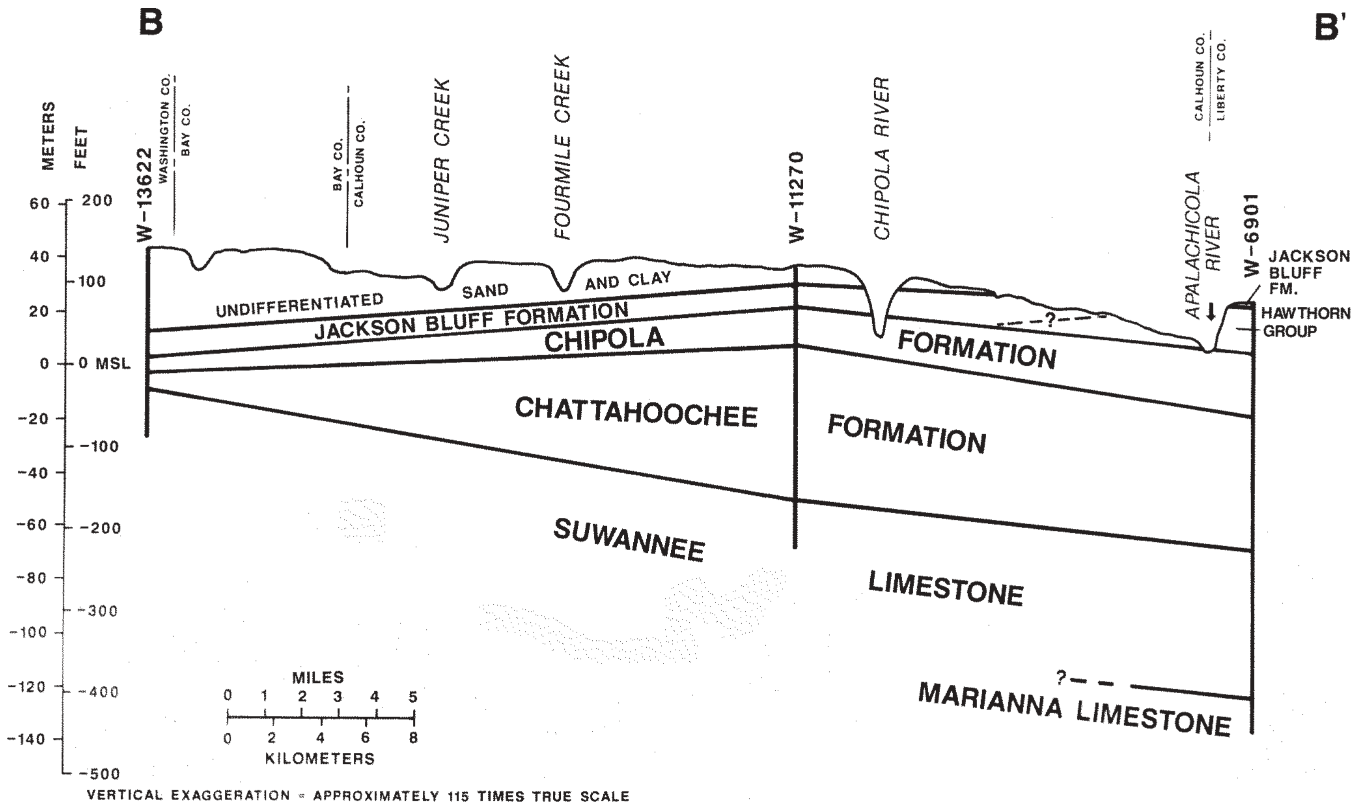

Figure 20.—Cross section of geologic materials from east to west through Calhoun County, Florida.

southwestward through a three-mile wide valley, which descends to an elevation of about 25 feet above MSL at the southern edge of Calhoun County.

The Chipola River flows southward through the east-central part of Calhoun County and forms Dead Lake near the southern boundary of the county. In places, the river is well incised. In the northern part of Calhoun County, Miocene limestone and Pliocene shell beds are exposed along the course of the river. Several smaller surface streams contribute to the Chipola River. Tenmile Creek, Fourmile Creek, and Juniper Creek form a southward succession of well-incised, northwest to southeast trending tributaries entering the Chipola River from the west. These creeks may define a parallel series of relict beach ridge systems. In the southern part of the county, Cypress Creek drains several low, swampy areas and ultimately empties into Dead Lake.

Stratigraphy

Calhoun County is underlain by hundreds of feet of marine limestones, dolomites, sands, and clays (Cooke and Mossom, 1929). According to unpublished well logs of the Florida Geological Survey, the oldest rocks recovered by well drilling in the county are Mesozoic Erathem, Cretaceous System (140 to 65 million years old) marine sedimentary rocks at depths of approximately 2,800 to 5,000 feet below land surface (BLS). Petroleum test wells in nearby Gulf County, however, reveal the presence of older Paleozoic Erathem (500 to 250 million years old) basement rocks at depths in excess of 12,000 feet BLS; similar rocks probably occur beneath Calhoun County. The youngest sediments in the county are Pleistocene and Holocene (1.8 million years old to recent) alluvium and marine terrace sands and clays.

The Mesozoic Erathem rocks and early Cenozoic Erathem (Paleocene and Eocene Series, 65 to 38 million years old) rocks underlying Calhoun County are largely marine carbonates lying at depths penetrated only by deep, oil test wells. Most water wells in Calhoun County draw from Oligocene and Miocene (38 to 5 million years old) strata at depths of 500 feet or less BLS. These rocks function as the important freshwater aquifers for the region. For purposes of this report, the discussion of the stratigraphy of Calhoun County is limited to these Oligocene and younger sediments. Figures 20 and 21 show the location of the geologic cross sections and illustrate the shallow stratigraphy of Calhoun County. Most of the geologic data cited in this study is from Schmidt (1984), from Puri and Vernon (1964), and from well log files of the Florida Geological Survey.

Oligocene Series

Marianna Limestone

The Marianna Limestone (Matson and Clapp, 1909) is the oldest unit penetrated by the cores used in this report. It consists of a gray to cream, chalky, fossiliferous marine limestone frequently containing large, coin-shaped *Lepidocyclina* foraminifera fossils. The Marianna Limestone is considered to be Lower Oligocene (38 to 33 million years old). This unit was penetrated in only one core used in this study, and the extent of the unit under the county is uncertain because of a general lack of well coverage. The unit probably underlies eastern and northern Calhoun County at depths of 400 to 500 feet BLS. Sediments of the Upper Oligocene Suwannee Limestone overlie the Marianna Limestone.

Suwannee Limestone

The Suwannee Limestone (Cooke and Mansfield, 1936) is an upper Oligocene (33 to 25 million years old), light gray to yellowish-gray, well-indurated, commonly dolomitized, marine limestone. It typically contains abundant fossils, including foraminifera, mollusks, and echinoids. Depth to the Suwannee Limestone ranges from 350 to 460 feet BLS in Calhoun County. The thickness of the unit is variable and typically exceeds 100 feet. The unit generally dips and thickens to the southeast into the trough of the Apalachicola Embayment. The Suwannee Limestone is a component of the Floridan aquifer system, and this unit supplies deep, municipal-water wells in the county. It unconformibly overlies the Oligocene Marianna Limestone or Eocene Ocala Group carbonates. In much of central and northern Calhoun

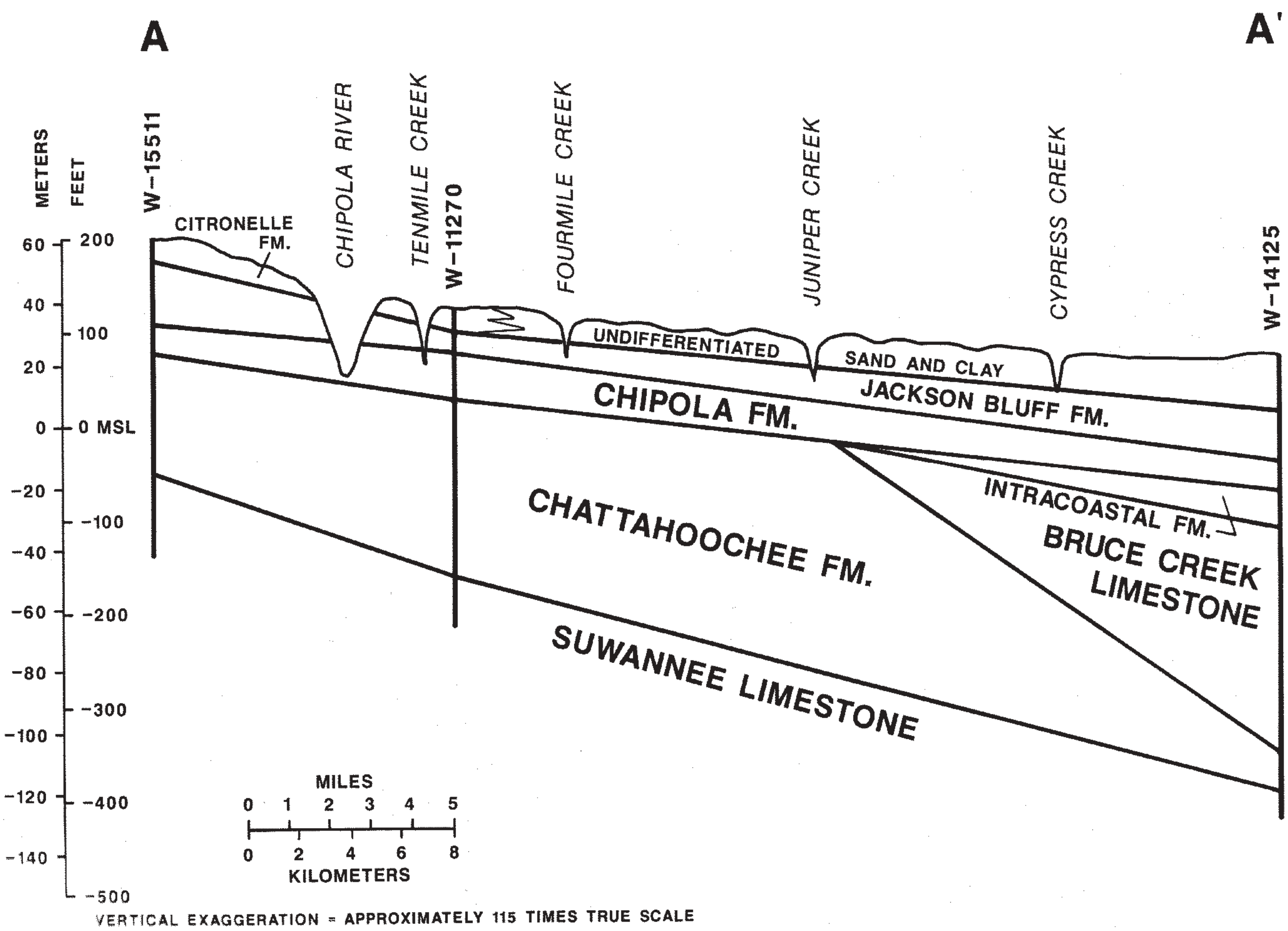

Figure 21.— Cross section of geologic materials from north to south through Calhoun County, Florida.

County, Miocene sediments of the Chattahoochee Formation overlie the Suwannee Limestone. The overlying Chattahoochee Formation grades laterally into the Bruce Creek Limestone near the southern edge of the county.

Miocene and Pliocene Series

Chattahoochee Formation

The lower Miocene (25 to 20 million years old) Chattahoochee Formation overlies the Suwannee Limestone in Calhoun County (Dall and Stanley-Brown, 1894). The Chattahoochee Formation is generally a very pale orange to white or light gray, commonly quartz sandy, phosphoritic, dolomitic marine limestone. In portions of the central and western panhandle, post-depositional ground water alteration of the carbonates has made differentiation of the Chattahoochee Formation from the underlying Suwannee Limestone and overlying Bruce Creek Limestone difficult or impossible. Where definable in Calhoun County, the top of the Chattahoochee Formation ranges from about 100 to 420 feet BLS. The thickness of the formation ranges from about 185 feet in the central portion of the county to less than 50 feet in western and southern portions. As with the underlying Suwannee Limestone, the Chattahoochee Formation dips to the east-southeast, grading into or interfingering with the Bruce Creek Limestone along the southern edge of Calhoun County. The Chattahoochee Formation is a unit of the Floridan aquifer system, and wells in rural Calhoun County draw from this formation. Along the southern edge of the county, the Bruce Creek Limestone grades into the Chattahoochee Formation. In northern Calhoun County, the Bruce Creek Limestone is absent and sediments of the middle Miocene Chipola Formation overlie the Chattahoochee Formation.

Bruce Creek Limestone

The middle Miocene (17 to 10 million years old) Bruce Creek Limestone is a white to yellowish gray, fossiliferous, calcarenitic, marine limestone underlying the southern half of Calhoun County (Huddlestun, 1984). It is commonly highly microfossiliferous, molluscan moldic, and in some areas, dolomitic. From the middle of the county, the Bruce Creek Limestone thickens and dips rapidly towards the south into the trough of the Apalachicola Embayment. The Bruce Creek Limestone ranges in depth from about 100 feet BLS at its northern limit in the central portion of the county to over 400 feet BLS in the southern portion. The thickness of the Bruce Creek Limestone increases southward rapidly from zero in the central portion of the county to nearly 200 feet near the Gulf County line. The Bruce Creek Limestone comprises the uppermost unit of the Floridan aquifer system in Calhoun County. Where present, it is overlain by the middle Miocene Intracoastal Formation.

Intracoastal Formation

The Intracoastal Formation is comprised of a yellowish gray, abundantly microfossiliferous, sandy, poorly indurated, marine limestone (Huddlestun, 1984; Schmidt and Clark, 1980). It ranges in age from middle Miocene to upper Pliocene (17 to 2 million years old). Like the underlying Bruce Creek Limestone, the updip limit of the Intracoastal Formation occurs along a west-to-east line across central Calhoun County. The formation is absent north of Blountstown. It thickens and dips to the south-southeast, approaching 60 feet in thickness at the southern edge of the county. Depth to the top of the unit in the county is highly variable, generally averaging about 100 to 150 feet BLS. Throughout its extent in Calhoun County, the Intracoastal Formation is overlain by the Chipola Formation.

Chipola Formation

The Chipola Formation is a middle Miocene carbonate unit underlying most of Calhoun County (Burns, 1889). It is typically comprised of a yellowish gray to light gray, moderately indurated to well indurated, quartz sandy, marine limestone or marl. The Chipola Formation approaches the surface in the central and northern portions of Calhoun County, where the formation is, in places, covered only by a thin veneer of Jackson Bluff Formation or undifferentiated surficial sediments. It is locally exposed along the banks of Tenmile Creek and along portions of the Chipola River, which is the type area for the formation. In this area, it commonly contains abundant fossil mollusks. In the western and southern portions of the county, the top of the Chipola Formation dips to nearly 100 feet BLS. The Chipola Formation is overlain by sediments of the upper Pliocene Jackson Bluff Formation.

Jackson Bluff Formation

The upper Pliocene (3 to 1.8 million years old) Jackson Bluff Formation is predominantly comprised of light gray to olive gray, poorly consolidated, clayey, quartz sands and sandy shell beds (Puri and Vernon, 1964). It overlies the Chipola Formation in Calhoun County. In the high bluffs in Liberty County across the Apalachicola River from northeastern Calhoun County, the

Jackson Bluff Formation rests on Miocene Hawthorn Group deposits. The Jackson Bluff Formation is a thin unit, averaging less than 50 feet in thickness in the eastern portion of Calhoun County. The formation dips and thickens to the south, reaching a maximum thickness of about 50 feet in the southern part of the county. Depth to the top of the Jackson Bluff Formation is variable throughout the county. The formation crops out locally along the Apalachicola and Chipola Rivers and is closest to the surface in the northeastern portion of the county, where 20 to 25 feet of Citronelle Formation sediments overlie it. In the western portion of the county, it approaches a depth of 80 feet BLS and is covered primarily by undifferentiated sands and clays. Along the southern edge of Calhoun County, about 50 feet of undifferentiated sands overlie the Jackson Bluff.

Citronelle Formation

The reddish, clayey, coarse, quartz sands and gravels of the upper Pliocene Citronelle Formation (Matson, 1916) blanket large areas in the northern half of Calhoun County. Believed to be of fluvial origin, the characteristic Citronelle Formation sediments are comprised of cross-bedded sands, gravels, and clays. Portions of the surficial deposits in Calhoun County may represent reworked and redeposited Citronelle sediments that were transported from the eroding highlands to the north. Thickness generally ranges from 20 to 80 feet, and the Citronnelle deposits comprise the surficial sediments in their area of occurrence. Within Calhoun County, the Citronelle Formation sediments grade laterally into a series of undifferentiated quartz sands and clayey sands.

Plio-Pleistocene and Holocene Series

Undifferentiated Sand and Clays

Surficial quartz sands, clays, and clayey sands cover much of the southern half of Calhoun County. Because of the massive and discontinuous nature of many of these units, they are grouped together as undifferentiated deposits. These deposits represent a mixture of marine and fluvial clastics associated with Pleistocene (1.8 million to 10,000 years old) sea-level highstands and the prograding Apalachicola delta. The modern soil profiles probably evolved during the late Pleistocene and Holocene (10,000 years ago to present). Holocene alluvium, in the form of river-borne clays and sand, is deposited along the banks and bars of the Apalachicola River in the eastern portion of Calhoun County.

Ground Water

Ground water is water that fills the pore spaces in subsurface rocks and sediments. In Calhoun County and adjacent counties, this water is derived principally from precipitation. The bulk of the consumptive water in Calhoun County is withdrawn from ground water aquifers. Three main aquifers are under Calhoun County. In order of increasing depth, they are the surficial aquifer system, the intermediate aquifer and confining system, and the Floridan aquifer system. The following data regarding the extent and thickness of the aquifers are from Florida Geological Survey Special Publication 32 (1991).

Surficial aquifer system

The surficial aquifer system is the uppermost freshwater aquifer in Calhoun County. This nonartesian aquifer is largely contained within the undifferentiated sands and the Citronelle Formation sediments. It is present in the northeastern portion of Calhoun County, where it reaches a thickness of 55 feet. It trends southward through the middle of the county adjacent to the Chipola River. In parts of central Calhoun County, the system is nearly 70 feet thick. It is absent or occurs only sporadically in the eastern and western portions of the county. The surficial aquifer system is unconfined, and its upper surface is the water table. In general, the water table fluctuates with the rate of precipitation and conforms to the topography of the land surface. Recharge to the aquifer is largely through rainfall percolating through the loose surficial sediments and, to a lesser extent, by upward seepage from the underlying intermediate aquifer system. The surficial aquifer is not used extensively as a water source in the county.

Intermediate aquifer and confining system

The intermediate aquifer system underlies the surficial aquifer system in Calhoun County and is largely contained within the Intracoastal, Chipola, and Jackson Bluff Formations. Permeable beds within the intermediate aquifer system vary considerably in thickness over the aerial extent of the aquifer. In general, the thickness of the aquifer ranges from 50 to 200 feet under Calhoun County and corresponds to the thickness of the geologic formation containing it. The depth to the top of the intermediate aquifer system is also highly variable, dipping from about 20 feet BLS in north-central Calhoun County to over 70 feet BLS in the western portion of the county. Some wells in rural areas draw from this unit, but the intermediate aquifer system is not widely used as a source of potable water. Low-permeability beds in the basal intermediate aquifer system may locally function as confining units to the underlying Floridan aquifer system.

Floridan aquifer system

The Floridan aquifer system is comprised of hundreds of feet of Eocene through Miocene age marine limestones, including the Ocala Group, the Suwannee Limestone, and where present, the Chattahoochee Formation and Bruce Creek Limestone. The Floridan aquifer system occurs as an artesian aquifer under the entire county. Surface springs tapping this aquifer are absent in Calhoun County. Most recharge to the Floridan aquifer system occurs in the northern part of the county in small, scattered areas at the updip portions of the carbonate units comprising the aquifer. In these areas, overburden to the Floridan aquifer system is thinnest and recharge occurs on a low to moderate level. Much of the regional recharge occurs further to the north in Jackson County where the strata of the Floridan aquifer system crop out at the surface.

Mineral Resources

The principal mineral resources in Calhoun County are sand, clay, limestone, and phosphate. The following paragraphs summarize the current potential for mining each commodity in the county.

Sand

A number of shallow private pits in Calhoun County are worked for local fill sand. A large commercial sand mine operates near the Apalachicola River. Pleistocene marine terrace sands and alluvium and Pliocene Citronelle Formation sediments contain quartz sand with varying amounts of clay matrix. These deposits blanket much of the county.

Clay

Localized deposits of clay and sandy clay are also associated with the undifferentiated Pleistocene and Holocene marine terrace deposits, Holocene alluvium, and Citronelle Formation sediments. Most of these clays are contained in and interbedded with other sediments. The clays are, therefore, relatively impure.

Flood-plain clay deposits along the Apalachicola River have been utilized for brick making in the county. In the 1920s, the Guilford Brothers Brick Company, located south of Blountstown, manufactured common brick, which was used in the construction of the Blountstown Post Office (Bell, 1924). Potential uses for this clay include face brick, drain tile, flower pots, and hollow blocks (Bell, 1924). Reserve estimates of the clay deposits in the county have not been made, and future exploitation would largely depend upon local market demand.

Limestone

Impure Miocene limestones occur at depth under most of Calhoun County. Most of the shallower units contain extensive impurities, including quartz sand. Because of the presence of these impurities, the thickness of the overburden (at least 50 feet in northern Calhoun County), and the presence of easily-accessible limestone deposits at the surface in nearby Jackson County, limestone is unlikely to ever be an economic commodity in Calhoun County.

Phosphate

Many of the Miocene formations underlying Calhoun County contain varying amounts of phosphate sand and granules. Most quantities, however, are well below the minimum percentage necessary for economic development. Also, most of the phosphate-bearing strata are at depths in excess of 50 feet. These factors preclude a high potential for mining phosphate in Calhoun County.

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Glossary

ABC soil. A soil having an A, a B, and a C horizon.

AC soil. A soil having only an A and a C horizon. Commonly, such soil formed in recent alluvium or on steep, rocky slopes.

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Alpha,alpha-dipyridyl. A dye that when dissolved in 1N ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction indicates a type of redoximorphic feature.

Animal unit month (AUM). The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Aquic conditions. Current soil wetness characterized by saturation, reduction, and redoximorphic features.

Area reclaim (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Argillic horizon. A subsoil horizon characterized by an accumulation of illuvial clay.

Aspect. The direction in which a slope faces.

Association, soil. A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low	0 to 0.05
Low	0.05 to 0.10
Moderate	0.10 to 0.15
High	0.15 to 0.20
Very high	more than 0.20

Backslope. The geomorphic component that forms the steepest inclined surface and principal element of many hillsides. Backslopes in profile are commonly steep, are linear, and may or may not include cliff segments.

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 system. A drainage system made by plowing, grading, or otherwise shaping the surface of a flat field. It consists of a series of low ridges separated by shallow, parallel dead furrows.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bisequum. Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

Breast height. An average height of 4.5 feet above the ground surface; the point on a tree where diameter measurements are ordinarily taken.

Brush management. Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

Cable yarding. A method of moving felled trees to a nearby central area for transport to a processing facility. Most cable yarding systems involve use of a drum, a pole, and wire cables in an arrangement similar to that of a rod and reel used for fishing. To reduce friction and soil disturbance, felled trees generally are reeled in while one end is lifted or the entire log is suspended.

California bearing ratio (CBR). The load-supporting capacity of a soil as compared to that of standard crushed limestone, expressed as a ratio. First standardized in California. A soil having a CBR of 16 supports 16 percent of the load that would be supported by standard crushed limestone, per unit area, with the same degree of distortion.

Canopy. The leafy crown of trees or shrubs. (See Crown.)

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Catena. A sequence, or “chain,” of soils on a landscape that formed in similar kinds of parent material but have different characteristics as a result of differences in relief and drainage.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Chemical treatment. Control of unwanted vegetation through the use of chemicals.

Chiseling. Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

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 depletions. Low-chroma zones having a low content of iron, manganese, and clay because of the chemical reduction of iron and manganese and the removal of iron, manganese, and clay. A type of redoximorphic depletion.

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.

Claypan. A slowly permeable soil horizon that contains much more clay than the horizons above it. A claypan is commonly hard when dry and plastic or stiff when wet.

Climax plant community. 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 textured soil. Sand or loamy sand.

Cobble (or cobblestone). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Cobbly soil material. Material that is 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.

Complex slope. Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas 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 or miscellaneous areas are somewhat similar in all areas.

Concretions. Cemented bodies with crude internal symmetry organized around a point, a line, or a plane. They typically take the form of concentric layers visible to the naked eye. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up concretions. If formed in place, concretions of iron oxide or manganese oxide are generally considered a type of redoximorphic concentration.

Conservation cropping system. Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

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. Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the "Soil Survey Manual."

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.

Corrosion. Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

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.

Cropping system. Growing crops according to a planned system of rotation and management practices.

Crop residue management. Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Cross-slope farming. Deliberately conducting farming operations on sloping farmland in such a way that tillage is across the general slope.

Crown. The upper part of a tree or shrub, including the living branches and their foliage.

Culmination of the mean annual increment (CMAI). The average annual increase per acre in the volume of a stand. Computed by dividing the total volume of the stand by its age. As the stand increases in age, the mean annual increment continues to increase until mortality begins to reduce the rate of increase. The point where the stand reaches its maximum annual rate of growth is called the culmination of the mean annual increment.

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.

Depressions. Landforms that are typically the sunken, lower parts of the earth's surface, have concave relief, and do not have natural outlets for surface drainage.

Depth, soil. Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Divided-slope farming. A form of field stripcropping in which crops are grown in a systematic arrangement of two strips, or bands, across the slope to reduce the hazard of water erosion. One strip is in a close-growing crop that provides protection from erosion, and the other strip is in a crop that provides less protection from erosion. This practice is used where slopes are not long enough to permit a full stripcropping pattern to be used.

Drainage class (natural). Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained,* and *very poorly drained*. These classes are defined in the "Soil Survey Manual."

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.

Endosaturation. A type of saturation of the soil, indicating an apparent water table, in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

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.

Ephemeral stream. A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

Episaturation. A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Escarpment. A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Synonym: scarp.

Evapotranspiration. The combined loss of water from a given area, and during a specific period of time, by evaporation from the soil surface and transpiration from plants.

Excess fines (in tables). Excess silt and clay in the soil. The soil does not provide a source of gravel or sand for construction purposes.

Fallow. Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grain is grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

Fast intake (in tables). The rapid movement of water into the soil.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fibric soil material (peat). The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity*.

Fill slope. A sloping surface consisting of excavated soil material from a road cut. It commonly is on the downhill side of the road.

Fine textured soil. Sandy clay, silty clay, or clay.

Firebreak. Area cleared of flammable material to stop or help control creeping or running fires. It also serves as a line from which to work and to facilitate the movement of firefighters and equipment. Designated roads also serve as firebreaks.

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

Flats. Nearly level landforms that are smooth, do not have any significant curvature or slope, and have little change in elevation. They occur as transitional areas. Typically, they are about 6 inches lower in elevation than the flatwoods and commonly extend down to depressions that have linear to slightly concave relief.

Flatwoods (colloquial). Broad, linear-relief landforms that have slightly convex relief along flats, depressions, and flood plains and have concave relief along rises and knolls.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Fluvial. Of or pertaining to rivers; produced by river action, as a fluvial plain.

Footslope. The hillslope position that forms the inner, gently inclined surface at the base of a slope. In profile, footslopes are commonly concave and are situated between the backslope and the toeslope.

Forb. Any herbaceous plant not a grass or a sedge.

Forest cover. All trees and other woody plants (underbrush) covering the ground in a forest.

Forest type. A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.

Formation (geologic). A convenient geological unit of considerable thickness and lateral extent used in mapping, describing, or interpreting the geology of a region.

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.

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.

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. 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 material and the more decomposed sapric material.

High-residue crops. Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

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.

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 A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. 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 bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it 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 potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a seasonal high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

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.

Increasers. Species in the climax vegetation that increase in amount as the more desirable plants are reduced by close grazing. Increasers commonly are the shorter plants and the less palatable to livestock.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

Intermittent stream. A stream, or reach of a stream, that flows for prolonged periods only when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Invaders. On range, plants that encroach into an area and grow after the climax vegetation has been reduced by grazing. Generally, plants invade following disturbance of the surface.

Iron depletions. Low-chroma zones having a low content of iron and manganese oxide because of chemical reduction and removal, but having a clay content similar to that of the adjacent matrix. A type of redoximorphic depletion.

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.

Knoll. A small, low, rounded area rising above adjacent landforms.

Landform. Any recognizable physical feature produced by natural causes on the earth's surface and having a characteristic shape and range in composition.

Landscape. A collection of related natural landforms, usually the land surface that can be comprehended in a single view.

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-residue crops. Such crops as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.

Low strength. The soil is not strong enough to support loads.

Masses. Concentrations of substances in the soil matrix that do not have a clearly defined boundary with the surrounding soil material and cannot be removed as a discrete unit. Common compounds making up masses are calcium carbonate, gypsum or other soluble salts, iron oxide, and manganese oxide. Masses consisting of iron oxide or manganese oxide generally are considered a type of redoximorphic concentration.

Mechanical treatment. Use of mechanical equipment for seeding, brush management, and other management practices.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Mollic epipedon. A thick, dark, humus-rich surface horizon (or horizons) having high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

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. 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 an area that is to be used as a septic tank absorption field with suitable soil material. The area is filled to an elevation high enough above the water table to meet local requirements for proper functioning of the field.

Muck. Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nodules. Cemented bodies lacking visible internal structure. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up nodules. If formed in place, nodules of iron oxide or manganese oxide are considered types of redoximorphic concentrations.

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. The content of organic matter in the surface layer is described as follows:

Very low	less than 0.5 percent
Low	0.5 to 1.0 percent
Moderately low	1.0 to 2.0 percent
Moderate	2.0 to 4.0 percent
High	4.0 to 8.0 percent
Very high	more than 8.0 percent

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 or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as "saturated hydraulic conductivity," which is defined in the "Soil Survey Manual." In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as "permeability." Terms describing permeability, measured in inches per hour, are as follows:

Extremely slow	0.0 to 0.01 inch
Very slow	0.01 to 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 flooding.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plinthite. The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents. It commonly appears as red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates on repeated wetting and drying, especially if it is exposed also to heat from the sun. In a moist soil, plinthite can be cut with a spade. It is a form of laterite.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poor filter (in tables). Because of rapid or very 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.

Potential native plant community. See Climax plant community.

Potential rooting depth (effective rooting depth). Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

Prescribed burning. Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.

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.

Proper grazing use. Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

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.

Rangeland. Land on which the potential natural vegetation is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing or browsing. It includes natural grasslands, savannas, many wetlands, some deserts, tundras, and areas that support certain forb and shrub communities.

Range site. An area of rangeland where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. A range site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other range sites in kind or proportion of species or total production.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid	less than 3.5
Extremely acid	3.5 to 4.4
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

Redoximorphic concentrations. Nodules, concretions, soft masses, pore linings, and other features resulting from the accumulation of iron or manganese oxide. An indication of chemical reduction and oxidation resulting from saturation.

Redoximorphic depletions. Low-chroma zones from which iron and manganese oxide or a combination of iron and manganese oxide and clay has been removed. These zones are indications of the chemical reduction of iron resulting from saturation.

Redoximorphic features. Redoximorphic concentrations, redoximorphic depletions, reduced matrices, a positive reaction to alpha,alpha-dipyridyl, and other features indicating the chemical reduction and oxidation of iron and manganese compounds resulting from saturation.

Reduced matrix. A soil matrix that has low chroma in situ because of chemically reduced iron (Fe II). The chemical reduction results from nearly continuous wetness. The matrix undergoes a change in hue or chroma within 30 minutes after exposure to air as the iron is oxidized (Fe III). A type of redoximorphic feature.

Relief. The elevations or inequalities of a land surface, considered collectively.

Rise. A landform that has a broad summit and gently sloping sides rising above lower, wetter land.

Road cut. A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

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.

Saturation. Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Scarification. The act of abrading, scratching, loosening, crushing, or modifying the surface to increase water absorption or to provide a more tillable soil.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Sequum. A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Shoulder. The hillslope position that forms the uppermost inclined surface near the top of a slope. If present, it comprises the transition zone from the backslope to the summit. The hillslope position is dominantly convex in profile and erosional in origin.

Shrink-swell (in tables). 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.

Side slope. The slope bounding a drainageway and lying between the drainageway and the adjacent interfluve. A side slope is generally linear along its width, and overland flow is parallel down the slope.

Silica. A combination of silicon and oxygen. The mineral form is called quartz.

Silica-sesquioxide ratio. The ratio of the number of molecules of silica to the number of molecules of alumina and iron oxide. The more highly weathered soils or their clay fractions in warm-temperate, humid regions, and especially those in the tropics, generally have a low ratio.

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.

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.

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. In this survey, classes for simple slopes are as follows:

Nearly level	0 to 2 percent
Gently sloping	2 to 5 percent
Moderately sloping	5 to 8 percent
Strongly sloping	8 to 12 percent
Moderately steep	12 to 20 percent
Steep	20 to 45 percent
Very steep	45 percent and higher

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 material below the solum. 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. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

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 content of organic matter than the overlying surface layer.

Summit. The highest point of any landform remanant, hill, or mountain.

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, considered collectively. It includes all subdivisions of these horizons.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Thin layer (in tables). Otherwise suitable soil material that is too thin for the specified use.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toeslope. The hillslope position that forms a gently inclined surface at the base of a slope. Toeslopes in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a slope continuum that grades to a valley or closed depression.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Upland. Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Variegation. Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Water bars. Smooth, shallow ditches or depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Windthrow. The uprooting and tipping over of trees by the wind.

Tables

Table 1.--Temperature and Precipitation

(Recorded in the period 1961 to 1989 at Fountain, Florida)

Month	Temperature					Precipitation					
	Average daily maximum	Average daily minimum	Average	2 years in 10 will have Maximum temp. >than	2 years in 10 will have Minimum temp. <than	Average # of grow deg days*	Average	2 years in 10 will have-- less than	2 years in 10 will have-- more than	Average # of days w/.1 or more	Average total snow fall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January	63.2	37.1	50.1	80	9	312	4.71	2.67	6.53	6	0.0
February	66.9	38.0	52.4	82	16	341	4.70	2.68	6.50	5	0.0
March	74.4	44.5	59.4	87	22	579	5.41	2.65	7.81	5	0.0
April	81.3	50.8	66.0	92	30	746	3.23	1.16	4.95	4	0.0
May	87.1	58.4	72.7	97	40	979	4.43	1.82	6.64	5	0.0
June	91.5	65.3	78.4	100	51	1,092	7.11	4.30	9.63	8	0.0
July	91.7	68.3	80.0	100	58	1,179	8.03	4.97	10.78	11	0.0
August	91.0	68.4	79.7	99	60	1,193	7.49	4.94	9.81	10	0.0
September	89.1	64.8	77.0	98	45	1,070	6.08	3.06	8.70	6	0.0
October	81.8	52.8	67.3	93	30	808	2.98	1.32	5.05	3	0.0
November	73.4	44.7	59.1	87	20	554	3.53	1.66	5.15	4	0.0
December	66.6	39.6	53.1	82	14	400	4.74	1.97	7.08	5	0.0
Yearly:											
Average	79.8	52.7	66.3	---	---	---	---	---	---	---	---
Extreme	106	4	---	101	10	---	---	---	---	---	---
Total	---	---	---	---	---	9,253	62.43	43.27	69.88	72	0.0

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minumum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (40 degrees F).

Table 2.--Freeze Dates in Spring and Fall

(Recorded in the period 1961-1990 at Fountain, 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--	March 15	April 3	April 9
2 year in 10 later than--	March 10	March 29	April 5
5 year in 10 later than--	February 28	March 18	March 28
First freezing temperature in fall:			
1 year in 10 earlier than--	November 4	October 25	October 15
2 year in 10 earlier than--	November 14	November 1	October 21
5 year in 10 earlier than--	December 1	November 16	November 3

Table 3.--Growing Season

(Recorded in the period 1955-90 at Fountain, Florida)

Probability	Temperature: 24°F or lower	28°F or lower	32°F or lower
50 percent	274 days	240 days	221 days
70 percent	285 days	251 days	231 days

Table 4.--Acreage and Proportionate Extent of the Soils

Map symbol	Map Unit Name	Acres	Percent
2	Albany loamy sand, 0 to 5 percent slopes	9,490	2.6
4	Brickyard clay loam, frequently flooded	16,380	4.5
5	Robertsdale fine sandy loam	11,721	3.2
6	Bladen loam, rarely flooded	6,429	1.7
7	Blanton sand, 0 to 5 percent slopes	12,442	3.4
8	Blanton sand, 5 to 8 percent slopes	1,376	0.4
10	Bonifay sand, 0 to 5 percent slopes	2,188	0.6
12	Chipley sand, 0 to 5 percent slopes	5,827	1.6
14	Chipola loamy sand, 0 to 5 percent slopes, very rarely flooded	2,399	0.7
17	Florala loamy sand, 0 to 2 percent slopes	9,459	2.6
18	Florala loamy sand, 2 to 5 percent slopes	689	0.2
20	Dorovan-Pamlico-Rutlege association, depressional	3,024	0.8
21	Dothan sandy loam, 0 to 2 percent slopes	28,847	7.9
22	Dothan loamy sand, 2 to 5 percent slopes	4,346	1.2
23	Dothan loamy sand, 5 to 8 percent slopes	1,162	0.3
24	Dunbar fine sandy loam, rarely flooded	5,655	1.5
25	Duplin very fine sandy loam, very rarely flooded	3,059	0.8
29	Kenansville loamy sand, wet substratum, 0 to 5 percent slopes, rarely flooded	2,614	0.7
30	Garcon loamy sand, rarely flooded	1,996	0.5
31	Foxworth sand, 0 to 5 percent slopes	10,376	2.8
32	Fuquay loamy sand, 0 to 2 percent slopes	12,747	3.5
33	Fuquay loamy sand, 2 to 5 percent slopes	3,878	1.1
34	Fuquay loamy sand, 5 to 8 percent slopes	959	0.3
35	Hurricane sand	3,271	0.9
36	Lakeland sand, 0 to 5 percent slopes	22,989	6.3
37	Lakeland sand, 5 to 8 percent slopes	2,045	0.6
38	Wahee-Ochlockonee complex, commonly flooded	8,376	2.3
39	Leefield loamy sand, 0 to 5 percent slopes	11,524	3.1
41	Lucy loamy sand, 0 to 2 percent slopes	2,050	0.6
42	Lucy sand, 2 to 5 percent slopes	948	0.3
43	Lucy sand, 5 to 8 percent slopes	642	0.2
44	Orangeburg loamy sand, 0 to 2 percent slopes	2,466	0.7
45	Orangeburg loamy sand, 2 to 5 percent slopes	736	0.2
46	Orangeburg sandy loam, 5 to 8 percent slopes	476	0.1
48	Pansey sandy loam	10,493	2.9
51	Plummer sand, 0 to 5 percent slopes	9,558	2.6
54	Croatan, Surrency, and Pantego soils, depressional	33,663	9.2
55	Pottsburg sand	8,123	2.2
57	Stilson loamy sand, 0 to 2 percent slopes	8,358	2.3
58	Stilson loamy sand, 2 to 5 percent slopes	1,432	0.4
60	Croatan, Rutlege, and Surrency soils, depressional	6,965	1.9
61	Troup sand, 0 to 5 percent slopes	9,110	2.5
62	Troup sand, 5 to 8 percent slopes	2,220	0.6
64	Pamlico, Bibb, and Rutlege soils, frequently flooded	11,551	3.1
66	Lakeland and Troup soils, 8 to 12 percent slopes	4,186	1.1
67	Alapaha loamy sand, 0 to 2 percent slopes	20,626	5.6
68	Croatan, Kinston, and Surrency soils, frequently flooded	16,024	4.4
69	Leefield loamy sand, 5 to 8 percent slopes	803	0.2
70	Alapaha loamy sand, 2 to 8 percent slopes	2,312	0.6
71	Dothan-Fuquay complex, 8 to 12 percent slopes	4,570	1.2
72	Pits	225	*
	Water	4,595	1.3
	Total	367,400	100.0

* Less than 0.1 percent.

Table 5.--Land Capability Classes and Yields per Acre of Crops and Pasture

(Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil.)

Soil name and map symbol	Land capability	Peanuts	Cotton lint	Soybeans	Winter wheat	Bahiagrass	Corn
		Lbs	Lbs	Bu	Bu	AUM*	Bu
2--------------- Albany	IIIw	1,700	450	20	45	6.5	75
4--------------- Brickyard	VIIw	---	---	---	---	---	---
5--------------- Robertsdale	IIIw	1,700	500	35	45	8.0	75
6--------------- Bladen	VIw	---	---	---	---	---	---
7--------------- Blanton	IIIs	2,200	450	25	40	6.5	60
8--------------- Blanton	IVs	2,000	400	20	35	6.5	50
10-------------- Bonifay	IIIs	1,600	450	24	40	7.2	50
12-------------- Chipley	IIIs	2,200	450	20	40	7.5	50
14-------------- Chipola	IIs	3,000	500	25	45	8.0	80
17-------------- Florala	IIw	3,600	900	40	55	9.0	100
18-------------- Florala	IIe	3,600	800	35	50	8.5	95
20-------------- Dorovan-Pamlico-Rutlege	VIIw	---	---	---	---	---	---
21-------------- Dothan	I	3,800	900	40	55	9.0	120
22-------------- Dothan	IIe	3,600	900	35	55	9.0	120
23-------------- Dothan	IIIe	3,600	800	30	50	8.0	100
24-------------- Dunbar	IIw	2,200	450	35	50	8.0	80
25-------------- Duplin	IIw	3,300	750	50	50	8.0	110
29-------------- Kenansville	IIs	3,400	700	33	45	8.0	100

* See footnote at end of table.

Table 5.--Land Capability Classes and Yields per Acre of Crops and Pasture--Continued

Soil name and map symbol	Land capability	Peanuts	Cotton lint	Soybeans	Winter wheat	Bahiagrass	Corn
		Lbs	Lbs	Bu	Bu	AUM*	Bu
30-------------- Garcon	IIw	2,200	450	30	40	8.0	70
31-------------- Foxworth	IIIs	2,000	450	20	30	7.5	50
32, 33---------- Fuquay	IIs	2,900	650	30	50	8.0	85
34-------------- Fuquay	IIIs	2,600	600	25	45	7.0	75
35-------------- Hurricane	IIIw	---	350	20	25	7.0	45
36-------------- Lakeland	IVs	2,000	300	20	35	7.0	55
37-------------- Lakeland	VIs	1,800	200	18	30	6.5	40
38:							
Wahee----------	VIw	---	---	---	---	---	---
Ochlockonee----	IIw	---	---	---	---	---	---
39-------------- Leefield	IIw	2,200	500	35	50	8.0	85
41, 42---------- Lucy	IIs	3,000	650	33	50	8.5	80
43-------------- Lucy	IIIs	2,500	600	25	45	8.5	70
44-------------- Orangeburg	I	4,000	900	45	55	8.5	120
45-------------- Orangeburg	IIe	4,000	900	45	55	8.5	120
46-------------- Orangeburg	IIIe	3,200	800	35	50	8.0	95
48-------------- Pansey	IVw	---	---	---	---	---	---
51-------------- Plummer	IVw	---	---	---	---	---	---
54-------------- Croatan, Surrency, and Pantego	VIIw	---	---	---	---	---	---
55-------------- Pottsburg	IVw	---	---	---	---	7.0	---

* See footnote at end of table.

Table 5.--Land Capability Classes and Yields per Acre of Crops and Pasture--Continued

Soil name and map symbol	Land capability	Peanuts	Cotton lint	Soybeans	Winter wheat	Bahiagrass	Corn
		Lbs	Lbs	Bu	Bu	AUM*	Bu
57-------------- Stilson	IIw	3,100	600	35	50	7.5	80
58-------------- Stilson	IIs	3,300	650	35	45	7.5	80
60-------------- Croatan, Rutlege, and Surrency	VIIw	---	---	---	---	---	---
61-------------- Troup	IIIs	2,200	500	25	40	7.2	60
62-------------- Troup	IVs	1,800	450	22	35	7.0	55
64:							
Pamlico-------	VIIw	---	---	---	---	---	---
Bibb----------	Vw	---	---	---	---	---	---
Rutlege-------	Vw	---	---	---	---	---	---
66-------------- Lakeland and Troup	VIs	---	---	---	---	5.9	---
67-------------- Alapaha	Vw	---	---	---	---	---	---
68:							
Croatan--------	VIIw	---	---	---	---	---	---
Kinston--------	VIw	---	---	---	---	---	---
Surrency-------	VIw	---	---	---	---	---	---
69-------------- Leefield	IIIe	2,000	400	20	35	7.5	60
70-------------- Alapaha	Vw	---	---	---	---	---	---
71:							
Dothan---------	IVe	2,600	660	25	40	7.0	78
Fuquay--------	IIIs	2,600	660	25	40	7.0	78
72. Pits							

* Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

Table 6.--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	Management concerns					Potential productivity			Trees to plant
	Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	
2------------------ Albany	Slight	Moderate	Moderate	Slight	Moderate	Slash pine----------	85	11	Slash pine, loblolly pine.
						Longleaf pine-------	80	7	
						Loblolly pine-------	95	10	
						White oak-----------	---	---	
						Pignut hickory------	---	---	
						American beech------	---	---	
						Flowering dogwood---	---	---	
5------------------ Robertsdale	Slight	Moderate	Slight	Moderate	Severe	Slash pine----------	90	11	Slash pine, loblolly pine.
						Loblolly pine-------	90	9	
						Sweetgum------------	83	6	
						Blackgum------------	---	---	
						Southern red oak----	---	---	
6------------------ Bladen	Slight	Moderate	Moderate	Severe	Severe	Slash pine----------	90	11	Loblolly pine, slash pine.**
						Loblolly pine-------	94	9	
						Sweetgum------------	90	7	
7, 8--------------- Blanton	Slight	Moderate	Moderate	Slight	Slight	Slash pine----------	90	11	Slash pine, loblolly pine, longleaf pine.
						Loblolly pine-------	80	8	
						Longleaf pine-------	70	6	
						Bluejack oak--------	---	---	
						Turkey oak----------	---	---	
						Live oak------------	---	---	
						White oak-----------	---	---	
						Pignut hickory------	---	---	
						American beech------	---	---	
						Flowering dogwood---	---	---	
10----------------- Bonifay	Slight	Moderate	Moderate	Slight	Moderate	Slash pine----------	85	11	Slash pine, sand pine, longleaf pine.
						Longleaf pine-------	65	7	
						Loblolly pine-------	80	8	
						Blackjack oak-------	---	---	
						Turkey oak----------	---	---	
						Post oak------------	---	---	

* See footnotes at end of table.

Table 6.--Woodland Management and Productivity--Continued

Soil name and map symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
12----------------- Chipley	Slight	Moderate	Moderate	Slight	Moderate	Slash pine---------- Longleaf pine------- Post oak------------ Turkey oak---------- Blackjack oak------- Post oak------------	83 80 --- --- --- ---	10 7 --- --- --- ---	Slash pine, longleaf pine.
14----------------- Chipola	Slight	Moderate	Moderate	Slight	Moderate	Slash pine---------- Loblolly pine------- Longleaf pine------- Live oak------------ Post oak------------ White oak----------- Pignut hickory------ American beech------ Flowering dogwood---	80 80 70 --- --- --- --- --- ---	10 8 6 --- --- --- --- --- ---	Slash pine, loblolly pine.
17, 18------------- Florala	Slight	Slight	Slight	Slight	Moderate	Slash pine---------- Lobllolly pine------- Longleaf pine------- Sweetgum------------ Water oak----------- White oak----------- Pignut hickory------ American beech------ Flowering dogwood---	90 90 80 --- --- --- --- --- ---	11 9 7 --- --- --- --- --- ---	Slash pine, loblolly pine.
21, 22, 23--------- Dothan	Slight	Slight	Slight	Slight	Moderate	Slash pine---------- Loblolly pine------- Longleaf pine------- Hickory------------- Water oak----------- White oak----------- Pignut hickory------ American beech------ Flowering dogwood---	92 88 84 --- --- --- --- --- ---	12 9 8 --- --- --- --- --- ---	Slash pine, loblolly pine, longleaf pine.

* See footnotes at end of table.

Table 6.--Woodland Management and Productivity--Continued

Soil name and map symbol	Management concerns					Potential productivity			Trees to plant
	Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	
24----------------- Dunbar	Slight	Moderate	Moderate	Severe	Severe	Slash pine---------- Loblolly pine------- Longleaf pine------- Sweetgum------------ Water oak----------- Yellow-poplar------- White oak----------- Pignut hickory------ American beech------ Flowering dogwood---	85 90 70 --- --- --- --- --- --- ---	11 9 6 --- --- --- --- --- --- ---	Loblolly pine, slash pine.
25----------------- Duplin	Slight	Moderate	Moderate	Severe	Moderate	Slash pine---------- Loblolly pine------- Sweetgum------------ Blackgum------------ White oak----------- Pignut hickory------ American beech------ Flowering dogwood---	90 90 --- --- --- --- --- ---	11 9 --- --- --- --- --- ---	Loblolly pine, slash pine.
29----------------- Kenansville	Slight	Moderate	Moderate	Slight	Moderate	Slash pine---------- Loblolly pine------- Longleaf pine------- Post oak------------ Blackjack oak------- White oak----------- Pignut hickory------ American beech------ Flowering dogwood---	93 84 68 --- --- --- --- --- ---	12 8 5 --- --- --- --- --- ---	Slash pine, loblolly pine.
30----------------- Garcon	Slight	Slight	Moderate	Moderate	Moderate	Slash pine---------- Longleaf pine------- White oak----------- Pignut hickory------ American beech------ Flowering dogwood---	80 70 --- --- --- ---	10 6 --- --- --- ---	Slash pine, loblolly pine.
31----------------- Foxworth	Slight	Moderate	Moderate	Slight	Moderate	Slash pine---------- Longleaf pine------- Turkey oak---------- Post oak------------ Bluejack oak-------- Laurel oak---------- Post oak------------	80 65 --- --- --- --- ---	10 5 --- --- --- --- ---	Slash pine, sand pine.

* See footnotes at end of table.

Table 6.--Woodland Management and Productivity--Continued

Soil name and map symbol	Management concerns					Potential productivity			Trees to plant
	Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	
32, 33, 34 Fuquay	Slight	Moderate	Moderate	Slight	Moderate	Slash pine	93	12	Slash pine, loblolly pine, longleaf pine.
						Loblolly pine	85	8	
						Longleaf pine	77	7	
						White oak	---	---	
						Pignut hickory	---	---	
						American beech	---	---	
						Flowering dogwood	---	---	
35 Hurricane	Slight	Moderate	Moderate	Slight	Moderate	Slash pine	83	10	Slash pine, longleaf pine.
						Longleaf pine	75	6	
						Blackjack oak	---	---	
						Post oak	---	---	
						Turkey oak	---	---	
36, 37 Lakeland***	Slight	Moderate	Moderate	Slight	Slight	Sand pine	75	5	Sand pine, longleaf pine.
						Longleaf pine	52	5	
						Slash pine	47	3	
						Turkey oak	---	---	
						Blackjack oak	---	---	
						Post oak	---	---	
						Bluejack oak	---	---	
						Laurel oak	---	---	
38:									
Wahee	Slight	Moderate	Moderate	Slight	Servere	Swamp chestnut oak	---	---	
						Yellow-poplar	---	---	
						Black willow	---	---	
						Green ash	---	---	
						River birch	---	---	
						Americam Sycamore	---	---	
Ochlockonee	Slight	Slight	Slight	Slight	Moderate	Sweetgum	---	---	
						Water hickory	---	---	
						Water oak	---	---	
						Willow oak	---	---	

* See footnotes at end of table.

Table 6.--Woodland Management and Productivity--Continued

Soil name and map 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
39----------------- Leefield	Slight	Moderate	Moderate	Moderate	Moderate	Slash pine---------- Loblolly pine------- Longleaf pine------- White oak----------- Pignut hickory------ American beech------ Flowering dogwood---	84 84 70 --- --- --- ---	11 8 6 --- --- --- ---	Slash pine, loblolly pine, longleaf pine.
41, 42, 43--------- Lucy	Slight	Moderate	Moderate	Slight	Moderate	Slash pine---------- Loblolly pine------- Longleaf pine------- White oak----------- Pignut hickory------ American beech------ Flowering dogwood---	84 80 70 --- --- --- ---	11 8 6 --- --- --- ---	Slash pine, loblolly pine, longleaf pine.
44, 45, 46--------- Orangeburg	Slight	Slight	Slight	Slight	Moderate	Slash pine---------- Loblolly pine------- Longleaf pine------- White oak----------- Pignut hickory------ American beech------ Flowering dogwood---	86 80 77 --- --- --- ---	11 8 7 --- --- --- ---	Slash pine, loblolly pine.
48----------------- Pansey	Slight	Moderate	Severe	Moderate	Severe	Slash pine---------- Loblolly pine-------	83 83	10 8	Slash pine, loblolly pine.**
51----------------- Plummer	Slight	Severe	Severe	Slight	Severe	Slash pine---------- Loblolly pine------- Longleaf pine------- Water oak-----------	88 91 70 ---	11 9 6 ---	Slash pine.**
55----------------- Pottsburg	Slight	Moderate	Moderate	Slight	Severe	Slash pine---------- Longleaf pine------- Live oak------------ Water oak-----------	80 65 --- ---	10 5 --- ---	Slash pine, longleaf pine.

* See footnotes at end of table.

Table 6.--Woodland Management and Productivity--Continued

Soil name and map symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Potential productivity: Common trees	Site index	Productivity class*	Trees to plant
57, 58: Stilson	Slight	Moderate	Moderate	Slight	Moderate	Slash pine	95	12	Slash pine, loblolly pine, longleaf pine.
						Loblolly pine	95	9	
						Longleaf pine	80	7	
						Sweetgum	---	---	
						White oak	---	---	
						Pignut hickory	---	---	
						American beech	---	---	
						Flowering dogwood	---	---	
61, 62: Troup	Slight	Moderate	Moderate	Slight	Slight	Slash pine	83	10	Slash pine, longleaf pine.
						Longleaf pine	70	6	
						Turkey oak	---	---	
						Blackjack oak	---	---	
						Post oak	---	---	
66:									
Lakeland***	Slight	Moderate	Moderate	Slight	Slight	Sand pine	75	5	Sand pine, longleaf pine.
						Longleaf pine	52	5	
						Slash pine	47	3	
						Blackjack oak	---	---	
						Post oak	---	---	
						Turkey oak	---	---	
Troup	Slight	Moderate	Moderate	Slight	Slight	Slash pine	83	6	Slash pine, longleaf pine.
						Longleaf pine	70	8	
						Turkey oak	---	---	
						Blackjack oak	---	---	
						Post oak	---	---	
67: Alapaha	Slight	Moderate	Moderate	Slight	Severe	Slash pine	87	11	Slash pine.**
						Loblolly pine	87	9	
						Longleaf pine	70	6	
						Water oak	---	---	
69: Leefield	Slight	Moderate	Moderate	Moderate	Moderate	Slash pine	84	11	Slash pine.
						Loblolly pine	84	8	
						Longleaf pine	70	6	
						White oak	---	---	
						Pignut hickory	---	---	
						American beech	---	---	
						Flowering dogwood	---	---	

* See footnotes at end of table.

Table 6.--Woodland Management and Productivity--Continued

Soil name and map symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Potential productivity: Common trees	Site index	Productivity class*	Trees to plant
71:									
Dothan	Slight	Slight	Slight	Slight	Moderate	Slash pine	92	12	Slash pine, loblolly pine, longleaf pine.
						Loblolly pine	88	9	
						Longleaf pine	84	8	
						Hickory	---	---	
						Water oak	---	---	
						White oak	---	---	
						Pignut hickory	---	---	
						American beech	---	---	
						Flowering dogwood	---	---	
Fuquay	Slight	Moderate	Moderate	Slight	Moderate	Slash pine	93	12	Slash pine, loblolly pine, longleaf pine.
						Loblolly pine	85	8	
						Longleaf pine	77	7	
						White oak	---	---	
						Pignut hickory	---	---	
						American beech	---	---	
						Flowering dogwood	---	---	

* 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.

** Adequate surface drainage or bedding is needed to regenerate the forest stand through the planting of trees and to obtain potential productivity.

*** For this Lakeland soil, site index data were collected in Walton County, Florida (Watts and Brockman, 1981).

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---------------- Albany	Severe: wetness.	Moderate: wetness, too sandy.	Severe: wetness.	Moderate: wetness, too sandy.	Severe: droughty.
4---------------- Brickyard	Severe: flooding, wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
5---------------- Robertsdale	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
6---------------- Bladen	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
7---------------- Blanton	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
8---------------- Blanton	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Severe: droughty.
10--------------- Bonifay	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
12--------------- Chipley	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
14--------------- Chipola	Severe: flooding.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.	Moderate: droughty.
17--------------- Florala	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness, droughty.
18--------------- Florala	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Moderate: wetness.	Moderate: wetness, droughty.
20:					
Dorovan---------	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
Pamlico---------	Severe: flooding, ponding, excess humus.	Severe: ponding, excess humus, too acid.	Severe: excess humus, ponding, too acid.	Severe: ponding, excess humus.	Severe: too acid, ponding, excess humus.
Rutlege---------	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding, droughty.

Table 7.--Recreational Development--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
21: Dothan	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: percs slowly.	Slight	Slight.
22: Dothan	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, percs slowly.	Slight	Moderate: droughty.
23: Dothan	Moderate: percs slowly.	Moderate: percs slowly.	Severe: slope.	Slight	Moderate: droughty.
24: Dunbar	Severe: flooding.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
25: Duplin	Severe: flooding.	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Slight	Slight.
29: Kenansville	Severe: flooding.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.	Moderate: droughty.
30: Garcon	Severe: flooding.	Moderate: wetness, too sandy.	Moderate: too sandy, wetness.	Moderate: wetness, too sandy.	Moderate: wetness, droughty.
31: Foxworth	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty, too sandy.
32: Fuquay	Moderate: too sandy, percs slowly.	Moderate: too sandy, percs slowly.	Moderate: too sandy, percs slowly.	Moderate: too sandy.	Moderate: droughty.
33: Fuquay	Moderate: too sandy, percs slowly.	Moderate: too sandy, percs slowly.	Moderate: slope, too sandy, percs slowly.	Moderate: too sandy.	Moderate: droughty.
34: Fuquay	Moderate: too sandy, percs slowly.	Moderate: too sandy, percs slowly.	Severe: slope, percs slowly.	Moderate: too sandy.	Moderate: droughty.
35: Hurricane	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
36: Lakeland	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty, too sandy.
37: Lakeland	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Moderate: droughty, too sandy.
38:					
Wahee	Severe: flooding.	Moderate: flooding, wetness.	Severe: flooding.	Moderate: wetness, flooding.	Severe: flooding.
Ochlockonee	Severe: flooding.	Moderate: flooding.	Severe: flooding.	Moderate: flooding.	Severe: flooding.

Table 7.--Recreational Development--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
39: Leefield	Moderate: wetness, too sandy.	Moderate: wetness, too sandy.	Moderate: slope, too sandy, wetness.	Moderate: wetness, too sandy.	Moderate: wetness, droughty.
41: Lucy	Slight	Slight	Slight	Slight	Moderate: droughty, too sandy.
42: Lucy	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty, too sandy.
43: Lucy	Slight	Slight	Severe: slope.	Slight	Moderate: droughty, too sandy.
44: Orangeburg	Slight	Slight	Slight	Slight	Slight.
45: Orangeburg	Slight	Slight	Moderate: slope.	Slight	Slight.
46: Orangeburg	Slight	Slight	Severe: slope.	Slight	Slight.
48: Pansey	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
51: Plummer	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness, droughty.
54:					
Croatan	Severe: flooding, ponding, excess humus.	Severe: ponding, excess humus, too acid.	Severe: excess humus, ponding, too acid.	Severe: ponding, excess humus.	Severe: too acid, ponding, excess humus.
Surrency	Severe: ponding, too sandy, percs slowly.	Severe: ponding, too sandy, percs slowly.	Severe: too sandy, ponding, percs slowly.	Severe: ponding, too sandy.	Severe: ponding.
Pantego	Severe: ponding, too acid, percs slowly.	Severe: ponding, too acid, percs slowly.	Severe: ponding, too acid, percs slowly.	Severe: ponding.	Severe: too acid, ponding.
55: Pottsburg	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness, droughty.
57: Stilson	Moderate: too sandy.	Moderate: too sandy.	Moderate: too sandy.	Moderate: too sandy.	Moderate: droughty.
58: Stilson	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.	Moderate: droughty.

Table 7.--Recreational Development--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
60:					
Croatan	Severe: flooding, ponding, excess humus.	Severe: ponding, excess humus, too acid.	Severe: excess humus, ponding, too acid.	Severe: ponding, excess humus.	Severe: too acid, ponding, excess humus.
Rutlege	Severe: ponding, too sandy.	Severe: ponding, too sandy.	Severe: ponding, too sandy.	Severe: ponding, too sandy.	Severe: ponding.
Surrency	Severe: ponding, percs slowly.	Severe: ponding, percs slowly.	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding.
61 Troup	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty.
62 Troup	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Moderate: droughty.
64:					
Pamlico	Severe: flooding, ponding, excess humus.	Severe: ponding, excess humus, too acid.	Severe: excess humus, ponding, flooding.	Severe: ponding, excess humus.	Severe: too acid, ponding, flooding.
Bibb	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
Rutlege	Severe: flooding, wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy.	Severe: wetness, too sandy.	Severe: wetness, droughty.
66:					
Lakeland	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Moderate: droughty, slope, too sandy.
Troup	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Moderate: droughty, slope.
67 Alapaha	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
68:					
Croatan	Severe: flooding, wetness, excess humus.	Severe: wetness, excess humus, too acid.	Severe: excess humus, wetness, flooding.	Severe: wetness, excess humus.	Severe: too acid, wetness, flooding.
Kinston	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.

Table 7.--Recreational Development--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
68:					
Surrency	Severe: flooding, wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: flooding, percs slowly.	Severe: wetness.	Severe: wetness, flooding.
69 Leefield	Moderate: percs slowly, wetness.	Moderate: percs slowly, wetness.	Severe: slope.	Moderate: wetness, too sandy.	Moderate: wetness, droughty.
70 Alapaha	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
71:					
Dothan	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope, percs slowly.	Slight	Moderate: droughty, slope.
Fuquay	Moderate: slope, too sandy, percs slowly.	Moderate: slope, too sandy, percs slowly.	Severe: slope, percs slowly.	Moderate: too sandy.	Moderate: droughty, slope.
72 Pits	Variable	Variable	Variable	Variable	Variable.

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 herba-ceous plants	Hard-wood trees	Conif-erous plants	Wetland plants	Shallow water areas	Open-land wild-life	Wood-land wild-life	Wetland wild-life
2-----------------Albany	Fair	Fair	Fair	Fair	Fair	Fair	Poor	Fair	Fair	Poor
4-----------------Brickyard	Poor	Poor	Fair	Good	Fair	Good	Fair	Poor	Good	Fair
5-----------------Robertsdale	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair
6-----------------Bladen	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good
7, 8--------------Blanton	Poor	Fair	Fair	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor
10----------------Bonifay	Poor	Fair	Fair	Poor	Fair	Very poor	Very poor	Poor	Fair	Very poor
12----------------Chipley	Poor	Fair	Fair	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor
14----------------Chipola	Poor	Fair	Good	Fair	Fair	Poor	Very poor	Fair	Fair	Very poor
17----------------Florala	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair
18----------------Florala	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
20:										
Dorovan-----------	Very poor	Very poor	Very poor	Very poor	Very poor	Good	Good	Very poor	Very poor	Good
Pamlico-----------	Very poor	Very poor	Poor	Poor	Poor	Good	Good	Very poor	Poor	Good
Rutlege-----------	Very poor	Poor	Poor	Poor	Poor	Fair	Good	Poor	Poor	Fair
21, 22, 23--------Dothan	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
24----------------Dunbar	Good	Good	Good	Good	Good	Poor	Fair	Good	Good	Poor
25----------------Duplin	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
29----------------Kenansville	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
30----------------Garcon	Poor	Fair	Good	Poor	Fair	Poor	Poor	Fair	Fair	Poor

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	Hard- wood trees	Conif- erous plants	Wetland plants	Shallow water areas	Open- land wild- life	Wood- land wild- life	Wetland wild- life
31----------------- Foxworth	Fair	Fair	Fair	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor
32, 33------------- Fuquay	Fair	Fair	Good	Fair	Fair	Poor	Very poor	Good	Fair	Very poor
34----------------- Fuquay	Poor	Fair	Good	Fair	Fair	Poor	Very poor	Good	Fair	Very poor
35----------------- Hurricane	Poor	Poor	Fair	Fair	Fair	Poor	Very poor	Poor	Fair	Very poor
36, 37------------- Lakeland	Poor	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
38:										
Wahee-------------	Very poor	Poor	Poor	Good	Fair	Fair	Fair	Poor	Fair	Fair
Ochlockonee-------	Poor	Fair	Fair	Good	Good	Poor	Very poor	Fair	Good	Very poor
39----------------- Leefield	Fair	Fair	Good	Fair	Fair	Fair	Fair	Fair	Fair	Fair
41, 42, 43--------- Lucy	Poor	Fair	Good	Good	Good	Poor	Very poor	Fair	Good	Very poor
44, 45------------- Orangeburg	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
46----------------- Orangeburg	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
48----------------- Pansey	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good
51----------------- Plummer	Poor	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair
54: Croatan.										
Surrency----------	Poor	Poor	Poor	Poor	Poor	Fair	Good	Poor	Poor	Fair
Pantego-----------	Very poor	Very poor	Very poor	Fair	Poor	Good	Good	Very poor	Poor	Good
55----------------- Pottsburg	Poor	Fair	Fair	Poor	Fair	Poor	Fair	Fair	Fair	Poor
57, 58------------- Stilson	Fair	Fair	Good	Fair	Fair	Poor	Poor	Fair	Fair	Poor
60: Croatan.										
Rutlege-----------	Very poor	Poor	Poor	Poor	Poor	Fair	Good	Poor	Poor	Fair

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
60:										
Surrency	Poor	Poor	Poor	Poor	Poor	Fair	Good	Poor	Poor	Fair
61, 62 Troup	Poor	Fair	Fair	Poor	Poor	Very poor	Very poor	Fair	Poor	Very poor
64:										
Pamlico	Very poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good
Bibb	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good
Rutlege	Very poor	Poor	Poor	Poor	Poor	Fair	Good	Poor	Poor	Fair
66:										
Lakeland	Poor	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
Troup	Poor	Fair	Fair	Poor	Poor	Very poor	Very poor	Fair	Poor	Very poor
67 Alapaha	Very poor	Poor	Fair	Fair	Fair	Fair	Fair	Poor	Fair	Fair
68:										
Croatan.										
Kinston	Very poor	Poor	Poor	Poor	Poor	Good	Fair	Poor	Poor	Fair
Surrency	Poor	Poor	Poor	Poor	Poor	Fair	Good	Poor	Poor	Fair
69 Leefield	Fair	Fair	Good	Fair	Fair	Fair	Fair	Fair	Fair	Fair
70 Alapaha	Very poor	Poor	Fair	Fair	Fair	Fair	Fair	Poor	Fair	Fair
71:										
Dothan	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Fuquay	Poor	Fair	Good	Fair	Fair	Poor	Very poor	Good	Fair	Very poor
72 Pits	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor

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----------------- Albany	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Severe: droughty.
4----------------- Brickyard	Severe: excess humus, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness, low strength.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: wetness, flooding.
5----------------- Robertsdale	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
6----------------- Bladen	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness.	Severe: wetness.
7----------------- Blanton	Severe: cutbanks cave.	Slight---------	Moderate: wetness.	Slight---------	Slight---------	Severe: droughty.
8----------------- Blanton	Severe: cutbanks cave.	Slight---------	Moderate: wetness.	Moderate: slope.	Slight---------	Severe: droughty.
10---------------- Bonifay	Severe: cutbanks cave.	Slight---------	Moderate: wetness.	Slight---------	Slight---------	Severe: droughty.
12---------------- Chipley	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Severe: droughty.
14---------------- Chipola	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.	Moderate: droughty.
17, 18------------ Florala	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness, droughty.
20:						
Dorovan----------	Severe: excess humus, ponding.	Severe: subsides, ponding.	Severe: subsides, ponding.	Severe: subsides, ponding.	Severe: subsides, ponding.	Severe: ponding, excess humus.

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
20:						
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: too acid, ponding, excess humus.
Rutlege	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding, droughty.
21 Dothan	Moderate: wetness.	Slight	Moderate: wetness.	Slight	Slight	Slight.
22 Dothan	Moderate: wetness.	Slight	Moderate: wetness.	Slight	Slight	Moderate: droughty.
23 Dothan	Moderate: wetness.	Slight	Moderate: wetness.	Moderate: slope.	Slight	Moderate: droughty.
24 Dunbar	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength.	Moderate: wetness.
25 Duplin	Severe: flooding.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Severe: low strength.	Slight.
29 Kenansville	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding.	Moderate: droughty.
30 Garcon	Severe: cutbanks cave, wetness.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding, wetness.	Moderate: wetness, droughty.
31 Foxworth	Severe: cutbanks cave.	Slight	Moderate: wetness.	Slight	Slight	Moderate: droughty, too sandy.
32, 33 Fuquay	Slight	Slight	Moderate: wetness.	Slight	Slight	Moderate: droughty.
34 Fuquay	Slight	Slight	Moderate: wetness.	Moderate: slope.	Slight	Moderate: droughty.

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
35----------------- Hurricane	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Severe: droughty.
36----------------- Lakeland	Severe: cutbanks cave.	Slight----------	Slight----------	Slight----------	Slight----------	Moderate: droughty, too sandy.
37----------------- Lakeland	Severe: cutbanks cave.	Slight----------	Slight----------	Moderate: slope.	Slight----------	Moderate: droughty, too sandy.
38:						
Wahee------------	Severe: wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding.	Severe: flooding.
Ochlockonee------	Moderate: wetness.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.
39----------------- Leefield	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness, droughty.
41----------------- Lucy	Moderate: cutbanks cave.	Slight----------	Slight----------	Slight----------	Slight----------	Moderate: droughty.
42----------------- Lucy	Moderate: cutbanks cave.	Slight----------	Slight----------	Slight----------	Slight----------	Moderate: droughty, too sandy.
43----------------- Lucy	Moderate: cutbanks cave.	Slight----------	Slight----------	Moderate: slope.	Slight----------	Moderate: droughty, too sandy.
44, 45------------ Orangeburg	Slight----------	Slight----------	Slight----------	Slight----------	Slight----------	Slight.
46----------------- Orangeburg	Slight----------	Slight----------	Slight----------	Moderate: slope.	Slight----------	Slight.
48----------------- Pansey	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.

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
51---------------- Plummer	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, droughty.
54:						
Croatan----------	Severe: excess humus, ponding.	Severe: subsides, flooding, ponding.	Severe: subsides, flooding, ponding.	Severe: subsides, flooding, ponding.	Severe: subsides, ponding.	Severe: too acid, ponding, excess humus.
Surrency---------	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
Pantego----------	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: too acid, ponding.
55---------------- Pottsburg	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, droughty.
57, 58------------ Stilson	Severe: cutbanks cave.	Slight---------	Moderate: wetness.	Slight---------	Slight---------	Moderate: droughty.
60:						
Croatan----------	Severe: excess humus, ponding.	Severe: subsides, flooding, ponding.	Severe: subsides, flooding, ponding.	Severe: subsides, flooding, ponding.	Severe: subsides, ponding.	Severe: too acid, ponding, excess humus.
Rutlege----------	Severe: cutbanks cave, 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.
61---------------- Troup	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Slight---------	Moderate: droughty.
62---------------- Troup	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Slight---------	Moderate: droughty.

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
64:						
Pamlico	Severe: cutbanks cave, excess humus, ponding.	Severe: flooding, ponding, low strength.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: low strength, flooding, ponding.	Severe: too acid, ponding, flooding.
Bibb	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: wetness, flooding.
Rutlege	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: wetness, droughty.
66:						
Lakeland	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope, too sandy.
Troup	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
67 Alapaha	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
68:						
Croatan	Severe: excess humus, wetness.	Severe: subsides, flooding, wetness.	Severe: subsides, flooding, wetness.	Severe: subsides, flooding, wetness.	Severe: subsides, wetness, flooding.	Severe: too acid, wetness, flooding.
Kinston	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: wetness, flooding.
Surrency	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: wetness, flooding.

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
69: Leefield	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Moderate: wetness.	Moderate: wetness, droughty.
70: Alapaha	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
71:						
Dothan	Moderate: wetness, slope.	Moderate: slope.	Moderate: wetness, slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
Fuquay	Moderate: slope.	Moderate: slope.	Moderate: wetness, slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
72: Pits	Variable	Variable	Variable	Variable	Variable	Variable.

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: Albany	Severe: wetness.	Severe: seepage, wetness.	Severe: wetness.	Severe: seepage, wetness.	Poor: wetness.
4: Brickyard	Severe: flooding, wetness, percs slowly.	Severe: flooding.	Severe: flooding, wetness, too clayey.	Severe: flooding, wetness.	Poor: too clayey, hard to pack, wetness.
5: Robertsdale	Severe: wetness, percs slowly.	Slight	Severe: wetness.	Severe: wetness.	Poor: wetness.
6: Bladen	Severe: wetness, percs slowly.	Slight	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
7, 8: Blanton	Moderate: wetness, percs slowly.	Severe: seepage.	Severe: too sandy.	Severe: seepage.	Poor: too sandy.
10: Bonifay	Moderate: wetness, percs slowly.	Severe: seepage.	Severe: too sandy.	Severe: seepage.	Poor: too sandy.
12: Chipley	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy.
14: Chipola	Severe: percs slowly.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: seepage.
17: Florala	Severe: wetness, percs slowly.	Moderate: seepage.	Severe: wetness.	Severe: wetness.	Fair: wetness.
18: Florala	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Severe: wetness.	Severe: wetness.	Fair: wetness.
20:					
Dorovan	Severe: subsides, ponding.	Severe: excess humus, ponding.	Severe: seepage, ponding.	Severe: ponding.	Poor: ponding, excess humus.
Pamlico	Severe: ponding, poor filter.	Severe: seepage, excess humus, ponding.	Severe: seepage, ponding, too sandy.	Severe: seepage, ponding.	Poor: seepage, too sandy, ponding.
Rutlege	Severe: ponding, poor filter.	Severe: seepage, ponding.	Severe: seepage, ponding, too sandy.	Severe: seepage, ponding.	Poor: seepage, too sandy, ponding.

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
21-------------- Dothan	Severe: wetness, percs slowly.	Moderate: seepage.	Moderate: wetness.	Slight-----------	Good.
22, 23---------- Dothan	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Moderate: wetness.	Slight-----------	Good.
24-------------- Dunbar	Severe: wetness, percs slowly, flooding.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: small stones, wetness.
25-------------- Duplin	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey, hard to pack, wetness.
29-------------- Kenansville	Moderate: wetness, flooding.	Severe: seepage.	Severe: seepage, wetness.	Severe: seepage.	Poor: thin layer.
30-------------- Garcon	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy.
31-------------- Foxworth	Moderate: wetness.	Severe: seepage.	Severe: seepage, wetness.	Severe: seepage.	Poor: seepage, too sandy.
32, 33, 34------ Fuquay	Severe: percs slowly, poor filter.	Severe: seepage.	Moderate: too sandy.	Severe: seepage.	Poor: seepage.
35-------------- Hurricane	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy.
36, 37---------- Lakeland	Slight-----------	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
38:					
Wahee----------	Severe: flooding, wetness, percs slowly.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: too clayey, hard to pack, wetness.
Ochlockonee----	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, wetness.	Fair: wetness.
39-------------- Leefield	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: wetness.	Severe: seepage, wetness.	Fair: wetness.
41, 42, 43------ Lucy	Slight-----------	Severe: seepage.	Slight-----------	Severe: seepage.	Fair: too clayey.

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-------------- Orangeburg	Slight-----------	Moderate: seepage.	Slight-----------	Slight-----------	Good.
45, 46---------- Orangeburg	Slight-----------	Moderate: seepage, slope.	Slight-----------	Slight-----------	Good.
48-------------- Pansey	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
51-------------- Plummer	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: wetness, too sandy.	Severe: seepage, wetness.	Poor: too sandy, wetness.
54:					
Croatan--------	Severe: ponding, percs slowly.	Severe: seepage, excess humus, ponding.	Severe: ponding, too acid.	Severe: seepage, ponding.	Poor: ponding.
Surrency-------	Severe: ponding, percs slowly.	Severe: seepage, ponding.	Severe: ponding, too sandy.	Severe: seepage, ponding.	Poor: too sandy, ponding.
Pantego--------	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding, too acid.	Severe: ponding.	Poor: ponding, too acid.
55-------------- Pottsburg	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
57, 58---------- Stilson	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Moderate: wetness.	Severe: seepage.	Fair: wetness.
60:					
Croatan--------	Severe: ponding, percs slowly.	Severe: seepage, excess humus, ponding.	Severe: ponding, too acid.	Severe: seepage, ponding.	Poor: ponding.
Rutlege--------	Severe: ponding, poor filter.	Severe: seepage, ponding.	Severe: seepage, ponding, too sandy.	Severe: seepage, ponding.	Poor: seepage, too sandy, ponding.
Surrency-------	Severe: ponding, percs slowly.	Severe: seepage, ponding.	Severe: ponding, too sandy.	Severe: seepage, ponding.	Poor: too sandy, ponding.
61, 62---------- Troup	Slight-----------	Severe: seepage.	Severe: too sandy.	Severe: seepage.	Poor: seepage, too sandy.
64:					
Pamlico--------	Severe: flooding, ponding, poor filter.	Severe: seepage, flooding, excess humus.	Severe: flooding, seepage, ponding.	Severe: flooding, seepage, ponding.	Poor: seepage, excess humus, ponding.

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
64:					
Bibb	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: small stones, wetness.
Rutlege	Severe: flooding, wetness, poor filter.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: seepage, too sandy, wetness.
66:					
Lakeland	Moderate: slope.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
Troup	Moderate: slope.	Severe: seepage, slope.	Severe: too sandy.	Severe: seepage.	Poor: seepage, too sandy.
67 Alapaha	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: wetness.	Severe: seepage, wetness.	Poor: wetness.
68:					
Croatan	Severe: flooding, wetness, percs slowly.	Severe: seepage, flooding, excess humus.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: wetness.
Kinston	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
Surrency	Severe: flooding, wetness, percs slowly.	Severe: seepage, flooding, wetness.	Severe: flooding, wetness, too sandy.	Severe: flooding, seepage, wetness.	Poor: too sandy, wetness.
69 Leefield	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: wetness.	Severe: seepage, wetness.	Fair: wetness.
70 Alapaha	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: wetness.	Severe: seepage, wetness.	Poor: wetness.
71:					
Dothan	Severe: wetness, percs slowly.	Severe: slope.	Moderate: wetness, slope.	Moderate: slope.	Fair: slope.
Fuquay	Severe: percs slowly, poor filter.	Severe: seepage, slope.	Moderate: slope, too sandy.	Severe: seepage.	Poor: seepage.
72 Pits	Variable	Variable	Variable	Variable	Variable.

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-------------------- Albany	Fair: wetness.	Probable------------	Improbable: too sandy.	Fair: too sandy.
4-------------------- Brickyard	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
5-------------------- Robertsdale	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
6-------------------- Bladen	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
7, 8----------------- Blanton	Good-----------------	Probable------------	Improbable: too sandy.	Poor: too sandy.
10------------------- Bonifay	Good-----------------	Probable------------	Improbable: too sandy.	Poor: too sandy.
12------------------- Chipley	Fair: wetness.	Probable------------	Improbable: too sandy.	Poor: too sandy.
14------------------- Chipola	Good-----------------	Probable------------	Improbable: too sandy.	Fair: too sandy.
17, 18--------------- Florala	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
20:				
Dorovan-------------	Poor: wetness.	Probable------------	Improbable: too sandy.	Poor: excess humus, wetness.
Pamlico-------------	Poor: low strength, wetness.	Probable------------	Improbable: too sandy.	Poor: excess humus, wetness, too acid.
Rutlege-------------	Poor: wetness.	Probable------------	Improbable: too sandy.	Poor: too sandy, wetness.
21, 22, 23----------- Dothan	Good-----------------	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer.
24------------------- Dunbar	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
25------------------- Duplin	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
29------------------- Kenansville	Good-----------------	Probable------------	Improbable: too sandy.	Fair: too sandy.

Table 11.--Construction Materials--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
30: Garcon	Fair: wetness.	Probable	Improbable: too sandy.	Poor: too sandy.
31: Foxworth	Good	Probable	Improbable: too sandy.	Poor: too sandy.
32, 33, 34: Fuquay	Good	Improbable: thin layer.	Improbable: too sandy.	Fair: too sandy, small stones.
35: Hurricane	Fair: wetness.	Probable	Improbable: too sandy.	Poor: too sandy.
36, 37: Lakeland	Good	Probable	Improbable: too sandy.	Poor: too sandy.
38:				
Wahee	Fair: low strength, shrink-swell, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Ochlockonee	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
39: Leefield	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
41: Lucy	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
42, 43: Lucy	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy.
44, 45, 46: Orangeburg	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
48: Pansey	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
51: Plummer	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness.
54:				
Croatan	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess humus, wetness, too acid.
Surrency	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy, wetness.
Pantego	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness, too acid.
55: Pottsburg	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness.

Table 11.--Construction Materials--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
57, 58: Stilson	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
60:				
Croatan	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess humus, wetness, too acid.
Rutlege	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness.
Surrency	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy, wetness.
61, 62: Troup	Good	Probable	Improbable: too sandy.	Poor: too sandy.
64:				
Pamlico	Poor: low strength, wetness.	Probable	Improbable: too sandy.	Poor: excess humus, wetness, too acid.
Bibb	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, wetness.
Rutlege	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness.
66:				
Lakeland	Good	Probable	Improbable: too sandy.	Poor: too sandy.
Troup	Good	Probable	Improbable: too sandy.	Poor: too sandy.
67: Alapaha	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
68:				
Croatan	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess humus, wetness, too acid.
Kinston	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Surrency	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy, wetness.
69: Leefield	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.

Table 11.--Construction Materials--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
70------------------- Alapaha	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
71:				
Dothan---------------	Good----------------	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer.
Fuquay---------------	Good----------------	Improbable: thin layer.	Improbable: too sandy.	Fair: too sandy, small stones, slope.
72------------------- Pits	Variable------------	Variable------------	Variable------	Variable.

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-- Pond reservoir areas	Limitations for-- Embankments, dikes, and levees	Limitations for-- Aquifer-fed excavated ponds	Features affecting-- Drainage	Features affecting-- Irrigation	Features affecting-- Terraces and diversions	Features affecting-- Grassed waterways
2----------------- 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.
4----------------- Brickyard	Slight---------	Severe: hard to pack, wetness.	Severe: slow refill.	Percs slowly, flooding.	Wetness, percs slowly.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
5----------------- Robertsdale	Slight---------	Moderate: piping, wetness.	Severe: no water, slow refill.	Percs slowly---	Wetness, percs slowly.	Wetness, percs slowly.	Wetness, percs slowly.
6----------------- Bladen	Slight---------	Severe: wetness.	Severe: slow refill.	Percs slowly---	Wetness, percs slowly.	Wetness, percs slowly.	Wetness, percs slowly.
7----------------- Blanton	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake.	Too sandy, soil blowing.	Droughty.
8----------------- Blanton	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Too sandy, soil blowing.	Droughty.
10---------------- Bonifay	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Droughty, fast intake.	Too sandy, soil blowing.	Droughty.
12---------------- Chipley	Severe: seepage.	Severe: seepage.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty.	Wetness, too sandy, soil blowing.	Droughty.
14---------------- Chipola	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake.	Too sandy, soil blowing.	Droughty.
17---------------- Florala	Moderate: seepage.	Severe: piping, wetness.	Severe: slow refill.	Percs slowly---	Wetness, droughty, fast intake.	Wetness, soil blowing, percs slowly.	Droughty, percs slowly.
18---------------- Florala	Moderate: seepage, slope.	Severe: piping, wetness.	Severe: slow refill.	Percs slowly, slope.	Wetness, droughty, fast intake.	Wetness, soil blowing, percs slowly.	Droughty, percs slowly.

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
20:							
Dorovan	Moderate: seepage.	Severe: excess humus, ponding.	Severe: cutbanks cave.	Ponding, subsides.	Ponding, soil blowing.	Ponding, soil blowing.	Wetness.
Pamlico	Severe: seepage.	Severe: seepage, piping, ponding.	Severe: cutbanks cave.	Ponding, subsides, cutbanks cave.	Ponding, soil blowing.	Ponding, too sandy, soil blowing.	Wetness.
Rutlege	Severe: seepage.	Severe: seepage, ponding.	Severe: cutbanks cave.	Ponding, cutbanks cave.	Ponding, droughty.	Ponding, too sandy.	Wetness.
21 Dothan	Moderate: seepage.	Moderate: piping.	Severe: no water, slow refill.	Deep to water, percs slowly.	Percs slowly	Percs slowly	Percs slowly.
22, 23 Dothan	Moderate: seepage, slope.	Moderate: piping.	Severe: no water, slow refill.	Deep to water, percs slowly.	Fast intake, slope, droughty.	Percs slowly	Percs slowly.
24 Dunbar	Slight	Severe: wetness.	Severe: slow refill.	Percs slowly	Percs slowly.	Wetness, soil blowing, percs slowly.	Wetness, percs slowly.
25 Duplin	Slight	Moderate: piping, hard to pack, wetness.	Severe: slow refill.	Percs slowly	Wetness, percs slowly.	Wetness, soil blowing, percs slowly.	Percs slowly.
29 Kenansville	Severe: seepage.	Severe: piping.	Severe: cutbanks cave.	Deep to water	Fast intake, droughty, soil blowing.	Soil blowing	Droughty.
30 Garcon	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Droughty.
31 Foxworth	Severe: seepage.	Severe: seepage.	Severe: cutbanks cave.	Deep to water	Droughty, fast intake.	Too sandy, soil blowing.	Droughty.
32 Fuquay	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.

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
33, 34: Fuquay	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Too sandy, soil blowing.	Droughty.
35: Hurricane	Severe: seepage.	Severe: seepage, piping.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty.	Wetness, too sandy, soil blowing.	Droughty.
36: Lakeland	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Droughty, fast intake.	Too sandy, soil blowing.	Droughty.
37: Lakeland	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Too sandy, soil blowing.	Droughty.
38:							
Wahee	Slight	Severe: wetness.	Severe: slow refill.	Percs slowly, flooding.	Wetness, percs slowly.	Erodes easily, wetness, percs slowly.	Erodes easily, percs slowly.
Ochlockonee	Severe: seepage.	Severe: piping.	Severe: cutbanks cave.	Deep to water	Flooding	Favorable	Favorable.
39: Leefield	Moderate: seepage.	Severe: piping, wetness.	Severe: slow refill, cutbanks cave.	Favorable	Wetness, droughty, fast intake.	Wetness, soil blowing.	Droughty.
41: Lucy	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Droughty, fast intake.	Too sandy, soil blowing.	Droughty.
42, 43: Lucy	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Droughty, fast intake, slope.	Too sandy, soil blowing.	Droughty.
44: Orangeburg	Moderate: seepage.	Moderate: piping.	Severe: no water.	Deep to water	Fast intake	Soil blowing	Favorable.
45: Orangeburg	Moderate: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water	Fast intake, slope.	Soil blowing	Favorable.
46: Orangeburg	Moderate: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope	Soil blowing	Favorable.

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 Pansey	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Percs slowly	Wetness, percs slowly.	Wetness, percs slowly.	Wetness, percs slowly.
51 Plummer	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, fast intake.	Wetness, too sandy, soil blowing.	Wetness, droughty.
54:							
Croatan	Severe: seepage.	Severe: piping, ponding.	Severe: slow refill.	Ponding, percs slowly, subsides.	Ponding, soil blowing, percs slowly.	Ponding, soil blowing.	Wetness, percs slowly.
Surrency	Severe: seepage.	Severe: seepage, piping, ponding.	Severe: slow refill, cutbanks cave.	Ponding, cutbanks cave, parcs slowly.	Ponding, droughty, fast intake.	Ponding, too sandy, percs slowly.	Wetness, droughty, rooting depth.
Pantego	Moderate: seepage.	Severe: ponding.	Severe: slow refill.	Ponding, too acid, percs slowly.	Ponding, percs slowly.	Ponding, percs slowly.	Wetness, percs slowly.
55 Pottsburg	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Wetness, droughty.
57 Stilson	Moderate: seepage.	Severe: piping.	Severe: cutbanks cave.	Favorable	Wetness, droughty.	Wetness, soil blowing.	Droughty.
58 Stilson	Moderate: seepage.	Severe: piping.	Severe: cutbanks cave.	Slope	Slope, wetness, droughty.	Wetness, soil blowing.	Droughty.
60:							
Croatan	Severe: seepage.	Severe: piping, ponding.	Severe: slow refill.	Ponding, percs slowly, subsides.	Ponding, soil blowing, percs slowly.	Ponding, soil blowing.	Wetness, percs slowly.
Rutlege	Severe: seepage.	Severe: seepage, ponding.	Severe: cutbanks cave.	Ponding, cutbanks cave.	Ponding, droughty.	Ponding, too sandy.	Wetness.

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
60:							
Surrency----------	Severe: seepage.	Severe: seepage, piping, ponding.	Severe: slow refill, cutbanks cave.	Ponding, cutbanks cave, percs slowly.	Ponding, droughty, fast intake.	Ponding, too sandy, percs slowly.	Wetness, droughty, rooting depth.
61----------------- Troup	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake.	Too sandy, soil blowing.	Droughty.
62----------------- Troup	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake, slope.	Too sandy, soil blowing.	Droughty.
64:							
Pamlico-----------	Severe: seepage.	Severe: seepage, piping, ponding.	Severe: cutbanks cave.	Ponding, flooding, subsides.	Ponding, flooding.	Ponding, too sandy, soil blowing.	Wetness.
Bibb--------------	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Flooding-------	Wetness--------	Erodes easily, wetness.	Wetness, erodes easily.
Rutlege-----------	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Flooding, cutbanks cave.	Wetness, droughty, fast intake.	Wetness, too sandy.	Wetness, droughty.
66:							
Lakeland----------	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Slope, too sandy, soil blowing.	Slope, droughty.
Troup-------------	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake, slope.	Slope, too sandy, soil blowing.	Slope, droughty.
67----------------- Alapaha	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: slow refill, cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Wetness, droughty.

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
68:							
Croatan	Severe: seepage.	Severe: piping, wetness.	Severe: slow refill.	Percs slowly, flooding, subsides.	Wetness, soil blowing, percs slowly.	Wetness, soil blowing.	Wetness, percs slowly.
Kinston	Moderate: seepage.	Severe: wetness.	Slight	Flooding	Wetness, flooding.	Wetness	Wetness.
Surrency	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: slow refill, cutbanks cave.	Flooding, cutbanks cave, percs slowly.	Wetness, droughty, fast intake.	Too sandy, wetness, percs slowly.	Wetness, droughty, rooting depth.
69 Leefield	Moderate: seepage.	Severe: piping, wetness.	Severe: slow refill, cutbanks cave.	Slope	Droughty, fast intake, slope.	Wetness, soil blowing.	Droughty.
70 Alapaha	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: slow refill, cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Wetness, droughty.
71:							
Dothan	Severe: slope.	Moderate: piping.	Severe: no water, slow refill.	Deep to water, percs slowly.	Fast intake, slope, droughty.	Slope, percs slowly.	Slope, droughty, percs slowly.
Fuquay	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water, slow refill.	Deep to water, percs slowly.	Slope, droughty, fast intake.	Slope, too sandy, soil blowing.	Slope, droughty, percs slowly.
72 Pits	Variable	Variable	Variable	Variable	Variable	Variable	Variable.

Table 13.--Engineering Index Properties

(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----------------- Albany	0-61	Loamy sand-------	SM, SP-SM	A-2	100	100	75-90	13-23	---	NP
	61-80	Sandy clay loam, sandy loam, fine sandy loam.	SC, SM, SC-SM	A-2-6 A-4, A-6	97-100	95-100	70-100	20-50	<40	NP-18
4----------------- Brickyard	0-6	Clay loam--------	CL, CH, MH	A-7	100	98-100	95-100	80-100	41-70	15-40
	6-28	Silty clay, silty clay loam, clay.	CL, CH, MH	A-7	100	98-100	95-100	85-100	41-75	15-45
	28-80	Silty clay, silty clay loam, clay loam.	CL, CH, MH, OH	A-6, A-7	100	98-100	90-100	70-95	30-70	11-40
5----------------- Robertsdale	0-7	Fine sandy loam	SC-SM, CL-ML, SM, ML	A-4	90-100	75-100	70-100	40-60	<25	NP-7
	7-80	Sandy clay loam, clay loam, loam.	SC, CL, CL-ML, SC-SM	A-4, A-6 A-7-6	90-100	80-100	70-97	40-76	25-40	4-19
6----------------- Bladen	0-14	Loam-------------	CL, ML, CL-ML	A-4	100	98-100	80-100	51-90	<30	NP-10
	14-80	Clay, sandy clay	CL, CH	A-7-6	100	99-100	75-100	55-85	43-67	23-45
7----------------- Blanton	0-68	Sand-------------	SP-SM, SM	A-3, A-2-4	100	90-100	65-100	5-20	---	NP
	68-80	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	23-50	12-45	NP-22
8----------------- Blanton	0-68	Sand-------------	SP-SM, SM	A-3, A-2-4	100	90-100	65-100	5-20	---	NP
	68-75	Loamy sand-------	SM, SP-SM	A-2	100	100	75-90	13-23	---	NP
	75-80	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

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	
10--------------- Bonifay	0-52	Sand-------------	SP-SM	A-3, A-2-4	98-100	98-100	60-95	5-12	---	NP
	52-64	Loamy sand-------	SM, SP-SM	A-2	100	100	75-90	13-23	---	NP
	64-80	Sandy loam, sandy clay loam, fine sandy loam.	SC-SM, SC, SM	A-2-4, A-4, A-6 A-2-6	95-100	90-100	63-95	23-50	<30	NP-12
12--------------- Chipley	0-7	Sand-------------	SP-SM	A-3, A-2-4	100	100	80-100	6-12	---	NP
	7-80	Sand, fine sand	SP-SM	A-3, A-2-4	100	100	80-100	6-12	---	NP
14--------------- Chipola	0-22	Loamy sand-------	SP-SM, SM	A-2-4	100	95-100	75-90	11-25	---	NP
	22-41	Sandy loam, sandy clay loam.	SC-SM, SC	A-2-4, A-4 A-7-6	95-100	95-100	75-97	30-75	18-44	4-22
	41-58	Loamy sand, sandy loam.	SM, SC-SM	A-2-4 A-7-6	95-100	90-95	75-90	13-35	<28	NP-7
	58-80	Sand, coarse sand	SP-SM	A-3, A-2-4	95-100	90-95	51-70	5-12	---	NP
17--------------- Florala	0-8	Loamy sand-------	SM, SP-SM	A-2-4	98-100	95-100	60-85	18-35	---	NP
	8-25	Fine sandy loam, sandy loam.	SM	A-2, A-4	98-100	95-100	60-90	30-50	<30	NP-7
	25-80	Fine sandy loam, sandy loam, sandy clay loam.	SC, SC-SM	A-4, A-6, A-2-6	95-100	95-100	55-85	35-50	20-35	4-15
18--------------- Florala	0-11	Loamy sand-------	SM, SP-SM	A-2-4	98-100	95-100	60-85	18-35	---	NP
	11-25	Fine sandy loam, sandy loam.	SM	A-2, A-4	98-100	95-100	60-90	30-50	<30	NP-7
	25-80	Fine sandy loam, sandy loam, sandy clay loam.	SC, SC-SM	A-4, A-6, A-2	95-100	95-100	55-85	35-50	20-35	4-15
20:										
Dorovan---------	0-80	Muck-------------	PT	---	---	---	---	---	---	---
Pamlico---------	0-31	Muck-------------	PT	---	---	---	---	---	---	---
	31-80	Sand, fine sand, loamy sand.	SM, SP-SM	A-2, A-3	100	100	70-95	5-20	10-20	NP
Rutlege---------	0-13	Sand-------------	SP-SM	A-3	95-100	95-100	70-100	5-10	---	NP
	13-80	Sand, loamy sand, loamy fine sand.	SP-SM, SP, SM	A-2, A-3	95-100	95-100	50-80	2-25	<20	NP

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	
21. Dothan	0-6	Sandy loam	SM, SP-SM	A-2, A-4	95-100	92-100	75-90	20-40	<25	NP-5
	6-25	Sandy clay loam, sandy loam, fine sandy loam.	SC-SM, SC, SM	A-2, A-4, A-6	95-100	92-100	60-90	23-49	<40	NP-16
	25-80	Sandy clay loam, sandy clay.	SC-SM, SC, CL-ML, CL	A-2, A-4, A-6, A-7	89-100	87-100	70-95	30-53	25-45	4-24
22. Dothan	0-11	Loamy sand	SM, SP-SM	A-2	95-100	92-100	60-80	13-30	---	NP
	11-48	Sandy clay loam, sandy loam, fine sandy loam.	SC-SM, SC, SM	A-2-4, A-4, A-6	89-100	89-100	60-90	23-49	<40	NP-16
	48-80	Sandy clay loam, sandy clay.	SC-SM, SC, CL-ML, CL	A-2, A-4, A-6, A-7	95-100	92-100	70-95	30-53	25-45	4-24
23. Dothan	0-5	Loamy sand	SM	A-2	95-100	92-100	60-80	13-30	---	NP
	5-12	Sandy clay loam, sandy loam, fine sandy loam.	SC-SM, SC, SM	A-2, A-4, A-6	95-100	92-100	60-90	23-49	<40	NP-16
	12-80	Sandy clay loam, sandy clay.	SC-SM, SC, CL-ML, CL	A-2, A-4, A-6, A-7	95-100	92-100	70-95	30-53	25-45	4-24
24. Dunbar	0-6	Fine sandy loam	SC-SM, SC, SM	A-2, A-4	100	100	50-95	20-50	20-35	3-15
	6-14	Loam, sandy clay loam, clay loam.	CL-ML, CL, SC	A-4, A-6	95-100	90-100	65-95	45-85	24-40	8-22
	14-80	Sandy clay, clay loam, clay.	CL, CH, ML, MH	A-6, A-7-6	100	100	85-96	50-86	40-65	12-25
25. Duplin	0-6	Very fine sandy loam.	SM, SC-SM	A-2, A-4	100	100	67-98	20-49	15-30	NP-7
	6-80	Sandy clay, clay loam, clay.	CL, CH, SC	A-6, A-7-6	100	98-100	80-100	45-87	40-65	13-35
29. Kenansville	0-22	Loamy sand	SM, SP-SM	A-1, A-2	100	95-100	45-60	10-25	10-20	NP-3
	22-52	Sandy loam, fine sandy loam, sandy clay loam.	SM, SC, SC-SM	A-2, A-4	100	95-100	50-75	20-40	15-30	NP-10
	52-80	Sand, loamy sand	SP-SM, SM	A-1, A-2, A-3	100	95-100	40-60	5-30	10-20	NP

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	Plas-ticity index
	In								Pct	
30--------------- Garcon	0-5	Loamy sand-------	SP-SM, SM	A-3, A-2-4	100	100	80-95	8-20	---	NP
	5-21	Loamy fine sand, loamy sand, fine sand.	SP-SM, SM	A-2-4, A-3	100	100	80-95	8-20	---	NP
	21-47	Sandy loam, fine sandy loam, sandy clay loam.	SM, SC-SM	A-2-4	100	100	80-95	18-30	<25	NP-7
	47-80	Loamy fine sand, loamy sand, sand.	SP-SM, SM	A-2-4	100	100	75-95	11-20	---	NP
31--------------- Foxworth	0-6	Sand-------------	SP-SM	A-3, A-2-4	100	100	60-100	5-12	---	NP
	6-67	Sand, fine sand	SP-SM	A-3, A-2-4	100	100	60-100	5-12	---	NP
	67-80	Sand, fine sand	SP, SP-SM	A-3, A-2-4	100	100	50-100	1-12	---	NP
32--------------- Fuquay	0-32	Loamy sand, loamy fine sand.	SP-SM, SM	A-2, A-3	95-100	90-100	50-83	5-35	10-20	NP
	32-58	Sandy loam, fine sandy loam, sandy clay loam.	SM, SC, SC-SM	A-2-4, A-4, A-6	85-100	85-100	70-90	23-45	20-45	NP-13
	58-80	Sandy clay loam	SC, SC-SM, SM	A-2-4, A-4, A-6, A-7-6	95-100	90-100	58-90	28-49	25-45	4-13
33--------------- Fuquay	0-30	Loamy sand, loamy fine sand.	SP-SM, SM	A-2, A-3	95-100	90-100	50-83	5-35	10-20	NP
	30-48	Sandy loam, fine sandy loam, sandy clay loam.	SM, SC, SC-SM	A-2, A-4, A-6	85-100	85-100	70-90	23-45	20-45	NP-13
	48-80	Sandy clay loam	SC, SC-SM, SM	A-2-4, A-4, A-6, A-7-6	95-100	90-100	58-90	28-49	25-45	4-13
34--------------- Fuquay	0-26	Loamy sand, loamy fine sand.	SP-SM, SM	A-2, A-3	95-100	90-100	50-83	5-35	10-20	NP
	26-50	Sandy loam, fine sandy loam, sandy clay loam.	SM, SC, SC-SM	A-2-4, A-4, A-6	85-100	85-100	70-90	23-45	20-45	NP-13
	50-80	Sandy clay loam	SC, SC-SM, SM	A-2-4, A-4, A-6, A-7-6	95-100	90-100	58-90	28-49	25-45	4-13

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	
35-------------- Hurricane	0-6	Sand------------	SP, SP-SM	A-3	100	100	78-100	3-8	0-14	NP
	6-72	Sand, fine sand	SP, SP-SM	A-3	100	100	78-100	3-8	0-14	NP
	72-80	Sand, fine sand	SP, SP-SM, SM	A-3, A-2-4	100	100	90-100	4-15	0-14	NP
36, 37---------- Lakeland	0-6	Sand------------	SP-SM	A-3, A-2-4	90-100	90-100	60-100	5-12	---	NP
	6-80	Sand, fine sand	SP, SP-SM	A-3, A-2-4	90-100	90-100	50-100	1-12	---	NP
38:										
Wahee----------	0-4	Clay loam--------	CL, CH	A-6, A-7, A-4	100	100	85-100	75-95	28-55	8-26
	4-42	Silty clay loam, silty clay, clay.	CL, CH	A-6, A-7	100	100	90-100	51-98	30-65	11-33
	42-80	Variable---------	---	---	---	---	---	---	---	---
Ochlockonee-----	0-4	Loam------------	ML, CL-ML	A-4	100	95-100	95-100	50-90	<30	NP-7
	4-31	Fine sandy loam, sandy loam, silt loam.	SM, ML, SC, CL	A-4	100	95-100	95-100	36-75	<32	NP-9
	31-80	Loamy sand, sandy loam, loam.	SM, ML, CL, SC	A-4, A-2	100	95-100	85-99	13-80	<32	NP-9
39-------------- Leefield	0-34	Loamy sand-------	SM, SW-SM, SP-SM	A-2	98-100	95-100	65-95	10-20	---	NP
	34-61	Sandy loam, sandy clay loam.	SC, SM, SC-SM	A-2-4, A-4, A-6	95-100	93-100	65-95	20-40	<40	NP-16
	61-80	Sandy loam, sandy clay loam.	SC, SM, SC-SM	A-2-4, A-4, A-6	95-100	95-100	65-90	20-40	<40	NP-20
41-------------- Lucy	0-34	Loamy sand-------	SM, SP-SM	A-2, A-4	98-100	95-100	50-90	5-40	---	NP
	34-52	Sandy loam, fine sandy loam, sandy clay loam.	SM, SC, SC-SM	A-2-4, A-4, A-6	97-100	95-100	55-95	5-50	10-30	NP-15
	52-80	Sandy clay loam, clay loam, sandy clay.	SC, SC-SM, SM	A-2-4, A-6, A-4	100	95-100	60-95	20-50	20-40	3-20

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	
42--------------- Lucy	0-27	Loamy sand-------	SM, SP-SM	A-2	98-100	95-100	50-90	5-40	---	NP
	27-42	Sandy loam, fine sandy loam, sandy clay loam.	SM, SC, SC-SM	A-2-4, A-4, A-6	97-100	95-100	55-95	5-50	10-30	NP-15
	42-80	Sandy clay loam, clay loam, sandy clay.	SC, SC-SM, SM	A-2-4, A-6, A-4	100	95-100	60-95	20-50	20-40	3-20
43--------------- Lucy	0-34	Loamy sand-------	SM, SP-SM	A-2	98-100	95-100	50-90	5-40	---	NP
	34-80	Sandy loam, fine sandy loam, sandy clay loam.	SM, SC, SC-SM	A-2-4, A-4, A-6	97-100	95-100	55-95	5-50	10-30	NP-15
44--------------- Orangeburg	0-9	Loamy sand-------	SM, SP-SM	A-2	98-100	95-100	60-87	14-28	---	NP
	9-16	Sandy loam-------	SM	A-2	98-100	95-100	70-96	25-35	<30	NP-4
	16-80	Sandy clay loam, sandy loam.	SC, CL, SM, SC-SM	A-6, A-4, A-7-6	98-100	95-100	71-96	38-58	22-44	3-23
45--------------- Orangeburg	0-6	Loamy sand-------	SM, SP-SM	A-2	98-100	95-100	60-87	14-28	---	NP
	6-12	Sandy loam-------	SM	A-2	98-100	95-100	70-96	25-35	<30	NP-4
	12-80	Sandy clay loam, sandy loam.	SC, CL, SM, SC-SM	A-6, A-4, A-7-6	98-100	95-100	71-96	38-58	22-44	3-23
46--------------- Orangeburg	0-5	Sandy loam-------	SM	A-2	98-100	95-100	75-95	20-35	---	NP
	5-80	Sandy clay loam, sandy loam.	SC, CL, SM, SC-SM	A-6, A-4, A-7-6	98-100	95-100	71-96	38-58	22-44	3-23
48--------------- Pansey	0-14	Sandy loam-------	SM, ML	A-2, A-4	100	95-100	55-85	30-55	<30	NP-4
	14-50	Sandy loam, sandy clay loam.	SM	A-2, A-4	100	95-100	80-100	25-60	<30	NP-17
	50-80	Clay, sandy clay	CL, CH, SC	A-6, A-7-6	100	98-100	80-100	36-87	41-65	13-35
51--------------- Plummer	0-68	Sand-------------	SM, SP-SM	A-2-4, A-3	100	100	75-90	5-20	---	NP
	68-80	Sandy loam, sandy clay loam, fine sandy loam.	SM, SC, SC-SM	A-2-4, A-4	100	97-100	76-96	20-48	<30	NP-10

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	Plas- ticity index
	In								Pct	
54:										
Croatan----------	0-19	Muck-------------	PT	---	---	---	---	---	---	---
	19-42	Sandy loam, fine sandy loam, mucky sandy loam.	SM, SC, SC-SM	A-2, A-4	100	100	60-85	30-49	25-35	NP-10
	42-47	Sandy loam, clay loam, sandy clay loam.	CL, CL-ML, SC, SC-SM	A-4, A-6	100	100	75-100	36-95	18-45	4-15
	47-80	Sand, loamy sand, loamy fine sand.	SP-SM, SP, SM	A-2, A-3	95-100	95-100	50-80	2-25	<20	NP
Surrency--------	0-5	Mucky sand-------	SP-SM, SM,	A-2	100	95-100	50-100	5-20	0-20	NP-5
	5-35	Loamy sand, sand, fine sand.	SP-SM, SM	A-2-4	100	95-100	50-100	10-26	0-14	NP
	35-80	Sandy loam, sandy clay loam.	SM, SC-SM, SC	A-2	100	95-100	75-100	22-35	0-30	NP-10
Pantego---------	0-14	Mucky fine sandy loam.	SM, ML	A-2, A-4	100	95-100	65-100	25-75	20-35	NP-10
	14-80	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
55--------------- Pottsburg	0-7	Sand-------------	SP, SP-SM	A-3	100	100	80-100	2-10	---	NP
	7-58	Sand, fine sand	SP, SP-SM	A-3	100	100	79-100	1-8	---	NP
	58-80	Sand, fine sand, loamy sand.	SP-SM, SP-SM, SP, SM	A-3, A-2-4	100	100	79-100	4-18	---	NP
57--------------- Stilson	0-34	Loamy sand-------	SM, SP-SM	A-2	94-100	94-100	71-92	15-24	---	NP
	34-80	Sandy loam, sandy clay loam.	SM, SC, SC-SM	A-2-4, A-6, A-4	89-100	86-100	71-94	25-41	<29	NP-13
58--------------- Stilson	0-24	Loamy sand-------	SM, SP-SM	A-2	94-100	94-100	71-92	15-24	---	NP
	24-80	Sandy loam, sandy clay loam.	SM, SC, SC-SM	A-2, A-6, A-4	89-100	86-100	71-94	25-41	<29	NP-13

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	
60:										
Croatan---------	0-23	Muck-------------	PT	---	---	---	---	---	---	---
	23-40	Sandy loam, fine sandy loam, mucky sandy loam.	SM, SC, SC-SM	A-2, A-4	100	100	60-85	30-49	25-35	NP-10
	40-80	Sandy loam, sandy clay loam, clay loam.	CL, CL-ML, SC, SC-SM	A-4, A-6	100	100	75-100	36-95	18-45	4-15
Rutlege---------	0-17	Mucky sand-------	SM, SP-SM	A-2, A-3	95-100	95-100	70-100	5-35	---	NP
	17-80	Sand, loamy sand, loamy fine sand.	SP-SM, SP, SM	A-2, A-3	95-100	95-100	50-80	2-25	<20	NP
Surrency--------	0-5	Mucky sand-------	SM, SP-SM	A-2	100	95-100	50-100	15-26	NP-14	NP
	5-35	Loamy sand, sand, fine sand.	SP-SM, SM	A-2-4	100	95-100	50-100	10-26	NP-14	NP
	35-80	Sandy loam, sandy clay loam.	SM, SC-SM, SC	A-2	100	95-100	75-100	22-35	0-30	NP-10
61--------------- Troup	0-46	Sand-------------	SM, SP-SM	A-2	95-100	90-100	50-75	10-30	---	NP
	46-80	Sandy clay loam, sandy loam, fine sandy loam.	SC, SC-SM, CL-ML, CL	A-4, A-2-6 A-6	95-100	90-100	60-90	24-55	19-40	4-20
62--------------- Troup	0-60	Sand-------------	SM, SP-SM	A-2	95-100	90-100	50-75	10-30	---	NP
	60-80	Sandy clay loam, sandy loam, fine sandy loam.	SC, SC-SM, CL-ML, CL	A-4, A-2, A-2-6 A-6	95-100	90-100	60-90	24-55	19-40	4-20
64:										
Pamlico---------	0-37	Mucky peat-------	PT	---	---	---	---	---	---	---
	37-80	Loamy sand, sand, loamy fine sand.	SM, SP-SM	A-2, A-3	100	100	70-95	5-20	10-20	NP
Bibb------------	0-8	Sandy loam-------	SM, SC-SM, ML, CL-ML	A-2, A-4	95-100	90-100	60-90	30-60	<25	NP-7
	8-80	Sandy loam, loamy sand, silt loam.	SM, SC-SM, ML, CL-ML	A-2, A-4	60-100	50-100	40-100	30-90	<30	NP-7
Rutlege---------	0-13	Sand-------------	SP-SM	A-3	95-100	95-100	70-100	5-10	---	NP
	13-80	Sand, loamy sand, loamy fine sand.	SP-SM, SP, SM	A-2, A-3	95-100	95-100	50-80	2-25	<20	NP

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	
66:										
Lakeland--------	0-5	Sand-------------	SP-SM	A-3, A-2-4	90-100	90-100	60-100	5-12	---	NP
	5-80	Sand, fine sand	SP, SP-SM	A-3, A-2-4	90-100	90-100	50-100	1-12	---	NP
Troup-----------	0-60	Sand-------------	SM, SP-SM	A-2	95-100	90-100	50-75	10-30	---	NP
	60-80	Sandy clay loam, sandy loam, fine sandy loam.	SC, SC-SM, CL-ML, CL	A-4, A-2-6, A-6	95-100	90-100	60-90	24-55	19-40	4-20
67--------------- Alapaha	0-28	Loamy sand-------	SM, SP-SM	A-2	100	99-100	70-95	15-31	---	NP
	28-62	Sandy loam, sandy clay loam.	SC, SC-SM	A-2, A-4	99-100	98-100	70-95	30-45	19-30	5-10
	62-80	Sandy clay loam	SC	A-2, A-4, A-6	93-100	88-100	66-93	29-40	20-43	7-26
68:										
Croatan----------	0-28	Muck-------------	PT	---	---	---	---	---	---	---
	28-40	Sandy loam, fine sandy loam, mucky sandy loam.	SM, SC, SC-SM	A-2, A-4	100	100	60-85	25-49	25-35	NP-10
	40-80	Loam, clay loam, sandy clay loam.	CL, ML, SC, SM	A-4, A-6	100	100	75-100	36-95	18-45	NP-15
Kinston---------	0-6	Fine sandy loam--	SM, SC, SC-SM	A-2, A-4	100	98-100	55-100	25-49	20-35	NP-10
	6-47	Loam, clay loam, sandy clay loam.	CL	A-4, A-6, A-7	100	95-100	75-100	60-95	20-45	8-22
	47-80	Variable---------	---	---	---	---	---	---	---	---
Surrency--------	0-6	Mucky sand-------	SM, SP-SM	A-2, A-3	95-100	95-100	70-100	5-35	---	NP
	6-22	Loamy sand-------	SM, SP-SM	A-2	100	95-100	50-100	15-26	0-14	NP
	22-31	Loamy sand, sand, fine sand.	SP-SM, SM	A-2-4	100	95-100	50-100	10-26	0-14	NP
	31-80	Sandy loam, sandy clay loam.	SM, SC-SM, SC	A-2	100	95-100	75-100	22-35	0-30	NP-10
69--------------- Leefield	0-29	Loamy sand-------	SM, SW-SM, SP-SM	A-2	98-100	95-100	65-95	10-20	---	NP
	29-37	Sandy loam, sandy clay loam.	SC, SM, SC-SM	A-2-4, A-4, A-6	95-100	93-100	65-95	20-40	<40	NP-16
	37-80	Sandy loam, sandy clay loam.	SC, SM, SC-SM	A-2, A-4, A-6	95-100	95-100	65-90	20-40	<40	NP-20

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	
70--------------- Alapaha	0-36	Loamy sand-------	SM, SP-SM	A-2	100	99-100	70-95	15-31	---	NP
	36-46	Sandy loam, sandy clay loam.	SC, SC-SM	A-2, A-4	99-100	98-100	70-95	30-45	19-30	5-10
	46-80	Sandy clay loam	SC	A-2, A-4, A-6	93-100	88-100	66-90	29-40	20-30	7-12
71:										
Dothan----------	0-6	Loamy sand-------	SM, SP-SM	A-2	95-100	92-100	60-80	13-30	---	NP
	6-18	Sandy clay loam, sandy loam, fine sandy loam.	SC-SM, SC, SM	A-2, A-4, A-6	95-100	92-100	60-90	23-49	<40	NP-16
	18-80	Sandy clay loam, sandy clay.	SC-SM, SC, CL-ML, CL	A-2, A-4, A-6, A-7	95-100	92-100	70-95	30-53	25-45	4-23
Fuquay----------	0-34	Loamy sand-------	SP-SM, SM	A-2, A-3	95-100	90-100	50-83	5-35	10-20	NP
	34-80	Sandy loam, fine sandy loam, sandy clay loam.	SM, SC, SC-SM	A-2, A-4, A-6	85-100	85-100	70-90	23-45	20-45	NP-13
72--------------- Pits	0-80	Variable---------	---	---	---	---	---	---	---	---

Table 14.--Physical and Chemical Properties of the Soils

(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	Permea-bility	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodi-bility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH	mmhos/cm					Pct
2---------------- Albany	0-61	1-10	1.40-1.65	6.0-20	0.10-0.30	3.5-6.5	<0.2	Low-------	0.10	5	2	1-2
	61-80	13-35	1.55-1.85	0.2-6.0	0.10-0.16	3.5-6.5	<0.2	Low-------	0.24			
4---------------- Brickyard	0-6	28-60	1.30-1.60	0.06-0.2	0.14-0.18	5.6-7.3	<0.2	High------	0.28	5	4	3-8
	6-28	35-60	1.30-1.60	<0.06	0.14-0.18	5.6-8.4	<0.2	Moderate	0.37			
	28-80	28-60	0.95-1.60	0.06-0.2	0.12-0.18	5.6-8.4	<0.2	Moderate	0.32			
5---------------- Robertsdale	0-7	7-20	1.22-1.60	0.6-2.0	0.20-0.35	4.5-6.0	<0.2	Low-------	0.24	5	3	0.5-6
	7-80	18-35	1.40-1.85	0.06-0.2	0.12-0.24	4.5-6.0	<0.2	Low-------	0.28			
6---------------- Bladen	0-14	15-27	1.30-1.65	0.6-2.0	0.14-0.35	3.5-5.5	<0.2	Low-------	0.37	5	6	2-8
	14-80	35-55	1.45-1.70	0.06-0.2	0.12-0.20	3.5-5.5	<0.2	Moderate	---			
7---------------- Blanton	0-68	1-7	1.30-1.60	2.0-20	0.03-0.07	4.5-6.0	<0.2	Low-------	0.10	5	1	.5-2
	68-80	10-40	1.60-1.85	0.2-2.0	0.10-0.15	4.5-6.0	<0.2	Low-------	0.20			
8---------------- Blanton	0-75	1-7	1.30-1.60	6.0-20	0.05-0.15	4.5-6.0	<0.2	Low-------	0.10	5	1	.5-2
	75-80	10-40	1.60-1.85	0.2-2.0	0.10-0.15	4.5-6.0	<0.2	Low-------	0.20			
10--------------- Bonifay	0-52	3-10	1.35-1.60	6.0-20	0.05-0.10	4.5-5.5	<0.2	Low-------	0.10	5	1	.5-2
	52-80	15-35	1.60-1.85	0.2-0.6	0.10-0.15	4.5-5.5	<0.2	Low-------	0.24			
12--------------- Chipley	0-7	1-5	1.35-1.50	6.0-20	0.05-0.10	3.5-6.0	<0.2	Low-------	0.10	5	1	1-3
	7-80	1-7	1.45-1.60	6.0-20	0.03-0.08	4.5-6.5	<0.2	Low-------	0.10			
14--------------- Chipola	0-22	0-8	1.30-1.65	0.6-20	0.06-0.20	4.5-6.0	<0.2	Low-------	0.17	5	2	1-3
	22-41	10-35	1.55-1.70	0.2-6.0	0.10-0.21	4.5-6.0	<0.2	Low-------	0.24			
	41-80	5-17	1.55-1.70	0.2-6.0	0.06-0.16	4.5-6.0	<0.2	Low-------	0.20			
17--------------- Florala	0-8	5-14	1.40-1.60	2.0-6.0	0.05-0.15	4.5-5.5	<0.2	Low-------	0.17	5	2	.5-2
	8-25	8-18	1.40-1.85	0.2-2.0	0.10-0.15	4.5-5.5	<0.2	Low-------	0.24			
	25-80	8-27	1.45-1.75	0.06-0.2	0.10-0.17	4.5-5.5	<0.2	Low-------	0.28			
18--------------- Florala	0-11	5-14	1.40-1.60	2.0-6.0	0.05-0.08	4.5-5.5	<0.2	Low-------	0.17	5	2	.5-2
	11-26	8-18	1.40-1.70	0.2-2.0	0.10-0.15	4.5-5.5	<0.2	Low-------	0.24			
	26-80	8-27	1.45-1.60	0.06-0.2	0.11-0.17	4.5-5.5	<0.2	Low-------	0.28			
20:												
Dorovan---------	0-80	---	0.25-0.40	0.6-2.0	0.20-0.25	3.6-5.0	<0.2	---	---	3	2	20-80

Table 14.--Physical and Chemical Properties of the Soils--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Erosion factors K	Erosion factors T	Wind erodi- bility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH	mmhos/cm					Pct
20:												
Pamlico---------	0-31	---	0.20-0.65	0.6-6.0	0.24-0.40	3.5-4.5	<0.2	Low-------	---	---	2	20-80
	31-80	5-10	1.60-1.75	0.06->20	0.02-0.10	3.5-5.0	<0.2	Low-------	0.10			
Rutlege---------	0-13	2-10	1.30-1.50	6.0-20	0.04-0.06	3.5-5.5	<0.2	Low-------	0.10	5	---	3-9
	13-80	2-10	1.40-1.60	6.0-20	0.04-0.08	3.5-5.5	<0.2	Low-------	0.17			
21--------------- Dothan	0-6	4-18	1.30-1.70	2.0-6.0	0.08-0.22	4.5-6.0	<0.2	Low-------	0.24	5	3	.5-3
	6-25	16-35	1.40-1.75	0.6-2.0	0.12-0.16	4.5-6.0	<0.2	Low-------	0.28			
	25-80	18-40	1.45-1.75	0.2-0.6	0.08-0.20	4.5-6.0	<0.2	Low-------	0.28			
22--------------- Dothan	0-11	4-15	1.30-1.60	2.0-6.0	0.06-0.22	4.5-6.0	<0.2	Low-------	0.15	5	2	.5-3
	11-80	16-35	1.40-1.60	0.2-0.6	0.12-0.20	4.5-6.0	<0.2	Low-------	0.28			
23--------------- Dothan	0-5	4-15	1.30-1.60	2.0-6.0	0.06-0.22	4.5-6.0	<0.2	Low-------	0.15	5	2	.5-3
	5-12	16-35	1.40-1.60	0.6-2.0	0.12-0.16	4.5-6.0	<0.2	Low-------	0.28			
	12-80	18-40	1.45-1.70	0.2-0.6	0.08-0.20	4.5-6.0	<0.2	Low-------	0.28			
24--------------- Dunbar	0-6	5-27	1.45-1.65	2.0-6.0	0.10-0.25	4.5-5.5	<0.2	Low-------	0.32	5	3	2-4
	6-14	20-55	1.35-1.50	0.2-0.6	0.14-0.19	4.5-5.5	<0.2	Low-------	0.28			
	14-80	35-60	1.25-1.45	0.2-0.6	0.13-0.20	4.5-5.5	<0.2	Moderate	0.28			
25--------------- Duplin	0-6	4-18	1.29-1.65	2.0-6.0	0.10-0.30	4.5-5.5	<0.2	Low-------	0.24	5	3	.5-4
	6-80	35-60	1.25-1.45	0.2-0.6	0.13-0.19	4.5-5.5	<0.2	Moderate	0.28			
29--------------- Kenansville	0-22	3-10	1.50-1.70	6.0-20	0.04-0.10	4.5-6.0	<0.2	Low-------	0.15	5	2	.5-2
	22-38	5-18	1.30-1.50	2.0-6.0	0.10-0.15	4.5-6.0	<0.2	Low-------	0.15			
	38-80	1-10	1.50-1.70	6.0-20	<0.05	4.5-6.0	<0.2	Low-------	0.10			
30--------------- Garcon	0-5	3-8	1.25-1.50	6.0-20	0.10-0.15	4.5-5.5	<0.2	Low-------	0.10	5	2	1-3
	5-21	3-8	1.40-1.65	6.0-20	0.05-0.10	4.5-5.5	<0.2	Low-------	0.10			
	21-47	12-20	1.55-1.70	0.6-2.0	0.10-0.15	4.5-5.5	<0.2	Low-------	0.24			
	47-80	5-10	1.55-1.70	0.6-2.0	0.07-0.10	4.5-5.5	<0.2	Low-------	0.10			
31--------------- Foxworth	0-6	1-8	1.25-1.55	>6.0	0.05-0.10	4.5-6.5	<0.2	Low-------	0.10	5	1	.5-2
	6-67	1-8	1.40-1.55	>6.0	0.02-0.10	4.5-6.5	<0.2	Low-------	0.10			
	67-80	0.5-6	1.40-1.65	>6.0	0.02-0.08	4.5-6.5	<0.2	Low-------	0.10			
32--------------- Fuquay	0-38	2-10	1.60-1.70	6.0-20	0.04-0.09	4.5-6.0	<0.2	Low-------	0.15	5	2	.5-2
	38-48	10-35	1.40-1.60	0.2-2.0	0.12-0.15	4.5-6.0	<0.2	Low-------	0.20			
	48-80	18-35	1.40-1.60	0.06-0.2	0.10-0.13	4.5-6.0	<0.2	Low-------	0.20			
33--------------- Fuquay	0-30	2-10	1.60-1.70	6.0-20	0.04-0.09	4.5-6.0	<0.2	Low-------	0.15	5	2	.5-2
	30-80	10-35	1.40-1.60	0.2-2.0	0.12-0.15	4.5-6.0	<0.2	Low-------	0.20			

Table 14.--Physical and Chemical Properties of the Soils--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Erosion factors K	Erosion factors T	Wind erodi- bility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH	mmhos/cm					Pct
34--------------- Fuquay	0-26	2-10	1.60-1.70	6.0-20	0.04-0.09	4.5-6.0	<0.2	Low-------	0.15	5	2	.5-2
	26-35	10-35	1.40-1.60	0.2-2.0	0.12-0.15	4.5-6.0	<0.2	Low-------	0.20			
	35-80	18-35	1.40-1.60	0.06-0.2	0.10-0.13	4.5-6.0	<0.2	Low-------	0.20			
35--------------- Hurricane	0-6	1-4	1.40-1.60	>6.0	0.03-0.09	3.5-6.0	<0.2	Low-------	0.10	5	2	.5-2
	6-72	0-4	1.40-1.60	>6.0	0.03-0.07	3.5-6.0	<0.2	Low-------	0.10			
	72-80	1-4	1.40-1.60	2.0-6.0	0.03-0.10	3.5-6.0	<0.2	Low-------	0.10			
36, 37----------- Lakeland	0-6	2-8	1.35-1.65	6.0-20	0.05-0.09	4.5-6.0	<0.2	Low-------	0.10	5	1	.5-1
	6-80	1-6	1.40-1.60	6.0-20	0.02-0.08	4.5-6.0	<0.2	Low-------	0.10			
38:												
Wahee-----------	0-4	30-40	1.20-1.40	0.06-0.6	0.12-0.18	4.5-6.0	<0.2	Moderate	0.28	5	6	1-5
	4-42	35-70	1.30-1.60	0.06-0.2	0.12-0.16	4.5-5.5	<0.2	Moderate	0.37			
	42-80	---	---	---	---	---	---	---	---			
Ochlockonee-----	0-4	7-22	1.40-1.60	2.0-6.0	0.10-0.20	4.5-6.5	<0.2	Low-------	0.24	5	5	.5-2
	4-31	8-18	1.40-1.60	0.6-2.0	0.10-0.20	4.5-5.5	<0.2	Low-------	0.20			
	31-72	3-18	1.40-1.70	2.0-6.0	0.06-0.12	4.5-5.5	<0.2	Low-------	0.17			
39--------------- Leefield	0-34	3-10	1.45-1.70	6.0-20	0.05-0.15	4.5-5.5	<0.2	Low-------	0.10	5	1	1-2
	34-61	13-25	1.50-1.75	0.6-2.0	0.09-0.13	4.5-5.5	<0.2	Low-------	0.15			
	61-80	13-30	1.50-1.80	0.2-0.6	0.10-0.16	4.5-5.5	<0.2	Low-------	0.10			
41--------------- Lucy	0-34	1-12	1.30-1.70	6.0-20	0.08-0.16	4.5-6.0	<0.2	Low-------	0.10	5	2	.5-2
	34-52	10-30	1.40-1.60	2.0-6.0	0.08-0.12	4.5-5.5	<0.2	Low-------	0.24			
	52-80	20-45	1.40-1.75	0.6-2.0	0.08-0.14	4.5-5.5	<0.2	Low-------	0.28			
42--------------- Lucy	0-27	1-10	1.30-1.70	6.0-20	0.05-0.16	4.5-6.0	<0.2	Low-------	0.10	5	1	.5-2
	27-42	10-30	1.40-1.60	2.0-6.0	0.08-0.12	4.5-5.5	<0.2	Low-------	0.24			
	42-80	20-45	1.40-1.60	0.6-2.0	0.08-0.14	4.5-5.5	<0.2	Low-------	0.28			
43--------------- Lucy	0-34	1-10	1.30-1.70	6.0-20	0.05-0.16	4.5-6.0	<0.2	Low-------	0.10	5	1	.5-2
	34-80	10-30	1.40-1.60	2.0-6.0	0.08-0.12	4.5-5.5	<0.2	Low-------	0.24			
44--------------- Orangeburg	0-9	4-10	1.35-1.55	2.0-6.0	0.06-0.11	4.5-6.5	<0.2	Low-------	0.10	5	2	.5-2
	9-16	7-18	1.50-1.71	0.6-6.0	0.09-0.12	4.5-6.5	<0.2	Low-------	0.20			
	16-80	18-36	1.60-1.75	0.6-2.0	0.10-0.14	4.5-5.5	<0.2	Low-------	0.24			
45--------------- Orangeburg	0-6	4-10	1.35-1.55	2.0-6.0	0.06-0.11	4.5-6.5	<0.2	Low-------	0.10	5	2	.5-2
	6-12	7-18	1.50-1.65	0.6-6.0	0.09-0.12	4.5-6.5	<0.2	Low-------	0.20			
	12-80	18-36	1.60-1.75	0.6-2.0	0.10-0.14	4.5-5.5	<0.2	Low-------	0.24			

Table 14.--Physical and Chemical Properties of the Soils--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Erosion factors K	Erosion factors T	Wind erodi- bility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH	mmhos/cm					Pct
46--------------- Orangeburg	0-5	7-15	1.30-1.50	2.0-6.0	0.07-0.10	4.5-6.0	<0.2	Low-------	0.20	5	3	.5-2
	5-15	7-18	1.50-1.65	2.0-6.0	0.09-0.12	4.5-6.0	<0.2	Low-------	0.20			
	15-80	18-36	1.60-1.75	0.6-2.0	0.10-0.14	4.5-5.5	<0.2	Low-------	0.24			
48--------------- Pansey	0-14	4-20	1.25-1.41	2.0-6.0	0.10-0.28	4.5-5.5	<0.2	Low-------	0.20	5	3	.5-7
	14-50	14-30	1.35-1.60	0.6-2.0	0.10-0.19	4.5-5.5	<0.2	Low-------	0.24			
	50-80	20-40	1.35-1.74	0.06-0.2	0.10-0.17	4.5-5.5	<0.2	Low-------	0.28			
51--------------- Plummer	0-68	1-7	1.35-1.78	2.0-20	0.03-0.22	3.5-5.5	<0.2	Low-------	0.10	5	1	1-3
	68-80	15-30	1.50-1.75	0.6-2.0	0.07-0.15	3.5-5.5	<0.2	Low-------	0.15			
54:												
Croatan---------	0-18	---	0.40-0.65	0.06-6.0	0.35-0.45	<4.5	<0.2	Low-------	---	2	2	25-60
	18-44	8-20	1.40-1.60	0.2-6.0	0.10-0.15	3.5-6.5	<0.2	Low-------	0.17			
	44-80	10-35	1.40-1.60	0.2-2.0	0.12-0.20	3.5-6.5	<0.2	Low-------	0.24			
Surrency--------	0-5	2-8	0.80-1.25	6.0-20	0.15-0.30	3.5-5.5	<0.2	Low-------	0.10	5	8	10-20
	5-32	0-10	1.50-1.65	2.0-20	0.05-0.10	3.5-5.5	<0.2	Low-------	0.10			
	32-80	10-23	1.60-1.85	0.6-2.0	0.06-0.10	3.5-5.5	<0.2	Low-------	0.15			
Pantego---------	0-14	5-15	1.40-1.60	2.0-6.0	0.12-0.20	3.5-5.5	<0.2	Low-------	0.20	5	8	4-10
	14-80	18-35	1.30-1.50	0.6-2.0	0.12-0.20	3.5-5.5	<0.2	Low-------	0.28			
55--------------- Pottsburg	0-7	1-4	1.20-1.50	>6.0	0.05-0.15	3.5-6.5	<0.2	Low-------	0.10	5	1	.5-3
	7-58	0-4	1.40-1.70	>6.0	0.03-0.10	3.5-6.5	<0.2	Low-------	0.10			
	58-80	1-6	1.55-1.90	0.6-2.0	0.10-0.25	3.5-6.0	<0.2	Low-------	0.15			
57--------------- Stilson	0-26	3-8	1.35-1.70	6.0-20	0.06-0.12	4.5-5.5	<0.2	Low-------	0.10	5	1	.5-2
	26-34	15-30	1.40-1.70	0.6-2.0	0.09-0.12	4.5-5.5	<0.2	Low-------	0.24			
	34-80	15-35	1.40-1.75	0.6-2.0	0.08-0.14	4.5-5.5	<0.2	Low-------	0.17			
58--------------- Stilson	0-24	3-8	1.35-1.70	6.0-20	0.06-0.12	4.5-5.5	<0.2	Low-------	0.10	5	1	.5-2
	24-80	15-30	1.40-1.75	0.6-2.0	0.09-0.14	4.5-5.5	<0.2	Low-------	0.24			
60:												
Croatan---------	0-19	---	0.40-0.65	0.06-6.0	0.35-0.45	<4.5	<0.2	Low-------	---	2	2	25-60
	19-40	8-20	1.40-1.60	0.2-6.0	0.10-0.15	3.5-6.5	<0.2	Low-------	0.17			
	40-80	10-35	1.40-1.60	0.2-2.0	0.12-0.20	3.5-6.5	<0.2	Low-------	0.24			
Rutlege---------	0-17	2-10	1.15-1.30	6.0-20	0.20-0.25	3.5-5.5	<0.2	Low-------	0.10	5	---	10-20
	17-80	2-10	1.40-1.60	6.0-20	0.04-0.08	3.5-5.5	<0.2	Low-------	0.17			

Table 14.--Physical and Chemical Properties of the Soils--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Erosion factors K	Erosion factors T	Wind erodi- bility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH	mmhos/cm					Pct
60:												
Surrency--------	0-8	0-10	1.50-1.70	6.0-20	0.05-0.10	3.5-5.5	<0.2	Low-------	0.10	5	8	2-9
	8-35	0-10	1.50-1.65	2.0-20	0.05-0.10	3.5-5.5	<0.2	Low-------	0.10			
	35-80	10-23	1.60-1.85	0.6-2.0	0.06-0.10	3.5-5.5	<0.2	Low-------	0.15			
61--------------- Troup	0-46	1-10	1.30-1.70	>0.6	0.05-0.10	4.5-6.0	<0.2	Low-------	0.10	5	1	0.5-2
	46-80	15-35	1.40-1.65	0.6-2.0	0.10-0.13	4.5-6.0	<0.2	Low-------	0.20			
62--------------- Troup	0-60	1-10	1.30-1.70	>6.0	0.05-0.10	4.5-6.0	<0.2	Low-------	0.10	5	1	0.5-2
	60-80	15-35	1.40-1.65	0.6-2.0	0.10-0.13	4.5-6.0	<0.2	Low-------	0.20			
64:												
Pamlico---------	0-37	---	0.20-0.65	0.6-6.0	0.24-0.40	3.5-4.5	<0.2	Low-------	---	2	2	20-80
	37-80	5-10	1.60-1.75	0.06->20	0.10-0.20	3.5-5.5	<0.2	Low-------	0.10			
Bibb------------	0-8	2-18	1.50-1.70	0.6-2.0	0.12-0.18	3.5-5.5	<0.2	Low-------	0.20	5	3	1-3
	8-80	2-18	1.45-1.75	0.6-2.0	0.10-0.20	3.5-5.5	<0.2	Low-------	0.37			
Rutlege---------	0-13	2-10	1.30-1.50	6.0-20	0.05-0.10	3.5-5.5	<0.2	Low-------	0.10	5	8	3-9
	13-80	2-10	1.50-1.70	6.0-20	0.04-0.08	3.5-5.5	<0.2	Low-------	0.17			
66:												
Lakeland--------	0-5	2-8	1.35-1.65	6.0-20	0.05-0.09	4.5-6.0	<0.2	Low-------	0.10	5	1	.5-1
	5-80	1-6	1.50-1.60	6.0-20	0.02-0.08	4.5-6.0	<0.2	Low-------	0.10			
Troup-----------	0-60	1-10	1.30-1.70	>6.0	0.05-0.10	4.5-6.0	<0.2	Low-------	0.10	5	1	0.5-2
	60-80	15-35	1.40-1.60	0.6-2.0	0.10-0.13	4.5-6.0	<0.2	Low-------	0.20			
67--------------- Alapaha	0-28	3-10	1.45-1.60	2.0-6.0	0.15-0.30	4.5-5.5	<0.2	Low-------	0.10	5	2	1-3
	28-48	15-30	1.55-1.85	0.6-2.0	0.10-0.15	4.5-5.5	<0.2	Low-------	0.24			
	48-80	20-30	1.60-1.80	0.2-0.6	0.08-0.10	4.5-5.5	<0.2	Low-------	0.28			
68:												
Croatan---------	0-28	---	0.40-0.65	0.06-6.0	0.35-0.45	<4.5	<0.2	Low-------	---	2	2	25-60
	28-40	8-20	1.40-1.60	0.2-6.0	0.10-0.15	3.5-6.5	<0.2	Low-------	0.17			
	40-80	10-35	1.40-1.60	0.2-2.0	0.12-0.20	3.5-6.5	<0.2	Low-------	0.24			
Kinston---------	0-6	5-18	1.40-1.60	2.0-6.0	0.13-0.19	4.5-5.5	<0.2	Low-------	0.24	5	3	2-5
	6-47	18-35	1.30-1.50	0.6-2.0	0.14-0.18	4.5-5.5	<0.2	Low-------	0.32			
	47-80	---	---	---	---	---	---	---	---			

Table 14.--Physical and Chemical Properties of the Soils--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Erosion factors K	Erosion factors T	Wind erodi- bility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH	mmhos/cm					Pct
68:												
Surrency--------	0-6	2-10	1.15-1.30	6.0-20	0.20-0.25	3.5-5.5	<0.2	Low-------	0.10	5		10-20
	6-22	0-10	1.50-1.70	6.0-20	0.05-0.10	3.5-5.5	<0.2	Low-------	0.10			
	22-31	0-10	1.50-1.65	2.0-20	0.05-0.10	3.5-5.0	<0.2	Low-------	0.10			
	31-80	10-23	1.60-1.85	0.6-2.0	0.06-0.10	3.5-5.5	<0.2	Low-------	0.15			
69--------------- Leefield	0-29	3-10	1.45-1.60	6.0-20	0.04-0.07	4.5-5.5	<0.2	Low-------	0.10	5	1	1-2
	29-37	15-25	1.50-1.65	0.6-2.0	0.10-0.13	4.5-5.5	<0.2	Low-------	0.15			
	37-80	15-30	1.50-1.70	0.2-0.6	0.08-0.12	4.5-5.5	<0.2	Low-------	0.10			
70--------------- Alapaha	0-36	3-10	1.45-1.60	2.0-6.0	0.15-0.30	4.5-5.5	<0.2	Low-------	0.10	5	2	1-3
	36-46	14-30	1.55-1.85	0.6-2.0	0.10-0.15	4.5-5.5	<0.2	Low-------	0.24			
	46-80	20-30	1.60-1.80	0.2-0.6	0.08-0.10	4.5-5.5	<0.2	Low-------	0.28			
71:												
Dothan----------	0-6	4-15	1.30-1.60	2.0-6.0	0.06-0.22	4.5-6.0	<0.2	Low-------	0.15	5	2	5-3
	6-18	16-35	1.40-1.60	0.6-2.0	0.12-0.16	4.5-6.0	<0.2	Low-------	0.28			
	18-80	18-40	1.45-1.70	0.2-0.6	0.08-0.20	4.5-6.0	<0.2	Low-------	0.28			
Fuquay----------	0-34	2-10	1.60-1.70	>6.0	0.04-0.09	4.5-6.0	<0.2	Low-------	0.15	5	2	.5-2
	34-80	10-35	1.40-1.60	0.06-2.0	0.12-0.15	4.5-6.0	<0.2	Low-------	0.20			
72--------------- Pits	0-80	---	---	---	---	---	---	---	---	---	8	---

Table 15.--Soil and Water Features

("Flooding" and "water table" and terms such as "rare," "brief," "apparent," and "perched" are explained in the text. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Subsidence		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Initial	Total	Uncoated steel	Concrete
					Ft			In	In		
2----------------- Albany	C	None--------	---	---	1.5-3.5	Apparent	Dec-Sep	---	---	High-----	High.
4----------------- Brickyard	D	Frequent----	Long to very long.	Dec-Sep	0-0.5	Apparent	Dec-Sep	---	---	Moderate	Moderate.
5----------------- Robertsdale	C	None--------	---	---	1.0-1.5	Perched	Dec-Sep	---	---	High-----	Moderate.
6----------------- Bladen	D	Rare--------	Brief	Feb-Sep	0-1.0	Apparent	Dec-Sep	---	---	High-----	High.
7, 8-------------- Blanton	A	None--------	---	---	3.5-6.0	Apparent	Jan-Sep	---	---	High-----	High.
10---------------- Bonifay	A	None--------	---	---	4.0-6.0	Perched	Jan-Sep	---	---	Low------	High.
12---------------- Chipley	C	None--------	---	---	1.5-3.5	Apparent	Dec-Sep	---	---	Low------	High.
14---------------- Chipola	A	Very Rare---	Brief	Jan-Sep	>6.0	---	---	---	---	Low------	High.
17, 18------------ Florala	C	None--------	---	---	1.5-2.5	Apparent	Dec-Sep	---	---	Moderate	High.
20:											
Dorovan----------	B/D	None--------	---	---	+1-0	Apparent	Jan-Dec	6-12	51-80	High-----	High.
Pamlico----------	B/D	Rare--------	---	---	+2-0	Apparent	Jan-Dec	4-20	10-36	High-----	High.
Rutlege----------	A/D	None--------	---	---	+2-0	Apparent	Dec-Sep	---	---	High-----	High.
21, 22, 23-------- Dothan	B	None--------	---	---	2.5-5.0	Perched	Dec-Sep	---	---	Moderate	Moderate.
24---------------- Dunbar	C	Rare--------	Brief	Jan-Sep	1.0-1.5	Apparent	Dec-Sep	---	---	High-----	High.

Table 15.--Soil and Water Features--Continued

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Subsidence		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Initial	Total	Uncoated steel	Concrete
					Ft			In	In		
25----------------- Duplin	C	Very Rare---	Brief	Jan-Sep	2.0-3.0	Apparent	Dec-Sep	---	---	High-----	High.
29----------------- Kenansville	A	Rare--------	Brief	Jan-Sep	4.0-6.0	Apparent	Dec-Sep	---	---	Low------	High.
30----------------- Garcon	C	Rare--------	Brief	Jan-Sep	1.5-3.0	Apparent	Dec-Sep	---	---	High-----	High.
31----------------- Foxworth	A	None--------	---	---	3.5-6.0	Apparent	Dec-Sep	---	---	Low------	Moderate.
32, 33, 34-------- Fuquay	B	None--------	---	---	3.5-6.0	Perched	Dec-Sep	---	---	Low------	High.
35----------------- Hurricane	C	None--------	---	---	1.5-3.5	Apparent	Dec-Sep	---	---	Low------	Moderate.
36, 37------------ Lakeland	A	None--------	---	---	>6.0	---	---	---	---	Low------	Moderate.
38:											
Wahee------------	C	Frequent----	Long	Dec-Sep	1.5-2.5	Apparent	Dec-Sep	---	---	High-----	High.
Ochlockonee------	B	Occasional--	Brief	Dec-Sep	2.5-5.0	Apparent	Dec-Sep	---	---	Low------	High.
39----------------- Leefield	C	None--------	---	---	1.5-2.5	Apparent	Dec-Sep	---	---	Moderate	High.
41, 42, 43-------- Lucy	A	None--------	---	---	>6.0	---	---	---	---	Low------	High.
44, 45, 46-------- Orangeburg	B	None--------	---	---	>6.0	---	---	---	---	Moderate	Moderate.
48----------------- Pansey	C/D	None--------	---	---	0-1.0	Apparent	Dec-Sep	---	---	High-----	Moderate.
51----------------- Plummer	B/D	None--------	---	---	0-0.5	Apparent	Dec-Sep	---	---	Moderate	High.

Table 15.--Soil and Water Features--Continued

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Subsidence		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Ini-tial	Total	Uncoated steel	Concrete
					Ft			In	In		
54:											
Croatan----------	D	None--------	---	---	+1-0	Apparent	Jan-Dec	4-10	18-24	High-----	High.
Surrency---------	D	None--------	---	---	+1-0	Apparent	Jan-Dec	---	---	High-----	High.
Pantego----------	C/D	None--------	---	---	+2-0	Apparent	Jan-Dec	---	---	High-----	High.
55---------------- Pottsburg	B/D	None--------	---	---	0.5-1.5	Apparent	Dec-Sep	---	---	High-----	High.
57, 58------------ Stilson	B	None--------	---	---	2.5-3.5	Apparent	Dec-Sep	---	---	Moderate	High.
60:											
Croatan----------	B/D	None--------	---	---	+1-0	Apparent	Jan-Dec	4-10	18-24	High-----	High.
Rutlege----------	B/D	None--------	---	---	+1-0	Apparent	Jan-Dec	---	---	High-----	High.
Surrency---------	D	None--------	---	---	+1-0	Apparent	Jan-Dec	---	---	High-----	High.
61, 62------------ Troup	A	None--------	---	---	>6.0	---	---	---	---	Low------	Moderate.
64:											
Pamlico----------	D	Frequent----	Long------	Dec-Sep	+1-0	Apparent	Jan-Dec	4-12	10-29	High-----	High.
Bibb-------------	D	Frequent----	Brief-----	Dec-Sep	0-0.5	Apparent	Jan-Sep	---	---	High-----	Moderate.
Rutlege----------	B/D	Frequent----	Brief-----	Dec-Sep	0-0.5	Apparent	Jan-Sep	---	---	High-----	High.
66:											
Lakeland---------	A	None--------	---	---	>6.0	---	---	---	---	Low------	Moderate.
Troup------------	A	None--------	---	---	>6.0	---	---	---	---	Low------	Moderate.
67---------------- Alapaha	B/D	None--------	---	---	0-0.5	Apparent	Dec-Sep	---	---	High-----	High.
68:											
Croatan----------	D	Frequent----	Long------	Dec-Sep	0-0.5	Apparent	Jan-Dec	4-10	18-24	High-----	High.
Kinston----------	B/D	Frequent----	Brief to long.	Dec-Sep	0-0.5	Apparent	Jan-Dec	---	---	High-----	High.

Table 15.--Soil and Water Features--Continued

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Subsidence		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Ini-tial	Total	Uncoated steel	Concrete
					Ft			In	In		
68:											
Surrency----------	D	Frequent----	Very long	Dec-Sep	0-0.5	Apparent	Jan-Dec	---	---	High-----	High.
69---------------- Leefield	C	None--------	---	---	1.5-2.5	Apparent	Dec-Sep	---	---	Moderate	High.
70---------------- Alapaha	D	None--------	---	---	0-0.5	Apparent	Jan-Dec	---	---	High-----	High.
71:											
Dothan-----------	B	None--------	---	---	2.5-5.0	Perched	Dec-Sep	---	---	Moderate	Moderate.
Fuquay-----------	B	None--------	---	---	3.5-6.0	Perched	Dec-Sep	---	---	Low------	High.
72---------------- Pits	---	None--------	---	---	Varies	---	---	---	---	---	---

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	Pct (wt)	Pct (wt)	Pct (wt)
Albany loamy sand:															
S89FL-013-014-1	0-8	Ap	1.2	10.0	30.3	34.9	10.1	86.5	11.3	2.2	12.7	1.61	17.7	7.2	1.1
-2	8-14	E1	1.9	11.2	30.1	32.6	9.8	85.6	12.7	1.7	23.4	1.63	8.8	5.1	0.8
-3	14-29	E2	1.4	10.8	28.0	34.5	11.8	86.5	12.0	1.5	34.9	1.59	7.4	4.6	0.6
-4	29-46	E3	2.0	11.0	26.4	35.2	10.8	85.4	12.1	2.5	29.0	1.58	8.0	5.2	1.1
-5	46-61	BE	1.8	9.6	24.8	33.6	10.6	80.4	13.4	6.2	3.9	1.83	9.6	7.0	2.0
-6	61-80	Btg	1.0	9.4	26.6	24.4	2.8	64.2	6.6	29.2	3.4	1.64	18.4	15.6	9.0
Bladen loam:															
S89FL-013-019-1	0-7	Ap	0.4	4.4	4.6	8.2	18.6	36.2	39.1	24.7	28.6	1.07	40.7	34.0	11.9
-2	7-14	Eg	0.4	3.4	4.4	8.6	19.6	36.4	42.6	21.0	0.5	1.61	20.8	17.8	7.7
-3	14-38	Btg1	0.2	2.4	2.6	5.2	12.4	22.8	28.8	48.4	19.7	1.61	24.5	20.7	12.7
-4	38-60	Btg2	0.2	1.8	2.0	4.2	15.6	23.8	28.8	47.4	0.1	1.49	28.8	27.2	18.3
-5	60-80	Btg2	0.4	2.6	2.4	4.2	13.8	23.4	25.3	51.3	0.1	1.46	31.0	28.1	19.0
Bonifay sand:															
S90FL-013-025-1	0-5	Ap	2.4	24.1	40.9	19.1	4.8	91.3	6.6	2.1	49.3	1.39	7.6	5.2	1.4
-2	5-27	E	4.3	22.1	36.1	21.7	6.8	91.0	6.0	3.0	28.9	1.51	7.2	4.8	1.2
-3	27-52	E	5.0	22.5	33.6	23.3	6.0	90.4	5.8	3.8	59.2	1.57	4.8	3.4	1.2
-4	52-64	Btv1	8.2	25.0	27.0	17.2	5.4	82.8	7.6	9.6	7.2	1.75	9.3	7.0	3.8
-5	64-80	Btv2	3.4	18.6	28.8	18.0	5.0	73.8	10.0	16.2	0.6	1.80	13.8	11.7	7.2
Chipley sand:															
S88FL-013-011-1	0-7	Ap	0.1	9.9	59.8	24.3	1.6	95.7	3.3	1.0	171.5	1.31	6.9	5.0	0.8
-2	7-21	C1	0.1	9.4	56.2	27.1	1.8	94.6	4.6	0.8	101.5	1.49	6.0	4.1	0.6
-3	21-33	C2	0.0	8.6	57.8	27.0	1.5	94.9	4.1	1.0	101.0	1.41	3.4	2.1	0.4
-4	33-47	C2	0.1	8.0	54.8	30.9	2.0	95.8	3.4	0.8	91.0	1.50	3.4	2.0	0.3
-5	47-57	C3	0.0	4.5	54.4	30.5	1.7	94.1	4.5	1.4	81.5	1.56	2.9	1.6	0.3
-6	57-80	Cg	0.1	7.4	52.9	34.6	2.3	97.3	2.4	0.3	52.6	1.56	2.6	1.4	0.2

Table 16.--Physical Analyses of Selected Soils--Continued

Soil name and sample number	Depth	Horizon	Particle-size distribution: Sand: Very coarse (2-1 mm)	Sand: Coarse (1-0.5 mm)	Sand: Medium (0.5-0.25 mm)	Sand: Fine (0.25-0.1 mm)	Sand: Very fine (0.1-0.05 mm)	Sand: Total (2-0.05 mm)	Silt (0.05-0.002 mm)	Clay (<0.002 mm)	Hydraulic conductivity	Bulk density (field moist)	Water content: 1/10-bar	Water content: 1/3-bar	Water content: 15-bar
	In		Pct	Pct	Pct	Pct	Pct	Pct	Pct	Pct	cm/hr	g/cm	----Pct (wt)-----		
Dunbar fine sandy loam:															
S89FL-013-020-1	0-6	Ap	0.9	6.7	12.6	23.8	19.8	63.8	22.3	13.7	18.4	1.47	22.1	17.1	5.5
-2	6-14	Bt	0.6	3.8	8.2	13.4	10.8	36.8	23.6	39.6	0.1	1.42	27.2	24.4	14.2
-3	14-36	Btg1	0.4	2.2	4.4	7.2	7.0	21.2	30.6	48.2	0.1	1.38	33.9	31.1	21.5
-4	36-58	Btg2	0.4	1.8	3.8	6.4	7.2	19.6	34.0	46.4	0.0	1.46	30.6	27.5	18.3
-5	58-80	Btg2	0.4	1.8	3.8	6.4	7.0	19.4	33.2	47.4	0.0	1.44	32.6	28.9	18.9
Duplin very fine sandy loam:															
S90FL-013-026-1	0-6	Ap	0.1	1.0	2.7	11.6	45.3	60.7	27.7	11.6	4.8	1.29	28.7	21.5	6.2
-2	6-12	Bt1	0.0	0.4	0.8	6.8	19.8	27.8	29.9	42.3	0.2	1.45	29.9	27.9	21.2
-3	12-29	Bt2	0.0	0.2	0.6	6.0	18.2	25.2	27.0	47.8	0.1	1.40	29.6	27.5	20.5
-4	29-50	Bt3	0.0	0.2	0.4	5.4	19.0	25.0	24.9	50.1	0.2	1.38	34.7	29.6	21.2
-5	50-80	Btg	0.0	0.4	1.2	5.2	19.4	26.2	29.7	44.1	0.0	1.44	29.4	26.9	19.6
Florala loamy sand:															
S88FL-013-006-1	0-8	Ap	1.5	12.4	25.9	30.6	12.8	83.2	9.6	7.2	42.1	1.35	12.6	8.3	3.3
-2	8-25	Bt	2.0	9.4	23.0	31.8	13.0	79.2	10.3	10.5	7.4	1.73	9.6	6.8	3.3
-3	25-43	Btv1	2.0	12.8	22.0	26.6	11.4	74.8	8.5	16.7	1.4	1.83	11.7	8.9	4.9
-4	43-67	Btv2	1.6	13.4	27.2	20.8	6.4	69.4	7.8	22.8	2.8	1.74	12.7	10.7	7.2
-5	67-80	Btvg	1.4	14.0	38.0	17.8	1.8	73.0	5.4	21.6	1.1	1.69	16.2	14.2	9.9
Foxworth sand:															
S88FL-013-012-1	0-6	Ap	0.0	8.7	56.9	26.6	2.0	94.2	4.4	1.4	40.8	1.54	4.2	2.7	0.5
-2	6-43	C1	0.1	9.4	55.6	25.9	2.2	93.2	5.2	1.6	123.5	1.40	4.4	2.9	0.8
-3	43-67	C2	0.1	9.5	55.6	27.2	2.1	94.5	4.3	1.2	73.0	1.54	4.2	3.0	0.6
-4	67-80	Cg	0.1	8.5	56.1	29.8	2.3	96.8	2.7	0.5	92.0	1.48	3.0	1.7	0.3
Fuquay loamy sand:															
S88FL-013-018-1	0-11	Ap	0.6	6.0	19.0	39.3	21.1	86.0	10.2	3.8	8.7	1.64	10.6	6.4	1.5
-2	11-23	E1	0.4	5.6	18.6	38.2	19.8	82.6	12.7	4.7	14.7	1.66	9.9	6.7	3.2
-3	23-32	E2	1.2	6.6	18.4	36.6	19.8	82.6	11.3	6.1	20.0	1.66	9.3	5.3	1.8
-4	32-42	Btv1	0.8	7.0	18.6	35.4	17.0	78.8	10.2	11.0	4.4	1.75	11.1	6.8	3.3
-5	42-58	Btv2	0.8	8.6	22.4	28.4	11.8	71.0	9.9	18.1	1.4	1.74	15.0	11.9	8.0
-6	58-80	Btg	1.2	12.2	29.4	19.4	7.0	69.2	8.2	22.6	0.6	1.68	19.1	17.1	11.3

Table 16.--Physical Analyses of Selected Soils--Continued

Soil name and sample number	Depth	Horizon	Particle-size distribution: Sand: Very coarse (2-1 mm)	Sand: Coarse (1-0.5 mm)	Sand: Medium (0.5-0.25 mm)	Sand: Fine (0.25-0.1 mm)	Sand: Very fine (0.1-0.05 mm)	Sand: Total (2-0.05 mm)	Silt (0.05-0.002 mm)	Clay (<0.002 mm)	Hydraulic conductivity	Bulk density (field moist)	Water content: 1/10-bar	Water content: 1/3-bar	Water content: 15-bar
	In		Pct	Pct	Pct	Pct	Pct	Pct	Pct	Pct	cm/hr	g/cm	Pct (wt)	Pct (wt)	Pct (wt)
Hurricane sand:															
S88FL-013-007-1	0-6	A	0.1	9.9	54.4	26.6	2.4	93.4	5.2	1.4	65.1	1.45	7.2	4.9	1.1
-2	6-23	E	0.2	10.4	52.2	28.0	2.6	93.4	5.6	1.0	77.6	1.49	17.7	3.8	0.9
-3	23-37	Eg1	0.1	9.4	53.8	27.8	2.5	93.6	4.8	1.6	60.5	1.50	4.9	3.3	0.8
-4	37-48	Eg2	0.1	8.3	51.6	32.2	3.3	95.5	3.9	0.6	65.8	1.53	3.0	2.0	0.4
-5	48-72	Eg3	0.0	8.2	53.9	32.4	2.6	97.1	2.6	0.3	55.9	1.59	3.6	2.2	0.3
-6	72-80	Bh	0.1	15.8	65.2	14.0	1.3	96.4	2.2	1.4	122.1	1.48	5.7	4.0	1.5
Lakeland sand:															
S88FL-013-009-1	0-6	A	0.2	11.6	56.6	22.8	1.9	93.1	4.9	2.0	50.0	1.39	7.3	5.2	1.4
-2	6-37	C1	0.2	12.0	57.3	22.1	1.7	93.3	4.4	2.3	110.4	1.39	5.0	3.8	1.0
-3	37-58	C2	0.3	10.4	55.4	25.4	2.4	93.9	3.6	2.5	189.0	1.42	3.6	2.7	0.9
-4	58-80	C3	1.0	16.0	54.2	23.6	2.0	96.8	1.9	1.3	119.0	1.46	2.7	1.9	0.6
Leefield loamy sand:															
S88FL-013-005-1	0-12	Ap	1.4	10.7	25.2	34.4	14.0	85.7	9.3	5.0	21.7	1.53	11.5	7.8	2.2
-2	12-21	E1	0.6	9.2	25.0	35.8	14.6	85.2	11.1	3.7	11.5	1.70	8.3	5.4	1.7
-3	21-34	E2	2.4	13.0	25.2	32.6	12.0	85.2	10.8	4.0	14.5	1.68	7.1	4.5	1.6
-4	34-61	Btvg1	1.2	10.0	23.6	31.2	12.2	78.2	8.0	13.8	2.5	1.75	13.1	10.1	6.1
-5	61-80	Btvg2	1.8	15.0	26.8	25.2	7.6	76.4	6.5	17.1	1.1	1.79	14.2	10.2	5.5
Lucy loamy sand:															
S88FL-013-010-1	0-6	Ap	3.4	18.7	35.2	22.4	6.8	86.5	8.8	4.7	38.8	1.41	14.5	9.1	3.2
-2	6-18	E1	2.4	20.0	34.0	23.2	6.8	86.4	9.0	4.6	60.5	1.37	8.1	5.7	2.5
-3	18-34	E2	2.6	19.8	33.2	23.6	7.2	86.4	8.6	5.0	18.7	1.45	8.4	5.5	2.5
-4	34-52	Bt1	1.4	13.6	29.2	22.8	7.0	74.0	8.5	17.5	22.4	1.54	7.1	4.7	2.2
-5	52-57	Bt2	1.4	13.2	25.8	19.4	6.6	66.4	9.0	24.6	5.2	1.63	14.3	12.2	8.9
-6	57-80	Bt3	0.8	13.0	27.4	18.4	4.8	66.4	6.4	29.2	0.5	1.75	15.1	13.3	9.8
Orangeburg loamy sand:															
S88FL-013-002-1	0-9	Ap	0.7	8.0	24.6	35.6	14.8	83.7	9.8	6.5	12.0	1.56	9.3	6.3	2.4
-2	9-16	BE	0.6	7.6	22.0	32.2	13.0	75.4	13.0	11.6	4.0	1.71	9.2	6.7	4.0
-3	16-24	Bt1	1.0	8.4	18.8	26.6	11.8	66.6	11.2	22.2	2.5	1.59	14.0	11.4	7.5
-4	24-50	Bt2	0.6	6.8	16.4	22.0	8.8	54.6	10.0	35.4	5.3	1.69	18.3	16.3	12.3
-5	50-80	Bt3	0.8	7.6	18.2	24.8	11.2	62.6	6.9	30.5	1.4	1.67	17.3	14.6	10.2

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	----Pct (wt)-----		
Pottsburg sand:															
S88FL-013-015-1	0-7	Ap	0.3	14.3	55.5	22.7	2.5	95.3	3.7	1.0	69.1	1.50	6.6	4.7	1.0
-2	7-14	Eg1	0.2	12.7	52.1	24.6	3.3	92.9	6.6	0.5	56.6	1.57	4.5	3.0	0.1
-3	14-22	Eg2	0.2	11.2	51.0	27.3	3.7	93.4	5.8	0.8	35.5	1.61	5.7	3.4	0.3
-4	22-52	Eg3	0.3	11.2	50.3	29.6	3.8	95.2	4.3	0.5	77.7	1.60	3.4	2.0	0.1
-5	52-58	EBg	0.2	10.2	45.8	25.2	2.2	83.6	14.7	1.7	0.4	1.90	8.1	6.7	0.4
-6	58-80	Bh	0.0	7.7	57.7	28.6	1.1	95.1	2.4	2.5	28.9	1.52	8.9	6.3	1.0
Stilson loamy sand:															
S88FL-013-017-1	0-6	Ap	2.0	15.7	31.9	26.5	10.5	86.6	9.1	4.3	16.0	1.59	9.1	6.8	1.6
-2	6-11	E1	1.2	14.8	30.4	27.0	10.8	84.2	11.0	4.8	16.9	1.68	7.8	5.8	1.9
-3	11-26	E2	1.6	17.2	30.2	24.0	9.4	82.4	11.5	6.1	28.6	1.67	8.6	6.3	2.3
-4	26-34	BE	2.0	13.4	25.6	27.4	12.2	80.6	9.6	9.8	22.4	1.67	9.9	7.1	3.4
-5	34-62	Btv	1.8	14.2	26.6	24.4	8.6	75.6	9.6	14.8	4.4	1.75	12.7	10.6	6.3
-6	62-80	Btvg	1.4	13.2	21.8	15.8	6.2	58.4	10.9	30.7	0.7	1.64	17.7	15.6	9.4
Troup sand:															
S88FL-013-013-1	0-6	A	2.4	16.3	35.2	22.5	13.6	90.0	7.2	2.8	58.6	1.34	9.0	5.9	1.3
-2	6-11	E1	1.4	16.6	35.6	21.6	13.4	88.6	9.1	2.3	35.1	1.59	7.4	5.1	1.8
-3	11-25	E2	1.8	15.4	33.6	22.6	13.5	86.9	9.5	3.6	34.4	1.61	6.6	4.4	1.8
-4	25-46	E3	3.2	19.8	32.2	21.0	12.8	89.0	8.0	3.0	27.9	1.54	5.3	3.4	1.4
-5	46-60	Bt1	3.0	16.8	26.6	16.6	10.0	73.0	8.1	18.9	4.1	1.65	15.8	13.3	8.6
-6	60-80	Bt2	1.8	13.4	26.0	17.6	10.2	69.0	5.6	25.4	8.3	1.58	16.1	13.1	8.4

Table 17.--Chemical Analyses Of Selected Soils

Soil name and sample number*	Depth	Horizon	Extractable bases: Ca	Mg	Na	K	Sum	Extractable acidity	Cation exchange capacity	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
Albany loamy sand:																				
S89FL-013-014-1	0-8	Ap	0.51	0.09	0.02	0.03	0.65	3.20	3.85	17	0.83	0.03	4.9	4.6	4.0	---	---	---	---	---
-2	8-14	E1	0.28	0.05	0.03	0.02	0.38	1.16	1.54	25	0.24	0.03	5.5	4.9	4.5	---	---	---	---	---
-3	14-29	E2	0.19	0.03	0.02	0.01	0.25	0.82	1.07	23	0.08	0.02	5.5	4.9	4.4	---	---	---	---	---
-4	29-46	E3	0.14	0.03	0.02	0.00	0.19	0.96	1.15	17	0.06	0.02	5.2	4.4	4.2	---	---	---	---	---
-5	46-61	BE	0.26	0.12	0.02	0.02	0.42	0.67	1.09	39	0.20	0.02	4.9	4.1	4.0	---	---	---	0.25	0.07
-6	61-80	Btg	0.38	0.45	0.04	0.07	0.94	6.89	7.83	12	0.06	0.02	4.7	3.8	3.6	---	---	---	1.04	0.16
Bladen loam:																				
S89FL-013-019-1	0-7	A	0.08	0.11	0.07	0.10	0.36	26.94	27.30	1	4.22	0.04	4.1	3.7	3.7	---	---	---	---	---
-2	7-14	Eg	0.08	0.07	0.05	0.03	0.23	7.86	8.09	3	0.57	0.02	4.4	3.8	3.7	---	---	---	0.47	0.10
-3	14-38	Btg1	0.25	0.23	0.03	0.06	0.57	15.62	16.19	4	0.58	0.01	4.7	3.8	3.5	---	---	---	2.56	0.29
-4	38-60	Btg2	1.52	0.95	0.05	0.11	2.63	15.94	18.57	14	0.26	0.01	4.7	3.7	3.3	---	---	---	2.06	0.21
-5	60-80	Btg2	1.27	0.86	0.06	0.08	2.27	16.18	18.45	12	0.27	0.01	4.6	3.7	3.3	---	---	---	2.55	0.23
Bonifay sand:																				
S89-013-025 -1	0-5	A	0.11	0.04	0.03	0.02	0.20	5.41	5.61	4	0.68	0.09	5.6	4.3	4.1	---	---	---	---	---
-2	5-27	E	0.02	0.02	0.00	0.00	0.04	2.75	2.79	1	0.13	0.13	5.4	4.6	4.3	---	---	---	---	---
-3	27-52	E	0.07	0.05	0.00	0.00	0.12	2.90	3.02	4	0.08	0.09	5.6	4.7	4.4	---	---	---	---	---
-4	52-64	Btv1	0.10	0.09	0.00	0.00	0.20	4.39	4.59	4	0.11	0.01	5.1	4.8	4.5	---	---	---	0.98	0.16
-5	64-80	Btv2	0.04	0.11	0.00	0.01	0.16	5.68	5.84	3	0.17	0.01	5.2	4.9	4.6	---	---	---	2.69	0.31
Chipley sand:																				
S89-013-011 -1	0-7	Ap	0.29	0.07	0.01	0.02	0.39	4.20	4.59	8	0.77	0.05	4.4	3.7	3.6	---	---	---	---	---
-2	7-21	C1	0.05	0.02	0.01	0.01	0.09	2.73	2.82	3	0.70	0.02	4.7	4.3	4.6	---	---	---	---	---
-3	21-33	C2	0.02	0.02	0.02	0.01	0.07	1.29	1.36	5	0.24	0.01	4.8	4.6	4.8	---	---	---	---	---
-4	33-47	C3	0.02	0.02	0.01	0.01	0.06	0.44	0.50	5	0.07	0.02	4.8	4.5	4.8	---	---	---	---	---
-5	47-57	C4	0.02	0.01	0.01	0.01	0.05	0.75	0.80	6	0.07	0.03	4.7	4.4	4.7	---	---	---	---	---
-6	57-80	Cg	0.02	0.01	0.01	0.00	0.04	0.30	0.34	12	0.04	0.04	4.8	4.6	4.7	---	---	---	---	---
Dunbar fine sandy loam:																				
S89FL-013-020-1	0-6	Ap	0.15	0.17	0.05	0.05	0.42	14.63	15.05	3	2.01	0.04	4.5	3.9	3.7	---	---	---	---	---
-2	6-14	Bt	0.50	0.99	0.10	0.06	1.65	12.71	14.36	11	0.69	0.03	4.7	3.9	3.8	---	---	---	1.80	0.33
-3	14-36	Btg1	0.67	2.18	0.20	0.09	3.14	19.01	22.15	14	0.51	0.02	5.0	3.9	3.8	---	---	---	2.22	0.35
-4	36-58	Btg2	1.95	7.41	0.45	0.15	9.96	14.97	24.93	40	0.21	0.02	5.0	3.8	3.4	---	---	---	2.27	0.21
-5	58-80	Btg2	1.97	7.82	0.44	0.15	10.38	18.39	28.77	36	0.21	0.03	5.1	3.8	3.3	---	---	---	2.87	0.18

* 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	Cation exchange capacity	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
Duplin very fine sandy loam:																				
S90FL-013-026-1	0-6	Ap	0.39	0.17	0.02	0.08	0.66	15.81	16.47	4	2.13	0.02	5.3	4.6	3.9	---	---	---	---	---
-2	6-12	Bt1	0.29	0.31	0.03	0.10	0.73	15.36	16.09	5	0.69	0.02	5.1	4.2	3.9	---	---	---	3.90	0.44
-3	12-29	Bt2	0.17	0.26	0.03	0.06	0.52	12.90	13.42	4	0.32	0.01	5.2	4.2	4.0	---	---	---	3.89	0.44
-4	29-50	Bt3	0.06	0.18	0.03	0.05	0.32	14.12	14.44	2	0.23	0.00	5.3	4.2	4.0	---	---	---	4.04	0.42
-5	50-80	Btg	0.10	0.45	0.04	0.06	0.65	13.93	14.58	4	0.13	0.01	5.4	4.2	4.0	---	---	---	4.90	0.40
Florala loamy sand:																				
S88FL-013-006-1	0-8	Ap	1.90	0.41	0.01	0.13	2.45	5.04	7.49	33	0.70	0.04	5.3	4.9	4.9	---	---	---	---	---
-2	8-25	Bt	0.46	0.24	0.01	0.06	0.77	2.58	3.35	23	0.10	0.04	5.0	4.7	4.7	---	---	---	0.33	0.08
-3	25-43	Btv1	0.62	0.30	0.02	0.07	1.01	2.70	3.71	27	0.04	0.04	5.1	4.6	4.5	---	---	---	0.56	0.10
-4	43-67	Btv2	0.46	0.12	0.01	0.04	0.63	4.20	4.83	13	0.04	0.03	4.6	4.3	4.4	---	---	---	1.15	0.21
-5	67-80	Btvg	0.28	0.14	0.02	0.02	0.46	3.25	3.71	12	0.05	0.04	4.5	4.4	4.4	---	---	---	1.60	0.16
Foxworth sand:																				
S88FL-013-012-1	0-6	Ap	0.15	0.03	0.02	0.22	1.81	2.03	11.00	---	0.37	0.03	4.7	4.3	4.3	---	---	---	---	---
-2	6-43	C1	0.02	0.02	0.01	0.01	0.06	1.03	1.09	6	0.13	0.02	4.6	4.3	4.5	---	---	---	---	---
-3	43-67	C2	0.02	0.02	0.02	0.01	0.07	1.05	1.12	6	0.15	0.02	4.6	4.8	4.5	---	---	---	---	---
-4	67-80	Cg	0.01	0.01	0.01	0.00	0.03	0.37	0.40	8	0.04	0.02	4.7	4.5	4.7	---	---	---	---	---
Fuquay loamy sand:																				
S88FL-013-018-1	0-11	Ap	1.45	0.25	0.02	0.07	1.79	2.87	4.66	38	0.75	0.04	6.0	5.3	5.1	---	---	---	---	---
-2	11-23	E	0.28	0.06	0.02	0.04	0.40	1.94	2.34	17	0.11	0.05	5.0	4.5	4.3	---	---	---	---	---
-3	23-32	EB	0.42	0.09	0.02	0.06	0.59	1.56	2.15	27	0.06	0.04	5.0.	4.5	4.4	---	---	---	---	---
-4	32-42	Bt1	1.05	0.29	0.02	0.11	1.47	2.30	3.77	39	0.05	0.05	5.0	4.5	4.4	---	---	---	0.91	0.16
-5	42-58	Bt2	0.85	0.32	0.02	0.15	1.34	4.03	5.37	25	0.06	0.08	4.7	4.3	4.2	---	---	---	2.78	0.33
-6	58-80	Btg	0.44	0.23	0.03	0.13	0.83	4.25	5.08	16	0.01	0.08	4.5	4.1	4.1	---	---	---	1.69	0.20
Hurricane sand:																				
S88FL-013-007-1	0-6	Ap	0.12	0.03	0.00	0.02	0.17	4.32	4.49	4	0.70	0.03	4.6	4.4	4.0	---	---	---	---	---
-2	6-23	E	0.04	0.01	0.00	0.01	0.06	3.37	3.43	2	0.49	0.02	4.9	4.7	4.6	---	---	---	---	---
-3	23-37	Eg1	0.02	0.01	0.00	0.01	0.04	2.01	2.05	2	0.26	0.02	4.6	4.6	4.7	---	---	---	---	---
-4	37-48	Eg2	0.01	0.00	0.00	0.00	0.01	0.75	0.76	1	0.06	0.03	4.8	4.7	4.9	---	---	---	---	---
-5	48-72	Eg3	0.01	0.00	0.00	0.00	0.01	0.75	0.76	1	0.04	0.01	4.9	4.7	5.0	---	---	---	---	---
-6	72-80	Bh	0.02	0.01	0.00	0.00	0.03	2.47	2.50	1	0.34	0.02	4.5	4.5	4.7	0.32	0.02	0.10	0.09	0.07

* See footnote at end of table.

Table 17.--Chemical Analyses of Selected Soils--Continued

Soil name and sample number*	Depth	Horizon	Extractable bases: Ca	Mg	Na	K	Sum	Extractable acidity	Cation exchange capacity	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
Lakeland sand:																				
S88FL-013-009-1	0-6	Ap	0.11	0.04	0.00	0.03	0.18	3.87	4.05	4	0.60	0.02	4.6	4.2	4.2	---	---	---	---	---
-2	6-37	C1	0.04	0.02	0.00	0.01	0.07	0.82	0.89	4	0.16	0.02	4.7	4.3	4.6	---	---	---	---	---
-3	37-58	C2	0.04	0.02	0.00	0.01	0.07	1.02	1.09	6	0.07	0.01	4.7	4.3	4.7	---	---	---	---	---
-4	58-80	C3	0.02	0.01	0.00	0.00	0.03	0.27	0.30	10	0.02	0.01	4.8	4.5	4.7	---	---	---	---	---
Leefield loamy sand:																				
S88FL-013-005-1	0-12	Ap	1.67	0.23	0.02	0.15	2.07	5.43	7.50	28	0.46	0.04	5.3	4.7	4.9	---	---	---	---	---
-2	12-21	E1	0.58	0.15	0.01	0.05	0.79	2.43	7.50	28	0.04	0.02	4.7	5.1	5.2	---	---	---	---	---
-3	21-34	E2	0.45	0.15	0.01	0.08	0.69	0.96	1.65	42	0.07	0.02	5.4	5.1	5.0	---	---	---	---	---
-4	34-61	Btvg1	0.49	0.28	0.01	0.03	0.81	4.18	4.99	16	0.04	0.04	4.7	4.3	4.3	---	---	---	0.74	0.13
-5	61-80	Btvg2	0.19	0.10	0.02	0.02	0.33	4.13	4.46	7	0.04	0.06	4.5	4.2	4.2	---	---	---	0.27	0.07
Lucy loamy sand:																				
S88FL-013-010-1	0-6	Ap	5.30	1.69	0.00	0.09	7.08	2.88	9.96	71	1.28	0.06	5.7	5.7	5.8	---	---	---	---	---
-2	6-18	E1	0.51	0.37	0.00	0.09	1.30	1.86	3.16	41	0.36	0.02	5.9	5.6	5.5	---	---	---	---	---
-3	18-34	E2	0.14	0.26	0.00	0.04	0.44	2.23	2.67	16	0.12	0.02	5.4	4.7	4.7	---	---	---	---	---
-4	34-52	Bt1	0.81	0.65	0.00	0.07	1.23	2.58	3.81	32	0.14	0.03	5.3	5.3	5.5	---	---	---	1.78	0.25
-5	52-57	Bt2	0.82	0.37	0.00	0.05	1.24	2.68	3.92	32	0.12	0.02	5.5	5.5	5.7	---	---	---	3.29	0.40
-6	57-80	Bt3	0.39	0.30	0.00	0.03	0.71	3.90	4.61	15	0.08	0.01	5.2	4.8	5.1	---	---	---	2.58	0.31
Orangeburg loamy sand:																				
S88FL-013-002-1	0-9	Ap	2.55	0.49	0.00	0.07	3.11	1.85	4.96	63	0.36	0.02	5.8	5.4	5.6	---	---	---	0.00	0.00
-2	9-16	BE	1.47	0.49	0.01	0.09	2.06	1.80	3.86	53	0.10	0.03	6.0	5.8	5.9	---	---	---	0.50	0.13
-3	16-24	Bt1	2.02	0.99	0.01	0.15	3.17	2.88	6.05	52	0.11	0.03	6.0	6.0	6.2	---	---	---	1.12	0.20
-4	24-50	Bt2	1.87	0.78	0.03	0.14	2.82	6.13	8.95	32	0.09	0.05	5.2	4.7	4.6	---	---	---	1.86	0.29
-5	50-80	Bt3	0.49	0.09	0.01	0.05	0.64	4.65	5.29	12	0.03	0.01	5.0	4.3	4.5	---	---	---	1.50	0.20
Pottsburg sand:																				
S88FL-013-015-1	0-7	Ap	0.12	0.06	0.05	0.02	0.25	2.69	2.94	9	0.72	0.04	3.9	3.3	2.9	---	---	---	---	---
-2	7-14	Eg1	0.04	0.02	0.02	0.01	0.09	2.54	2.63	3	0.36	0.02	4.2	4.2	3.8	---	---	---	---	---
-3	14-22	Eg2	0.02	0.01	0.01	0.00	0.04	1.15	1.19	3	0.14	0.02	4.6	4.5	4.3	---	---	---	---	---
-4	22-52	Eg3	0.01	0.00	0.01	0.00	0.02	0.41	0.43	5	0.05	0.01	5.3	4.9	4.8	---	---	---	---	---
-5	52-58	EBg	0.03	0.01	0.01	0.00	0.05	0.77	0.82	6	0.06	0.02	5.1	4.5	4.7	---	---	---	---	---
-6	58-80	Bh	0.03	0.01	0.01	0.01	0.05	2.55	2.60	2	1.23	0.02	4.7	4.6	4.4	0.71	0.01	0.31	0.06	0.13

* 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	Cation exchange capacity	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
Stilson loamy sand:																				
S88FL-013-017-1	0-6	Ap	1.97	0.34	0.02	0.12	2.45	3.01	5.46	45	0.70	0.05	6.0	5.2	5.2	---	---	---	---	---
-2	6-11	E1	0.95	0.24	0.02	0.11	1.32	1.22	2.54	52	0.18	0.04	6.1	5.5	5.2	---	---	---	---	---
-3	11-26	E2	0.35	0.11	0.02	0.06	0.54	2.02	2.56	21	0.07	0.04	5.1	4.6	4.4	---	---	---	---	---
-4	26-34	BE	0.65	0.21	0.02	0.07	0.95	2.29	3.24	29	0.06	0.04	5.1	5.5	4.4	---	---	---	0.63	0.13
-5	34-62	Btv	0.85	0.33	0.02	0.08	1.28	3.04	4.32	30	0.10	0.06	4.9	4.4	4.4	---	---	---	0.77	0.16
-6	62-80	Btvg	0.95	0.41	0.02	0.09	1.46	5.93	7.39	20	0.08	0.07	4.6	4.3	4.3	---	---	---	1.99	0.31
Troup sand:																				
S88FL-013-013-1	0-6	A	1.42	0.18	0.02	0.04	1.66	2.97	4.63	36	1.00	0.04	5.4	5.2	5.0	---	---	---	---	---
-2	6-11	E1	0.95	0.07	0.02	0.02	1.06	1.75	2.81	38	0.37	0.03	5.7	5.4	5.2	---	---	---	---	---
-3	11-25	E2	0.37	0.05	0.01	0.01	0.44	1.11	1.55	28	0.20	0.02	5.3	5.0	4.7	---	---	---	---	---
-4	25-46	E3	0.15	0.04	0.01	0.01	0.21	0.93	1.14	18	0.14	0.02	5.2	4.4	4.4	---	---	---	---	---
-5	46-60	Bt1	0.70	0.26	0.03	0.13	1.12	3.56	4.68	24	0.11	0.02	5.0	4.1	4.3	---	---	---	1.17	0.18
-6	60-80	Bt2	0.16	0.22	0.03	0.05	0.46	4.48	4.94	9	0.11	0.02	4.6	4.0	3.9	---	---	---	1.39	0.22

* Each of the soils is 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				
			Smectite	14-angstrom intergrade	Kaolinite	Quartz	Gibbsite
	Cm		Pct	Pct	Pct	Pct	Pct
Albany loamy sand:							
S89FL-013-014-1	0-8	Ap	0	40	24	36	0
-5	46-61	BE	0	41	47	12	0
Bladen loam:							
S89FL-013-019-1	0-7	Ap	0	29	63	8	0
-3	14-38	Btg1	0	24	69	7	0
-5	60-80	Btg2	12	21	61	6	0
Bonifay sand:							
S89FL-013-025-1	0-5	An	0	52	26	20	2
-4	52-64	E/Bv	0	52	34	9	5
-5	64-80	Btv	0	37	51	7	5
Chipley sand:							
S89FL-013-011-1	0-7	Ap	25	40	14	21	0
-4	33-47	C3	32	40	13	15	0
-6	57-80	Cg	36	37	11	16	0
Dunbar fine sandy loam:							
S89FL-013-020-1	0-6	Ap	11	19	64	6	0
-3	14-36	Btg1	10	16	67	7	0
-5	58-80	Btg2	45	9	41	5	0
Duplin very fine sandy loam:							
S90FL-013-026-1	0-6	Ap	0	20	73	7	0
-3	12-29	Bt2	0	18	76	6	0
-5	50-80	Btg	0	9	82	9	0
Florala loamy sand:							
S88FL-013-006-1	0-8	Ap	0	31	30	10	29
-3	25-43	Btv1	0	25	42	7	26
-5	67-80	Btvg	0	11	85	4	0
Foxworth loamy sand:							
S88FL-013-012-1	0-6	Ap	19	50	16	15	0
-2	4-43	C1	25	51	15	0	9
-4	67-80	C3	25	48	16	11	0
Fuquay loamy sand:							
S88FL-013-018-1	0-11	Ap	0	52	32	16	0
-4	34-42	Btv1	0	46	48	6	0
-6	56-80	Btg	0	18	76	6	0
Hurricane sand:							
S88FL-013-007-1	0-6	Ap	0	46	15	39	0
-3	23-27	Eg1	0	47	14	39	0
-6	72-80	Bh	0	25	24	51	0
Lakeland sand:							
S88FL-013-009-1	0-6	Ap	0	56	22	22	0
-3	32-58	C2	25	48	15	12	0
-4	58-80	C3	23	51	17	9	0

Table 18.--Clay Mineralogy of Selected Soils--Continued

Soil name and sample number*	Depth	Horizon	Clay minerals				
			Smectite	14-angstrom intergrade	Kaolinite	Quartz	Gibbsite
	Cm		Pct	Pct	Pct	Pct	Pct
Leefield loamy sand:							
S88FL-013-005-1	0-12	Ap	0	41	30	13	16
-4	34-61	Btvg1	0	40	29	6	25
-5	61-80	Btvg2	0	35	27	8	30
Lucy loamy sand:							
S88FL-013-010-1	0-6	Ap	0	33	27	8	32
-3	18-34	E2	0	34	27	6	33
-6	57-80	Bt3	21	34	41	0	4
Orangeburg loamy sand:							
S88FL-013-002-1	0-9	Ap	0	34	47	9	10
-3	16-24	Bt1	0	24	50	6	20
-5	50-80	Bt3	0	16	56	8	20
Pottsburg sand:							
S88FL-013-015-1	0-7	Ap	35	29	14	22	0
-4	22-52	Eg3	10	37	11	42	0
-6	58-80	Bh	0	42	14	44	0
Stilson loamy sand:							
S88FL-013-017-1	0-6	Ap	0	47	25	27	1
-4	26-34	BE	0	55	35	9	1
-6	62-80	Btvg	0	36	51	11	2
Troup sand:							
S88FL-013-013-1	0-6	A	0	47	43	10	0
-5	46-60	Bt1	0	38	57	5	0

* Each of the soils is 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	FDOT report number	Classification		Mechanical analysis: Percentage passing sieve--				Mechanical analysis: Percentage smaller than--				Liquid limit	Plasticity index	Moisture density: Maximum dry density	Moisture density: Optimum moisture
		AASHTO	Unified	No. 4	No. 10	No. 40	No. 200	.05 mm	.02 mm	.005 mm	.002 mm				
												Pct		Lb/ft^3	Pct
Alapaha loamy sand: (S89FL-013-22-4) Btgv2----41 to 69	25	A-7-6	SC	100	100	93	48	42	36	31	29	43.0	26.0	111.6	14.7
Albany loamy sand: (S88FL-013-14-6) Bt-------61 to 80	17	A-2-6	SC	100	100	84	34	30	27	25	25	33.0	18.0	110.6	15.8
Bladen loam: (S89FL-013-19-3) Btg1-----14 to 38	22	A-7-6	CL	100	100	96	84	74	64	43	38	43.0	28.0	97.3	22.2
Bonifay sand: (S90FL-013-25-2) E---------5 to 52	28	A-2-4	SP-SM	100	100	62	12	10	9	5	4	NP	NP	114.3	9.0
Chipley sand: (S88FL-013-11-4) C2-------33 to 47	14	A-3	SP-SM	100	100	82	5	5	4	2	1	NP	NP	103.4	9.8
Dunbar fine sandy loam: (S89FL-013-20-4) Btg2-----36 to 58	23	A-7-6	MH	100	100	96	86	83	70	55	48	55.0	20.0	92.1	26.7
Duplin very fine sandy loam: (S90FL-013-26-4) Bt3------29 to 50	29	A-7-6	CH	100	100	99	87	80	65	56	50	52.0	26.0	91.5	26.9
Florala loamy sand: (S88FL-013-6-4) Btv2-----43 to 67	9	A-2-6	SC	100	100	72	35	32	30	26	26	31.0	15.0	109.8	16.1

Table 19.--Engineering Index Test Data--Continued

Soil name, report number, horizon, and depth in inches	FDOT report number	Classification		Mechanical analysis: Percentage passing sieve--				Mechanical analysis: Percentage smaller than--				Liquid limit	Plasticity index	Moisture density: Maximum dry density	Moisture density: Optimum moisture
		AASHTO	Unified	No. 4	No. 10	No. 40	No. 200	.05 mm	.02 mm	.005 mm	.002 mm	Pct		Lb/ft^3	Pct
Foxworth sand: (S88FL-013-12-2) C1--------6 to 43	15	A-3	SP-SM	100	100	77	6	6	5	4	2	NP	NP	107.4	11.7
Fuquay loamy sand: (S88FL-013-18-5) Btv2-----42 to 58	21	A-2-4	SC	100	100	83	32	28	23	20	19	23.0	9.0	115.5	12.9
Hurricane sand: (S88FL-013-7-5) E4-------48 to 72	10	A-3	SP	100	100	80	3	0	0	0	0	NP	NP	101.8	10.1
Lakeland sand: (S88FL-013-9-3) C2-------37 to 58	12	A-3	SP-SM	100	100	76	6	6	5	3	3	NP	NP	104.6	13.3
Leefield loamy sand: (S88FL-013-5-4) Btv1-----34 to 61	8	A-2-4	SM	100	100	78	24	20	17	13	13	NP	NP	121.0	11.6
Lucy loamy sand: (S88FL-013-10-4) Bt1------34 to 52	13	A-2-4	SC	100	100	70	29	27	24	20	20	21.0	9.0	121.3	10.3
Orangeburg loamy sand: (S88FL-013-2-4) Bt2------24 to 50	3	A-7-6	SC	100	100	90	52	47	42	41	40	44.0	23.0	109.4	16.5
Pottsburg sand: (S88FL-013-15-4) E3-------22 to 52	18	A-3	SP-SM	100	100	79	7	6	5	3	2	NP	NP	105.9	12.8
Robertsdale sandy loam: (S90FL-013-28-5) Btg------43 to 80	31	A-7-6	CL	100	100	97	76	65	57	46	43	46.0	19.0	100.9	23.7

Table 19.--Engineering Index Test Data--Continued

Soil name, report number, horizon, and depth in inches	FDOT report number	Classification		Mechanical analysis								Liquid limit	Plasticity index	Moisture density	
				Percentage passing sieve--				Percentage smaller than--							
		AASHTO	Unified	No. 4	No. 10	No. 40	No. 200	.05 mm	.02 mm	.005 mm	.002 mm			Maximum dry density	Optimum moisture
												Pct		Lb/ft^3	Pct
Stilson loamy sand:															
(S88FL-013-17-5)															
Btv1-----34 to 62	20	A-2-4	SM	100	100	71	27	24	21	17	16	NP	NP	120.7	10.8
Troup sand:															
(S88FL-013-13-5)															
Bt-------46 to 80	16	A-2-6	SC	100	100	73	35	32	28	24	24	31.0	14.0	116.0	13.5

Table 20.--Classification of the Soils

Soil name	Family or higher taxonomic class
Alapaha	Loamy, siliceous, subactive, thermic Arenic Plinthic Paleaquults
Albany	Loamy, siliceous, subactive, thermic Grossarenic Paleudults
Bibb	Coarse-loamy, siliceous, acitve, acid, thermic Typic Fluvaquents
Bladen	Fine, mixed, semiactive, thermic Typic Albaquults
Blanton	Loamy, siliceous, semiactive, thermic Grossarenic Paleudults
Bonifay	Loamy, siliceous, subactive, thermic Grossarenic Plinthic Paleudults
Brickyard	Fine, smectitic, nonacid, thermic Typic Endoaquepts
Chipley	Thermic, coated Aquic Quartzipsamments
Chipola	Loamy, kaolinitic, thermic Arenic Kanhapludults
Croatan	Loamy, siliceous, dysic, thermic Terric Haplosaprists
Dorovan	Dysic, thermic Typic Haplosaprists
Dothan	Fine-loamy, kaolinitic, thermic Plinthic Kandiudults
Dunbar	Fine, kaolinitic, thermic Aeric Paleaquults
Duplin	Fine, kaolinitic, thermic Aquic Paleudults
Florala	Coarse-loamy, siliceous, subactive, thermic Plinthaquic Paleudults
Foxworth	Thermic, coated Typic Quartzipsamments
Fuquay	Loamy, kaolinitic, thermic Arenic Plinthic Kandiudults
Garcon	Loamy, siliceous, active, thermic Aquic Arenic Hapludults
Hurricane	Sandy, siliceous, thermic Oxyaquic Alorthods
Kenansville	Loamy, siliceous, subactive, thermic Arenic Hapludults
Kinston	Fine-loamy, siliceous, semiactive, acid, thermic Fluvaquentic Endoaquepts
Lakeland	Thermic, coated Typic Quartzipsamments
Leefield	Loamy, siliceous, subactive, thermic Arenic Plinthaquic Paleudults
Lucy	Loamy, kaolinitic, thermic Arenic Kandiudults
Ochlockonee	Coarse-loamy, siliceous, active, acid, thermic Typic Udifluvents
Orangeburg	Fine-loamy, kaolinitic, thermic Typic Kandiudults
Pamlico	Sandy or sandy-skeletal, siliceous, dysic, thermic Terric Haplosaprists
Pansey	Fine-loamy, siliceous, semiactive, thermic Plinthic Paleaquults
Pantego	Fine-loamy, siliceous, semiactive, thermic Umbric Paleaquults
Plummer	Loamy, siliceous, subactive, thermic Grossarenic Paleaquults
Pottsburg	Sandy, siliceous, thermic Grossarenic Alaquods
Robertsdale	Fine-loamy, siliceous, semiactive, thermic Plinthaquic Paleudults
Rutlege	Sandy, siliceous, thermic Typic Humaquepts
Stilson	Loamy, siliceous, subactive, thermic Arenic Plinthic Paleudults
Surrency	Loamy, siliceous, semiactive, thermic Arenic Umbric Paleaquults
Troup	Loamy, kaolinitic, thermic Grossarenic Kandiudults
Wahee	Fine, mixed, semiactive, thermic Aeric Endoaquults

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