United States
Department of
Agriculture

Soil
Conservation
Service

In cooperation with
South Carolina
Agricultural Experiment
Station and South
Carolina Department of
Natural Resources

Soil Survey of Chesterfield County, South Carolina

How To Use This Soil Survey

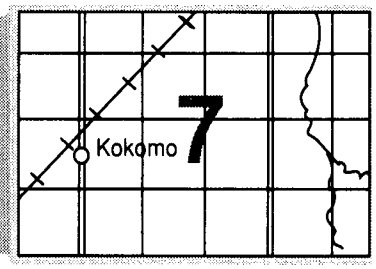
General Soil Map

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

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

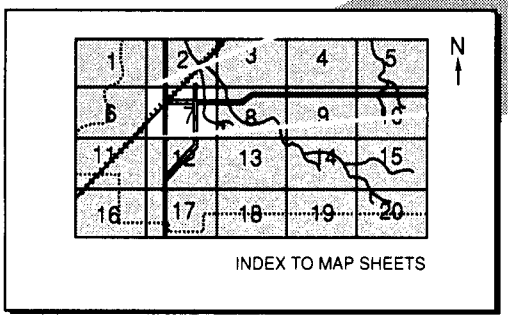
Detailed Soil Maps

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



MAP SHEET

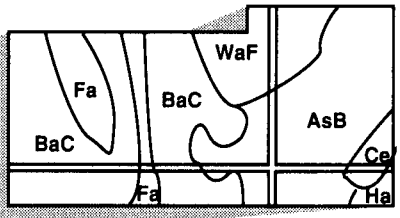
To find information about your area of interest, locate that area on the **Index to Map Sheets**, which precedes the soil maps. Note the number of the map sheet, and turn to that sheet.



INDEX TO MAP SHEETS

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

MAP SHEET



AREA OF INTEREST

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

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

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

Major fieldwork for this soil survey was completed in 1989. Soil names and descriptions were approved in 1989. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1989. This soil survey was made cooperatively by the Soil Conservation Service, the South Carolina Agricultural Experiment Station, and the South Carolina Department of Natural Resources, Land Resources and Conservation Districts Division. It is part of the technical assistance furnished to the Chesterfield County Soil and Water Conservation District.

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

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

Cover: No-till soybeans in an area of Badin silt loam, 2 to 6 percent slopes, help to control erosion and conserve moisture.

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Foreword

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

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

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

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

Mark W. Berkland
State Conservationist
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Soil Survey of Chesterfield County, South Carolina

By Ronald Morton, Soil Conservation Service

Fieldwork by Ronald Morton, Edward H. Earles, Leander Brown, Bobby J. Ward, and Georgia Turner, Soil Conservation Service, and Carl B. Lawrence, South Carolina Department of Natural Resources, Land Resources and Conservation Districts Division

United States Department of Agriculture, Soil Conservation Service, in cooperation with the South Carolina Agricultural Experiment Station and the South Carolina Department of Natural Resources

CHESTERFIELD COUNTY is in the northeastern part of South Carolina (fig. 1). It is bounded on the south by Darlington County and on the north by Anson and Union Counties. It is bounded on the east by the Pee Dee River, which separates it from Marlboro County. It is bounded on the west by the Lynches River, which separates it from Kershaw and Lancaster Counties.

Chesterfield County has a total land area of 508,000 acres. It has 1,000 acres of water areas more than 40 acres in size. Elevations range from about 75 feet above sea level at the Pee Dee River to about 725 feet above sea level near the town of Pageland. Chesterfield, the county seat, is in the northern part of the county and has a population of about 1,432. Cheraw, the largest town, has a population of about 5,654. The population of the county is approximately 40,100.

Most of Chesterfield County is rural. Most of the land is woodland, but some areas are used for row crops, such as corn, soybeans, tobacco, and wheat. Grain sorghum, peaches, watermelons, and cantaloupes are also grown. Broiler chickens, turkeys, and beef cattle are the main kinds of livestock raised in the county.

This soil survey updates an earlier survey of Chesterfield County published in 1914 *(16)*. It provides additional information and has larger maps, which show the soils in greater detail.

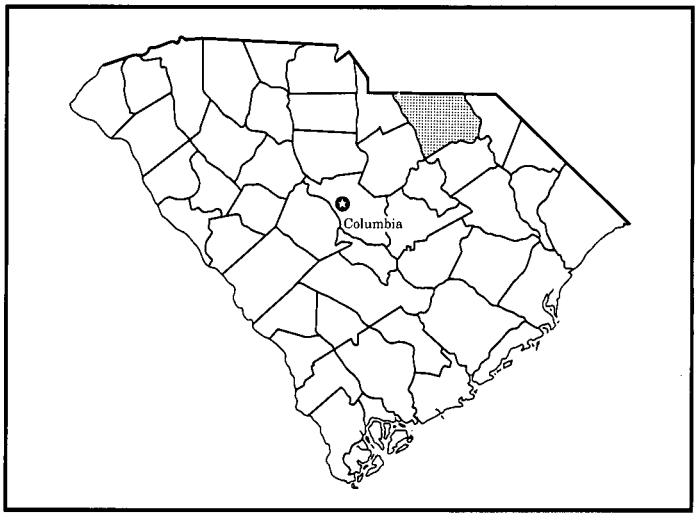

Figure 1.—Location of Chesterfield County in South Carolina.

General Nature of the County

This section provides general information about the survey area. It briefly describes the history and climate of Chesterfield County.

History

Before 1730, the area that is now Chesterfield County was occupied by Indians, principally the Cheraws. In 1731, the British government offered bounties to speed settlement of the territory. The bounties soon attracted a colony of Welsh Baptists from Newcastle County, Delaware. These colonists had come from Wales in 1701. The first of the Welsh settlers came to the Pee Dee area in about 1736 and obtained a grant of land. They soon were followed by other settlers of English, Scottish, and Irish descent. This influx of people continued until the opening years of the Revolutionary War.

In 1785, by an act of the General Assembly, counties were created by dividing the Cheraw District into three parts, one of which was Chesterfield County. The county was named in honor of the Earl of Chesterfield. Cheraw, the largest and oldest town in Chesterfield County, was established in 1766 and given the name of Chatham in honor of the first Earl of Chatham. The name was changed to Cheraw in 1821.

Climate

Table 1 gives data on temperature and precipitation for the survey area as recorded at Cheraw, South Carolina, in the period 1951 to 1986. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter, the average temperature is 43 degrees F and the average daily minimum temperature is 30 degrees. The lowest temperature on record, which occurred at Cheraw on January 21, 1985, is 0 degrees. In summer, the average temperature is 78 degrees and the average daily maximum temperature is 89 degrees. The highest recorded temperature, which occurred at Cheraw on July 23, 1952, is 108 degrees.

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 (50 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 48.79 inches. Of this, 26.52 inches, or 54 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 22.03 inches. The heaviest 1-day rainfall during the period of record was 6.79 inches at Cheraw on June 17, 1979. Thunderstorms occur on about 54 days each year.

The average seasonal snowfall is 3.6 inches. The greatest snow depth at any one time during the period of record was 12 inches. In most years only 1 or 2 days have at least 1 inch of snow on the ground.

The average relative humidity in midafternoon is about 53 percent. Humidity is higher at night, and the average at dawn is about 87 percent. The sun shines 67 percent of the time possible in summer and 59 percent in winter. The prevailing wind is from the southwest. Average windspeed is highest, 9 miles per hour, in spring.

How This Survey Was Made

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

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

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

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

While a soil survey is in progress, samples of some of the soils in the area 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. Interpretations for all of the soils are field tested through observation of the soils in different uses under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

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

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

Map Unit Composition

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

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

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

General Soil Map Units

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

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

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

Dominantly Nearly Level to Steep Soils on the Piedmont

These soils make up about 15 percent of the survey area. They are in the northern part of the county.

1. Badin-Georgeville-Goldston

Gently sloping to steep, shallow, moderately deep, and very deep, well drained to excessively drained soils that have a loamy or clayey subsoil

The landscape is characterized by moderate to prominent relief. It consists of broad, gently sloping to strongly sloping ridges that are dissected by shallow drainageways and of moderately steep or steep areas that are dissected by common or many shallow and narrow drainageways that lead to flood plains along creeks (fig. 2). The natural vegetation consists mostly of pine in the more level areas and pine and hardwoods in the steeper areas. Roads and houses are abundant in areas of this map unit.

This map unit makes up about 11 percent of the survey area. It is about 73 percent Badin soils, 10 percent Georgeville soils, 7 percent Goldston soils, and 10 percent soils of minor extent.

Badin soils are moderately deep and well drained. They are at the intermediate elevations. Typically, they have a surface layer of brownish silt loam and a subsoil of yellowish and reddish silty clay loam and silty clay. The underlying material is multicolored, weathered, fractured slate. The bedrock is hard, jointed slate.

Georgeville soils are very deep and well drained. They are at the highest elevations. Typically, they have a surface layer of reddish silty clay loam and a subsoil of reddish silty clay and mottled clay loam.

Goldston soils are shallow and are well drained to excessively drained. They generally are in the steepest positions on the landscape. Typically, they have a surface layer of brownish channery silt loam and a subsoil of brownish extremely channery silt loam. The underlying material is greenish, weathered, fractured slate. The bedrock is hard, jointed slate.

Of minor extent in this map unit are the very deep, well drained Ailey, Alamance, and Rion soils and the moderately deep, moderately well drained Pageland soils. Ailey soils have a thick, sandy surface layer. They are on the Coastal Plain. Alamance and Rion soils have a loamy subsoil. Rion soils formed in granite. Pageland soils are at the head of drainageways.

About 50 percent of the acreage in this map unit has been cleared for use as cropland or pasture. Corn, soybeans, and wheat commonly are grown. The uncleared areas are used as woodland or as habitat for wildlife.

These soils range from moderately well suited to not suited to row crops. The hazard of erosion is the main management concern. Conservation tillage, contour farming, contour stripcropping, terraces, grassed waterways, and cover crops help to control runoff and erosion in the gently sloping to moderately steep areas. The steep areas are not suited to row crops because of the slope.

These soils are moderately well suited to woodland. Common trees are loblolly pine and shortleaf pine. The main management concerns are the hazard of erosion and the equipment limitation in the steeper areas. Harvesting methods that least disturb the soil can minimize the potential for erosion and the equipment

Figure 2.—Typical landscape in the Badin-Georgeville-Goldston general soil map unit. Georgeville soils are in the gently sloping areas in the foreground, Badin soils are in the strongly sloping areas, and Goldston soils are in the strongly sloping or moderately steep areas in the background.

limitation. These methods include locating skid trails, log landings, and temporary logging roads so that they do not lead to drainageways; moving logs on the contour; and plowing fire lanes on the contour.

These soils are moderately well suited to hay and pasture. The hazard of erosion while new pastures are being established is the main management concern. Fescue is a common grass to plant. A seedbed should be prepared on the contour or across the slope where practical. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

These soils are moderately well suited to most engineering uses related to homesite development. The depth to bedrock, restricted permeability, and the slope are the main limitations on sites for septic tank absorption fields. These limitations can be minimized by using a special layout and by increasing the size of the absorption field. The Badin and Goldston soils are limited as sites for dwellings because of the depth to bedrock, the shrink-swell potential, and the slope. The highly weathered bedrock can be ripped with heavy machinery, or structural designs that do not penetrate the bedrock and that conform to the shape of the slope can be used. The effects of shrinking and swelling can be minimized by backfilling with coarser textured material. Proper fertilization, seeding, mulching, and land shaping can help to establish and maintain the plant cover in suburban areas.

2. Pageland-Goldston-Badin

Gently sloping to steep, shallow or moderately deep, moderately well drained to excessively drained soils that have a loamy or clayey subsoil

The landscape is characterized by moderate relief. It consists of broad, gently sloping ridgetops and strongly sloping to steep side slopes that are parallel to drainageways. The natural vegetation consists mostly of pine and hardwoods. Houses and roads are abundant in areas of this map unit.

This map unit makes up about 0.6 percent of the

survey area. It is about 50 percent Pageland soils, 21 percent Goldston soils, 19 percent Badin soils, and 10 percent soils of minor extent.

Pageland soils are moderately deep and moderately well drained. They are in the gently sloping areas. Typically, they have a surface layer of brownish silt loam and a subsoil of yellowish and brownish silty clay loam. The lower part of the subsoil has gray mottles. The underlying material is multicolored, weathered, fractured slate.

Goldston soils are shallow and are well drained to excessively drained. They are in the steepest positions on the landscape. Typically, they have a surface layer of brownish channery silt loam and a subsoil of brownish very channery silt loam. The underlying material is greenish, weathered, fractured slate. The bedrock is hard, jointed slate.

Badin soils are moderately deep and well drained. They are at the intermediate elevations. Typically, they have a surface layer of brownish silt loam and a subsoil of yellowish and reddish silty clay loam and silty clay. The underlying material is multicolored, weathered, fractured slate. The bedrock is hard, jointed slate.

Of minor extent in this map unit are the very deep, well drained Alamance and Georgeville soils. Georgeville soils have bedrock at a depth of more than 60 inches. Alamance soils have a loamy subsoil.

About 65 percent of the acreage in this map unit has been cleared for use as cropland or pasture. Corn, soybeans, and wheat commonly are grown. The uncleared areas are used as woodland or as habitat for wildlife.

These soils range from moderately well suited to poorly suited to row crops. The hazard of erosion and wetness in the Pageland soils are the main management concerns. Conservation tillage, contour farming, contour stripcropping, terraces, grassed waterways, and cover crops help to control runoff and erosion in the gently sloping to moderately steep areas. The wetness can be reduced by maintaining shallow surface drains and open ditches. The steep areas are not suited to row crops because of the slope.

These soils range from moderately well suited to poorly suited to woodland. Common trees are loblolly pine and shortleaf pine. The main management concerns are the hazard of erosion and the equipment limitation in the steeper areas, seedling mortality, and the windthrow hazard. Harvesting methods that least disturb the soil can minimize the potential for erosion and the equipment limitation. These methods include locating skid trails, log landings, and temporary logging roads so that they do not lead to drainageways; moving logs on the contour; and plowing fire lanes on the contour. The seedling mortality rate, which is caused by droughtiness, can be reduced by planting in furrows. Because rooting depth is restricted in the Goldston soils, the trees may be uprooted during periods of strong winds.

These soils are moderately well suited to hay and pasture. Fescue and improved bermudagrass are common grasses to plant. The hazard of erosion while new pastures are being established is the main management concern. A seedbed should be prepared on the contour or across the slope where practical. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

These soils range from moderately well suited to poorly suited to engineering uses related to homesite development. Restricted permeability, the depth to bedrock, the slope, and the wetness are the main management concerns on sites for septic tank absorption fields. These limitations can be minimized by using a special layout and by increasing the size of the absorption field. The depth to bedrock, the shrink-swell potential, and the slope are the main management concerns on sites for dwellings. The highly weathered bedrock can be ripped with heavy machinery, or structural designs that do not penetrate the bedrock and that conform to the shape of the slope can be used. The effects of shrinking and swelling can be minimized by backfilling with coarser textured material. Proper fertilization, seeding, mulching, and land shaping can help to establish and maintain the plant cover in suburban areas.

3. Poindexter-Badin

Moderately steep or steep, moderately deep, well drained soils that have a loamy or clayey subsoil

The landscape is characterized by prominent relief. It consists of narrow ridgetops and moderately steep to very steep side slopes dissected by short drainageways that lead to narrow flood plains. The natural vegetation consists mostly of pine and hardwoods. There are few houses and roads in areas of this map unit.

This map unit makes up about 0.4 percent of the survey area. It is about 58 percent Poindexter soils, 32 percent Badin soils, and 10 percent soils of minor extent.

Poindexter soils are at the highest elevations. Typically, they have a surface layer of brownish fine sandy loam and a subsoil of brownish loam. The underlying material is multicolored, weathered, basic rock.

Badin soils are at the intermediate elevations.

Typically, they have a surface layer of brownish silt loam and a subsoil of yellowish and reddish silty clay loam and silty clay. The underlying material is multicolored, weathered, fractured slate. The bedrock is hard, jointed slate.

Of minor extent in this map unit are the very deep, well drained Pacolet and Rion soils and the shallow, well drained to excessively drained Goldston soils. Pacolet soils have a clayey subsoil. They are more than 60 inches deep over bedrock. Rion soils have a loamy subsoil. Generally, they have large boulders on the surface. Goldston soils have soft bedrock within a depth of 20 inches.

Most areas of this map unit are used as woodland or as habitat for wildlife.

These soils are generally not suited to row crops. The slope and the hazard of erosion are the main management concerns.

These soils are moderately well suited to woodland. Common trees are loblolly pine and shortleaf pine. The main management concerns are the equipment limitation and the hazard of erosion. Harvesting methods that least disturb the soil can minimize the potential for erosion and the equipment limitation. These methods include locating skid trails, log landings, and temporary logging roads so that they do not lead to drainageways; moving logs on the contour; and plowing fire lanes on the contour.

These soils are poorly suited to hay and pasture. The slope and the hazard of erosion while new pastures are being established are the main management concerns. Fescue is a common grass to plant. A seedbed should be prepared on the contour or across the slope where practical. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

These soils are poorly suited to engineering uses related to homesite development. The slope, the depth to bedrock, and restricted permeability are the main limitations on sites for septic tank absorption fields. These limitations can be minimized by using a special layout, by increasing the size of the absorption field, and by installing the lines on the contour. The soils are limited as sites for dwellings because of the depth to bedrock, the shrink-swell potential, and the slope. The highly weathered bedrock can be ripped with heavy machinery, or structural designs that do not penetrate the bedrock and that conform to the shape of the slope can be used. The effects of shrinking and swelling can be minimized by backfilling with coarser textured material. Proper fertilization, seeding, mulching, and land shaping can help to establish and maintain the plant cover in suburban areas.

4. Rion-Pacolet-Cecil

Gently sloping to steep, very deep, well drained soils that have a loamy or clayey subsoil

The landscape is characterized by prominent relief. It consists of gently sloping to strongly sloping ridges and side slopes and of moderately steep or steep areas with narrow ridgetops and side slopes dissected by many short drainageways that lead to narrow flood plains. Numerous boulders are on the moderately steep to very steep side slopes. The natural vegetation consists mostly of pine in the gently sloping to moderately steep areas and of hardwoods and a few pines in the steep areas. There are few houses and roads in areas of this map unit.

This map unit makes up about 2 percent of the survey area. It is about 51 percent Rion soils, 30 percent Pacolet soils, 10 percent Cecil soils, and 9 percent soils of minor extent.

Rion soils are at the highest elevations. Typically, they have a surface layer of brownish sandy loam, a subsurface layer of yellowish sandy loam, and a subsoil of yellowish sandy clay loam. The underlying material is mottled yellowish and white sandy loam.

Pacolet soils are at the intermediate elevations. Typically, they have a surface layer of reddish clay loam and a subsoil of reddish clay and loam. The underlying material is reddish loam.

Cecil soils are in the smoothest positions on the landscape. Typically, they have a surface layer of reddish sandy clay loam. The upper part of the subsoil is reddish clay and clay loam. The lower part is reddish sandy clay loam and clay loam.

Of minor extent in this map unit are the very deep, well drained Ailey soils and the moderately deep, well drained Badin soils. Ailey soils have a thick, sandy surface layer. They are on the Coastal Plain. Badin soils have soft bedrock within a depth of 40 inches.

About 30 percent of the acreage in this map unit has been cleared for use as cropland or pasture. Soybeans and wheat commonly are grown in the cleared areas. The uncleared areas are used as woodland or as habitat for wildlife.

These soils range from well suited to not suited to row crops. The slope, the hazard of erosion, and boulders on the surface are the main management concerns. Conservation tillage, contour farming, contour stripcropping, terraces, grassed waterways, and cover crops help to control runoff and erosion in the gently sloping to moderately steep areas. The moderately steep and steep areas are not suited to row crops because of the slope and the boulders on the surface.

These soils range from moderately well suited to poorly suited to woodland. Common trees are loblolly

pine and shortleaf pine. The main management concerns are the equipment limitation, seedling mortality, and the hazard of erosion. Harvesting methods that least disturb the soil can minimize the potential for erosion and the equipment limitation. These methods include locating skid trails, log landings, and temporary logging roads so that they do not lead to drainageways; moving logs on the contour; and plowing fire lanes on the contour. The seedling mortality rate, which is caused by droughtiness, can be reduced by planting in furrows.

These soils range from moderately well suited to poorly suited to hay and pasture. The slope and the hazard of erosion while new pastures are being established are the main management concerns. The boulders and stones in the steeper areas of this map unit can interfere with the use of equipment. Fescue and improved bermudagrass are common grasses to plant in the gently sloping to strongly sloping areas. A seedbed should be prepared on the contour or across the slope where practical. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

These soils range from moderately well suited to poorly suited to engineering uses related to homesite development. The slope and restricted permeability are the main limitations on sites for septic tank absorption fields. These limitations can be minimized by using a special layout, by increasing the size of the absorption field, and by installing the lines on the contour. The slope is the main management concern on sites for dwellings. It can be reduced by cutting and filling and by modifying the design of the buildings. Proper fertilization, seeding, mulching, and land shaping can help to establish and maintain the plant cover in suburban areas.

5. Claycreek-Mayodan-Chewacla

Nearly level to strongly sloping, very deep, well drained to somewhat poorly drained soils that have a loamy or clayey subsoil

The landscape is characterized by low relief. It consists of nearly level flood plains and nearly level to strongly sloping Triassic basins that are surrounded by sloping to steep side slopes. These side slopes are dissected by many shallow drainageways that drain into the basins and form creeks. The natural vegetation consists mostly of pine and a few hardwoods. There are few houses in areas of this map unit, but there are numerous roads.

This map unit makes up about 1 percent of the survey area. It is about 41 percent Claycreek soils, 40 percent Mayodan soils, 15 percent Chewacla soils, and 4 percent soils of minor extent.

Claycreek soils are moderately well drained. They are at the intermediate elevations. Typically, they have a surface layer of brownish silt loam and a subsoil of silt loam and silty clay loam that is brownish in the upper part and mottled yellowish and grayish in the lower part. The underlying material is mottled yellowish, grayish, brownish, and reddish silty clay loam.

Mayodan soils are well drained. They are at the highest elevations. Typically, they have a surface layer of brownish silt loam and a subsoil of reddish silty clay and brownish silty clay loam. The underlying material is yellowish, grayish, and reddish loam.

Chewacla soils are somewhat poorly drained. They are on flood plains. Typically, they have a surface layer of brownish clay loam. The upper part of the subsoil is yellowish loam that has grayish mottles. The lower part is mottled grayish, brownish, and reddish loam, sandy loam, and sandy clay loam. The underlying material is grayish loamy sand, sandy loam, and sandy clay loam.

Of minor extent in this map unit are the moderately deep, well drained Badin soils; the shallow, well drained to excessively drained Goldston soils; and the very deep, well drained Riverview soils. Badin and Goldston soils are on the side slopes surrounding the basins. Riverview soils are on flood plains.

About 70 percent of the acreage in this map unit has been cleared for use as cropland or pasture. Corn, soybeans, and wheat commonly are grown in the cleared areas. The uncleared areas are used as woodland or as habitat for wildlife.

These soils are moderately well suited to row crops. Wetness, the hazard of erosion, and flooding are the main management concerns. Because of the moderately slow permeability in the Claycreek soils, shallow surface drains and open ditches commonly are used to control the water table. Conservation tillage, contour farming, contour stripcropping, terraces, grassed waterways, and cover crops help to control runoff and erosion. Overcoming the flooding is not economically feasible. The effects of flooding can be reduced by growing short-season crops that are planted after the flooding in spring and harvested before the flooding in fall and spring.

These soils are moderately well suited to woodland. Common trees are loblolly pine and shortleaf pine. The main management concerns are plant competition and the equipment limitation. Competing vegetation can be controlled by proper site preparation, such as burning, spraying, cutting, or girdling. Removing excess water, using wider tires on equipment, and bedding, planting, and harvesting trees during dry periods help to overcome the equipment limitation.

These soils are moderately well suited to hay and pasture. Fescue and improved bermudagrass are common grasses to plant. The wetness and the flooding are the main management concerns. The wetness can be overcome by maintaining open ditches and surface drains. Overcoming the flooding is generally not economically feasible. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

These soils are moderately well suited or not suited to engineering uses related to homesite development. The wetness, the restricted permeability, and the flooding are the main management concerns on sites for septic tank absorption fields. The wetness and the restricted permeability can be overcome by using a special layout and by increasing the size of the absorption field. The wetness, the shrink-swell potential, and the flooding are the main management concerns on sites for dwellings. The wetness and the shrink-swell potential can be overcome by maintaining a surface drainage system and by backfilling with coarser textured material. Overcoming the flooding is generally not economically feasible on the Chewacla soils. Proper fertilization, seeding, mulching, and land shaping can help to establish and maintain the plant cover in suburban areas.

Dominantly Nearly Level to Moderately Steep Soils in the Sand Hills

These soils make up about 55 percent of the survey area. They are mostly in the central and southern parts of the county.

6. Alpin-Candor

Nearly level to moderately steep, very deep, excessively drained and somewhat excessively drained soils that have a sandy or a loamy and sandy subsoil

The landscape is characterized by moderate relief. It consists of nearly level to strongly sloping areas on ridges and moderately steep or steep areas along side slopes that lead to drainageways. The natural vegetation consists mostly of pine and small hardwoods. There are few houses in areas of this map unit, but there are numerous roads.

This map unit makes up about 31 percent of the survey area. It is about 50 percent Alpin soils, 30 percent Candor soils, and 20 percent soils of minor extent.

Alpin soils are excessively drained. They are at the highest elevations. Typically, they have a surface layer of brownish sand, a subsurface layer of yellowish and brownish sand, and a subsoil of brownish sand with thin alternating bands of loamy sand.

Candor soils are somewhat excessively drained. They are at the lowest elevations. Typically, they have a surface layer and subsurface layer of brownish sand. The upper part of the subsoil is brownish loamy sand. Below this is yellowish sand. The lower part of the subsoil is yellowish sandy loam and mottled sandy clay loam.

Of minor extent in this map unit are the very deep, well drained Ailey and Vaucluse soils and the very deep, very poorly drained Johnston soils. Ailey and Vaucluse soils have a loamy subsoil. Johnston soils are along drainageways and creeks.

About 90 percent of the acreage in this map unit is used as woodland or as habitat for wildlife (fig. 3). Most of the cleared land is used for peaches, watermelons, or hay. A few areas are used for soybeans, wheat, or field seed.

These soils range from poorly suited to not suited to row crops. Droughtiness, a low nutrient-holding capacity, and soil blowing are the main management concerns. Conservation tillage, contour farming, cover crops, crop residue management, and contour stripcropping with close-growing grains or legumes increase the available water capacity and the nutrient-holding capacity and reduce the hazard of soil blowing.

These soils range from moderately well suited to poorly suited to woodland. Common trees are loblolly pine and longleaf pine. The main management concerns are the equipment limitation and seedling mortality. The sandy surface layer restricts the use of wheeled equipment, especially when the soil is very dry. Tracked vehicles or vehicles with wider tires can be used. The seedling mortality rate, which is caused by droughtiness, can be reduced by planting in furrows.

These soils range from moderately well suited to poorly suited to pasture and hay. Improved bermudagrass and bahiagrass are common grasses to plant. The droughtiness and the low nutrient-holding capacity are the main management concerns. Frequent applications of fertilizer and manure are needed. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during dry periods help to keep the pasture in good condition.

These soils are well suited or moderately well suited to engineering uses related to homesite development. The slope is a limitation on sites for septic tank absorption fields. This limitation can be overcome by using a special layout, increasing the size of the absorption field, and placing lines on the contour. The slope is also a limitation on sites for dwellings. It can be overcome by cutting and filling and by modifying the design of the buildings. Droughtiness is a management

Figure 3.—The vegetation in areas of the Alpin-Candor general soil map unit consists mostly of longleaf pine and loblolly pine.

concern affecting lawns and recreational uses. Proper fertilization, seeding, mulching, land shaping, and supplemental irrigation can help to establish and maintain the plant cover.

7. Ailey-Johnston-Vaucluse

Nearly level to moderately steep, very deep, well drained and very poorly drained soils that have a loamy subsoil

The landscape is characterized by marked relief. It consists of broad, nearly level ridges and gently sloping to moderately steep side slopes that lead to nearly level flood plains. The natural vegetation consists mostly of pine on the ridges and side slopes and of hardwoods on the flood plains. Roads and houses are abundant in areas of this map unit.

This map unit makes up about 24 percent of the survey area. It is about 40 percent Ailey soils, 20 percent Johnston soils, 14 percent Vaucluse soils, and 26 percent soils of minor extent.

Ailey soils are well drained. They are at the highest elevations. Typically, they have a surface layer and subsurface layer of thick, brownish sand and a subsoil of mottled, yellowish sandy loam and sandy clay loam. The lower part of the subsoil is very firm, brittle, and compact in part of the mass. The underlying material is yellowish sandy loam and mottled clay loam.

Johnston soils are very poorly drained. They are at the lowest elevations. Typically, they have a thick surface layer of black and grayish sandy loam. The underlying material is grayish loamy sand and sand.

Vaucluse soils are well drained. They are at the intermediate elevations. Typically, they have a surface layer of grayish loamy sand, a subsurface layer of yellowish loamy sand, and a subsoil of reddish and yellowish sandy clay loam. The lower part of the subsoil is dense, compact, and brittle in part of the mass. The underlying material is yellowish sandy loam.

Of minor extent in this map unit are the very deep, somewhat excessively drained Candor soils; the very deep, well drained Emporia soils; the very deep, moderately well drained Pelion soils; and the very deep, poorly drained Ogeechee soils. Candor, Pelion, and Ogeechee soils are in the lower positions on the landscape. Emporia soils are at the intermediate elevations.

About 40 percent of the acreage in this map unit has been cleared for use as cropland. Corn, soybeans, and watermelons commonly are grown. The uncleared areas are used as woodland or as habitat for wildlife.

These soils range from poorly suited to not suited to row crops. Droughtiness, the hazard of erosion, a low nutrient-holding capacity, a restricted rooting depth, and flooding are the main management concerns. Conservation tillage, contour farming, cover crops, crop residue management, and contour stripcropping with close-growing grains or legumes increase the available water capacity and the nutrient-holding capacity. Fertilizers are more efficient if applied at intervals rather than in a single application. The Johnston soils are not suited to row crops because of the flooding and wetness.

These soils are moderately well suited to woodland. Common trees are loblolly pine and longleaf pine. The main management concerns are the equipment limitation and seedling mortality. The sandy surface layer of the Ailey soil restricts the use of wheeled equipment, especially when the soil is very dry. Tracked vehicles or vehicles with wider tires can be used. Removing excess water, using wider tires on equipment, and bedding, planting, and harvesting trees during dry periods help to overcome the equipment limitation on the Johnston soils. The seedling mortality rate, which is caused by droughtiness, can be reduced on the Ailey and Vaucluse soils by planting in furrows. The seedling mortality rate on the Johnston soils can be reduced by planting suitable species at the proper time and by planting on raised beds. Trees on the Johnston and Vaucluse soils may be uprooted during periods of strong winds because of the restricted rooting depth. Competing vegetation on the Johnston soils can be controlled by proper site preparation, such as burning, spraying, cutting, or girdling.

These soils range from moderately well suited to poorly suited to hay and pasture. The droughtiness, the hazard of erosion, and the flooding are the main limitations. Frequent applications of fertilizer and manure are needed. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during dry periods help to keep the pasture in good condition. A seedbed should be prepared on the contour or across the slope where practical. Overcoming the flooding is generally not economically feasible.

These soils range from moderately well suited to not suited to engineering uses related to homesite development. The wetness, restricted permeability, and the flooding are the main limitations on sites for septic tank absorption fields. The restricted permeability can be overcome by using specially designed or modified conventional systems and by increasing the size of the absorption field. The slope, the wetness, and the flooding are the main management concerns on sites for dwellings. The slope can be reduced by cutting and filling and by modifying the design of the buildings. It is generally not economically feasible to reduce the wetness and the hazard of flooding on the Johnston soils. Proper fertilization, seeding, mulching, land shaping, and supplemental irrigation can help to establish and maintain the plant cover in suburban areas.

Dominantly Nearly Level to Strongly Sloping Soils on the Coastal Plain

These soils make up about 18 percent of the survey area. They are in the northeastern and southwestern parts of the county.

8. Ailey-Pelion-Emporia

Nearly level to strongly sloping, very deep, well drained and moderately well drained soils that have a loamy subsoil

The landscape is characterized by moderate relief. It consists of broad, nearly level ridges and gently sloping to strongly sloping side slopes. The natural vegetation consists mostly of pine.

This map unit makes up about 14 percent of the survey area. It is about 37 percent Ailey soils, 30 percent Pelion soils, 19 percent Emporia soils, and 14 percent soils of minor extent.

Ailey soils are well drained. They are at the highest elevations. Typically, they have a surface layer and subsurface layer of thick, brownish sand and a subsoil of mottled, yellowish sandy loam and sandy clay loam. The lower part of the subsoil is very firm, brittle, and cemented in part of the mass. The underlying material is yellowish sandy loam and mottled clay loam.

Pelion soils are moderately well drained. They are at the lowest elevations. Typically, they have a surface layer and subsurface layer of brownish loamy sand and a subsoil of yellowish sandy clay loam. The lower part of the subsoil is firm, dense, brittle, and compact in part of the mass and has grayish mottles. The underlying material is yellowish, grayish, and reddish, sandy and loamy material.

Emporia soils are well drained. They are at the intermediate elevations. Typically, they have a surface layer and subsurface layer of brownish loamy sand and a subsoil of brownish and yellowish sandy clay loam and mottled sandy clay. The underlying material is mottled yellowish, grayish, and reddish sandy clay loam and sandy loam.

Of minor extent in this map unit are the very deep, excessively drained Alpin soils; the very deep, somewhat excessively drained Candor soils; the very deep, poorly drained Ogeechee soils; and the very deep, very poorly drained Johnston soils. Candor and Alpin soils are in the higher positions on the landscape. Ogeechee soils are in the lower positions. Johnston soils are on flood plains.

About 60 percent of the acreage in this map unit has been cleared for use as cropland or pasture. Corn, soybeans, wheat, and watermelons commonly are grown. The uncleared areas are used as woodland or as habitat for wildlife.

These soils are moderately well suited to row crops. The hazard of erosion, droughtiness, a low nutrient-holding capacity, and a restricted rooting depth are the main management concerns. Conservation tillage, contour farming, contour stripcropping, terraces, grassed waterways, and cover crops help to control runoff and erosion and conserve moisture. Fertilizers are more efficient if applied at intervals rather than in a single application.

These soils are moderately well suited to woodland. Common trees are loblolly pine and longleaf pine. The main management concerns are the equipment limitation and seedling mortality. The sandy surface layer restricts the use of wheeled equipment, especially when the soil is very dry. Tracked vehicles or vehicles with wider tires can be used. The seedling mortality rate, which is caused by droughtiness, can be reduced by planting in furrows. Because rooting depth is restricted by the dense, compact subsoil in the Pelion soils, the trees may be uprooted during periods of strong winds.

These soils are moderately well suited to hay and pasture. Bahiagrass and improved bermudagrass are common grasses to plant. Droughtiness is the main management concern. Frequent applications of fertilizer and manure are needed. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during dry periods help to keep the pasture in good condition.

These soils are moderately well suited to engineering uses related to homesite development. The slope, restricted permeability, and wetness are the main management concerns on sites for septic tank absorption fields. These limitations can be minimized by using a special layout and by increasing the size of the absorption field. The wetness and the slope are the main management concerns on sites for dwellings. The wetness can be reduced by adding suitable fill material, shaping the area to remove excess surface water, and installing a drainage system. The slope can be reduced by cutting and filling and by modifying the design of the buildings. Proper fertilization, seeding, mulching, land shaping, and supplemental irrigation can help to establish and maintain the plant cover in suburban areas.

9. Emporia-Noboco-Coxville

Nearly level to strongly sloping, very deep, well drained and poorly drained soils that have a loamy or clayey subsoil

The landscape is characterized by low relief. It consists of broad, nearly level ridges; gently sloping to strongly sloping side slopes; small oval depressions; and shallow drainageways. The natural vegetation consists mostly of pine and scattered hardwoods. Roads and houses are abundant in areas of this map unit.

This map unit makes up about 4 percent of the survey area. It is about 49 percent Emporia soils, 27 percent Noboco soils, 10 percent Coxville soils, and 14 percent soils of minor extent.

Emporia soils are well drained. They are at the intermediate elevations. Typically, they have a surface layer and subsurface layer of brownish loamy sand and a subsoil of brownish and yellowish sandy clay loam and mottled sandy clay. The underlying material is mottled yellowish, grayish, and reddish sandy clay loam and sandy loam.

Noboco soils are well drained. They are at the highest elevations. Typically, they have a surface layer and subsurface layer of brownish loamy sand and a subsoil of yellowish sandy clay loam. The lower part of the subsoil has brownish, reddish, and grayish mottles.

Coxville soils are poorly drained. They are at the lowest elevations. Typically, they have a surface layer of grayish sandy loam. The subsoil is brownish and grayish clay loam and clay that has reddish, brownish, and yellowish mottles. The underlying material is white clay.

Of minor extent in this map unit are the very deep, well drained Ailey and Bonneau soils; the very deep, moderately well drained Goldsboro soils; and the very deep, poorly drained Woodington soils. Ailey and Bonneau soils have a sandy surface layer more than 20 inches thick. They are in the higher positions on the landscape. Goldsboro soils are in broad, nearly level

areas. Woodington soils are in the lower positions on the landscape.

About 95 percent of the acreage in this map unit has been cleared for use as cropland. Tobacco, corn, soybeans, and wheat commonly are grown. Most of the uncleared areas are used as woodland or as habitat for wildlife. Some areas of this map unit are used for urban development.

These soils are well suited to row crops and small grain. Wetness and the hazard of erosion are the main management concerns. Conservation tillage, contour farming, contour stripcropping, terraces, grassed waterways, and cover crops help to control runoff and erosion. Because of the moderately slow permeability in the Coxville soils, shallow surface drains and open ditches commonly are used to control the water table.

These soils are well suited to woodland. Common trees are loblolly pine and longleaf pine. The main management concern is plant competition. Competing vegetation can be controlled by proper site preparation, such as burning, spraying, cutting, or girdling. Wetness in the Coxville soils also affects equipment use, seedling mortality, and the windthrow hazard. Removing excess water, using wider tires on equipment, and bedding, planting, and harvesting trees during dry periods help to overcome the equipment limitation. The seedling mortality rate can be reduced by planting suitable species at the proper time and by planting on raised beds. Trees may be uprooted during periods of strong winds because of the restricted rooting depth.

These soils are well suited to pasture and hay. Bahiagrass and improved bermudagrass are common grasses to plant. The wetness is a management concern on the Coxville soils. It can be overcome by maintaining open ditches and surface drains. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

These soils range from moderately well suited to poorly suited to most engineering uses related to homesite development. The wetness and restricted permeability are the main limitations on sites for septic tank absorption fields. These limitations can be minimized on the better drained soils by using a special layout and by increasing the size of the absorption field. The poorly drained Coxville soils are generally not used as sites for septic tank absorption fields because of the wetness. The wetness and the shrink-swell potential are the main management concerns on sites for dwellings. The wetness can be reduced on sites for most dwellings by adding suitable fill material, shaping the area to remove excess surface water, and installing a drainage system. The soils are generally not used as sites for dwellings with basements, however, because of the wetness. The effects of shrinking and swelling can be minimized by backfilling with coarser textured material. Most areas are well suited to lawns and shrubs. In areas of the Coxville soils, however, a drainage system is needed and plants that can tolerate a seasonal high water table should be selected.

Dominantly Nearly Level to Strongly Sloping Soils on Stream Terraces and Flood Plains

These soils make up about 12 percent of the survey area. They are along the Pee Dee River, the Lynches River, Thompson Creek, Juniper Creek, and Black Creek and their tributaries and on stream terraces.

10. Chewacla-Chastain-Riverview

Nearly level, very deep, somewhat poorly drained, poorly drained, and well drained soils that have a loamy or clayey subsoil

The landscape is characterized by low relief. It consists of nearly level areas and low, flat areas with meandering channels and narrow ridges that parallel the Pee Dee River, the Lynches River, and Thompson Creek and most of their tributaries. The natural vegetation consists mostly of hardwoods and a few pines in the higher areas. There are no houses and only a few public roads in areas of this map unit. The soils are frequently flooded for brief to very long periods.

This map unit makes up about 8 percent of the survey area. It is about 51 percent Chewacla soils, 24 percent Chastain soils, 11 percent Riverview soils, and 14 percent soils of minor extent.

Chewacla soils are somewhat poorly drained. They are at the intermediate elevations. Typically, they have a surface layer of brownish clay loam. The upper part of the subsoil is yellowish loam that has grayish mottles. The lower part is mottled grayish, brownish, and reddish loam, sandy loam, and sandy clay loam. The underlying material is grayish loamy sand, sandy loam, and sandy clay loam.

Chastain soils are poorly drained. They are at the lowest elevations. Typically, they have a surface layer of brownish silt loam and a subsoil of grayish clay and silty clay loam that has yellowish and brownish mottles.

Riverview soils are well drained. They are at the highest elevations. Typically, they have a surface layer of brownish silt loam and a subsoil of brownish loam and silty clay loam.

Of minor extent in this map unit are the very deep, somewhat excessively drained Alaga soils; the very deep, moderately well drained Tetotum soils; and the very deep, somewhat poorly drained Wahee soils. Alaga soils are sandy throughout. Tetotum soils have a

loamy subsoil. Wahee soils have a clayey subsoil. The minor soils are in the higher positions on the landscape.

About 80 percent of the acreage in this map unit is used as woodland or as habitat for wildlife. Soybeans and wheat commonly are grown in the cleared areas.

These soils range from moderately well suited to not suited to row crops. Wetness and the frequent flooding are the main limitations. Overcoming the flooding is generally not economically feasible. The effects of flooding can be reduced by growing short-season crops that are planted after the flooding in spring and harvested before the flooding in fall and winter. The wetness can be overcome by maintaining a surface drainage system.

These soils are well suited to the production of water-tolerant hardwoods. Common trees are water oak, water tupelo, and loblolly pine. The main management concern is plant competition. Competing vegetation can be controlled by proper site preparation, such as burning, spraying, cutting, or girdling. Wetness in areas of the Chewacla and Chastain soils affects equipment use, the windthrow hazard, and seedling mortality. Removing excess water, using wider tires on equipment, and bedding, planting, and harvesting trees during dry periods help to overcome the equipment limitation. Trees may be uprooted during periods of strong winds because of the restricted rooting depth. The seedling mortality rate can be reduced by planting suitable species at the proper time and by planting on raised beds.

These soils range from moderately well suited to poorly suited to hay and pasture. Bahiagrass, fescue, and improved bermudagrass are common grasses to plant. The wetness and the flooding are the main management concerns. Overcoming the flooding is generally not economically feasible. The wetness can be overcome by maintaining open ditches and surface drains. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

These soils are generally not suited to engineering uses related to homesite development. The wetness and the flooding are the main management concerns. Overcoming these limitations is generally difficult and expensive.

11. Tetotum-Wickham-Quartzipsamments

Nearly level to strongly sloping, very deep, well drained, moderately well drained, and excessively drained soils that have a loamy subsoil or are sandy throughout

The landscape is characterized by low relief. It consists of broad, nearly level to strongly sloping areas adjacent to the flood plains along the Pee Dee River and Thompson Creek. It also includes mined areas in the eastern part of the county adjacent to the Coastal Plain and Sand Hills. The natural vegetation consists mostly of pine. There are few houses and public roads in areas of this map unit. The soils are subject to rare flooding during periods of abnormally high rainfall.

This map unit makes up about 2 percent of the survey area. It is about 36 percent Tetotum soils, 13 percent Wickham soils, 13 percent Quartzipsamments, and 38 percent soils of minor extent.

Tetotum soils are moderately well drained. They are at the lowest elevations. Typically, they have a surface layer of brownish sandy loam. The upper part of the subsoil is yellowish loam and clay loam that has reddish and grayish mottles. The lower part is grayish loam and clay loam that has brownish and reddish mottles. The underlying material is mottled sandy clay loam.

Wickham soils are well drained. They are at the intermediate elevations. Typically, they have a surface layer of brownish sandy loam and a subsoil of reddish clay loam, sandy clay loam, and sandy loam. The underlying material is brownish loamy sand.

Quartzipsamments are excessively drained. They are at the highest elevations. Typically, they are variable in color and are sand or loamy sand. They have been stockpiled for future use, or they have been disturbed by machinery.

Of minor extent in this map unit are the very deep, somewhat excessively drained Alaga soils; the very deep, moderately well drained Hornsville soils; the very deep, somewhat poorly drained Chewacla and Wahee soils; and the very deep, poorly drained Chastain soils. Alaga soils are sandy throughout. They are in areas that have not been disturbed or stockpiled. Chastain and Chewacla soils are on flood plains. They are frequently flooded. Hornsville and Wahee soils have a clayey subsoil. They are in the lower positions on the landscape.

About 40 percent of the acreage in this map unit is used for cropland or pasture. Corn, soybeans, and wheat commonly are grown. The uncleared areas are used as woodland or as habitat for wildlife.

These soils range from well suited to not suited to row crops. The hazard of erosion, wetness, and droughtiness are the main management concerns. Wetness and flooding in adjacent areas limit the accessibility of areas of this map unit. Conservation tillage, contour farming, contour stripcropping, terraces, grassed waterways, and cover crops help to control runoff and erosion. Quartzipsamments generally are not suited to row crops.

These soils range from moderately well suited to poorly suited to woodland. Common trees are loblolly pine and longleaf pine. Plant competition is a

management concern on the Tetotum soils. Competing vegetation can be controlled by proper site preparation, such as burning, spraying, cutting, or girdling. The equipment limitation and seedling mortality are management concerns on the Quartzipsamments. The sandy surface layer restricts the use of wheeled equipment, especially when the soils are very dry. Tracked vehicles or vehicles with wider tires can be used. The seedling mortality rate, which is caused by droughtiness, can be reduced by planting in furrows. Reshaping may be required in areas of the Quartzipsamments.

These soils are well suited or moderately well suited to pasture and hay. Bahiagrass, fescue, and improved bermudagrass are common grasses to plant. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition. Reshaping may be needed in areas of the Quartzipsamments.

These soils are poorly suited to most engineering uses related to homesite development. The wetness and the flooding are the main limitations on sites for septic tank absorption fields and for dwellings. In some areas the wetness can be reduced by special design. Overcoming the flooding is generally difficult and expensive.

12. Bibb-Johnston

Nearly level, very deep, poorly drained and very poorly drained soils that have loamy and sandy underlying material

The landscape is characterized by low relief. It consists of low, flat, elongated areas on the flood plains along Black Creek and Juniper Creek. The natural vegetation consists mostly of hardwoods. There are no houses in areas of this map unit. A few roads cross the flood plains and connect adjacent higher areas. The soils are frequently flooded for brief or long periods.

This map unit makes up about 2 percent of the survey area. It is about 57 percent Bibb soils, 35 percent Johnston soils, and 8 percent soils of minor extent.

Bibb soils are poorly drained. They are at the highest elevations. Typically, they have a surface layer of brownish sandy loam. The underlying material is grayish loam, sandy loam, and sand.

Johnston soils are very poorly drained. They are at the lowest elevations. Typically, they have a thick surface layer of black and grayish sandy loam. The underlying material is grayish loamy sand and sand.

Of minor extent in this map unit are the very deep, moderately well drained Pelion soils and the very deep, poorly drained Ogeechee soils. Pelion and Ogeechee soils have a loamy subsoil. They are adjacent to the flood plains.

All of the acreage in this map unit is used as woodland or as habitat for wildlife.

These soils are not suited to row crops. Wetness and flooding are the main limitations. Overcoming the flooding is generally not economically feasible.

These soils are poorly suited to woodland. The wetness is a limitation affecting the production of loblolly pine. The soils are well suited to water-tolerant hardwoods, such as yellow-poplar and sweetgum. The main management concerns are the equipment limitation, the windthrow hazard, seedling mortality, and plant competition. Removing excess water, using wider tires on equipment, and bedding, planting, and harvesting trees during dry periods help to overcome the equipment limitation. The seedling mortality rate can be reduced by planting suitable species at the proper time and by planting on raised beds. Trees may be uprooted during periods of strong winds because of the restricted rooting depth. Competing vegetation can be controlled by proper site preparation, such as burning, spraying, cutting, or girdling.

These soils are poorly suited to hay and pasture. Fescue is a common grass to plant. The wetness and the flooding are the main limitations. Overcoming the flooding is generally not economically feasible. The wetness can be overcome by maintaining open ditches and surface drains. Grazing should be deferred until the soil has drained sufficiently and is firm enough to withstand trampling by livestock. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

These soils are generally not suited to engineering uses related to homesite development. The wetness and the flooding are the main limitations. Overcoming these limitations is generally difficult and expensive.

Broad Land Use Considerations

Chesterfield County is made up of three major land resource areas. These are the Carolina and Georgia Sand Hills, the Southern Coastal Plain, and the Southern Piedmont *(3)*.

The Carolina and Georgia Sand Hills area is in the central and southern parts of the county. Most of this area is woodland. A large percentage is federally owned or state owned. Timber production is important. Cash crops include peaches, melons, grapes, soybeans, corn, hay, and wheat.

The soils in this area are nearly level to strongly sloping. The steeper side slopes are near

drainageways. Most of the soils are excessively drained to well drained. Alpin, Troup, Ailey, and Vaucluse soils are the major soils in the uplands. The moderately well drained Pelion soils are gently sloping or moderately sloping and are generally near drainageways. The soils on flood plains are poorly drained or very poorly drained. They are mostly along Black Creek and its tributaries. Johnston and Bibb soils are the major soils on the flood plains.

The Southern Coastal Plain is mostly in the eastern and central parts of the county. Most of this area is farmland. The area is important for cash crops. Corn, soybeans, wheat, and tobacco are the major crops grown.

The soils in this area are nearly level to sloping. The steeper side slopes are near drainageways. Most of the soils are well drained or moderately well drained. Poorly drained soils are in oval or broad, flat depressions on flood plains. Emporia, Noboco, Goldsboro, Lucy, Coxville, Smithboro, and Bonneau soils are the major soils in the uplands. The soils on flood plains are well drained to poorly drained. They are mostly along the Pee Dee River, the Lynches River, and Thompson Creek and their tributaries. Chewacla, Chastain, and Riverview soils are the major soils on the flood plains.

The Southern Piedmont is in the northern and northwestern parts of the county. Most of this area is used as cropland or pasture. Cash crops include soybeans, corn, wheat, and millet. Poultry also is important.

The soils in this area are generally gently sloping to steep. The steeper side slopes are near drainageways. Most of the soils are well drained. Georgeville, Badin, Pacolet, Rion, and Cecil soils are the major soils in the uplands. The northern part of this resource area has Triassic basins. These basins are generally surrounded by steep or very steep side slopes that are dissected by many small drainageways. The basins are gently sloping to sloping and are well drained or moderately well drained. Mayodan and Claycreek soils are the major soils in the basins. The soils on flood plains in this resource area are well drained to poorly drained. They are mostly along Thompson Creek and the Lynches River and their tributaries. Chewacla, Chastain, and Riverview soils are the major soils on the flood plains.

Detailed Soil Map Units

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

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

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

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

Soils of one series can differ in texture of the surface layer or of the substratum. They also can differ in slope, stoniness, salinity, wetness, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Emporia loamy sand, 2 to 6 percent slopes, is a phase of the Emporia series.

Some map units are made up of two or more major soils. These map units are called soil complexes. A *soil complex* consists of two or more soils in such an intricate pattern or in such small areas that they cannot be shown separately on the soil maps. The pattern and proportion of the soils are somewhat similar in all areas. Chewacla-Chastain complex, frequently flooded, is an example.

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

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

AaA—Ailey sand, moderately wet, 0 to 2 percent slopes. This very deep soil is on broad, nearly level ridges of the Sand Hills and Coastal Plain. It is well drained. Most areas are irregularly shaped. The areas are typically 10 to 50 acres in size but range from 5 to 300 acres. Slope lengths are typically 100 to 300 feet but range from 50 to 400 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 3 inches, brownish sand

Subsurface layer:
3 to 28 inches, brownish sand

Subsoil:
28 to 43 inches, yellowish, grayish, and reddish sandy loam and sandy clay loam
43 to 53 inches, mottled yellowish sandy clay loam that is very firm, brittle, and cemented in part of the mass

Substratum:
53 to 62 inches, yellowish sandy loam
62 to 72 inches, mottled grayish, reddish, and yellowish clay loam

Included with this soil in mapping are small areas of Alpin, Candor, Pelion, Troup, and Vaucluse soils. Also included are small areas of soils that have slopes of more than 2 percent and small areas of soils that have a surface layer of gravelly sand. Included soils make up about 15 percent of the map unit.

Important properties of the Ailey soil—

Permeability: Slow
Available water capacity: Low
Seasonal high water table: Perched at a depth of 4 to 6 feet
Surface runoff: Slow
Hazard of water erosion: Slight
Depth to bedrock: More than 60 inches

Most areas are used as woodland or cropland. A few areas are used for pasture, as habitat for wildlife, or for truck crops.

This soil is poorly suited to row crops and small grain. The main management concerns are droughtiness, a low nutrient-holding capacity, and the hazard of soil blowing. Fertilizers are more efficient if applied at intervals rather than in a single application. Conservation tillage, contour farming, contour stripcropping with close-growing grains or legumes, cover crops, and crop residue management increase the available water capacity and the nutrient-holding capacity and reduce the hazard of soil blowing.

This soil is moderately suited to the production of loblolly pine. Longleaf pine also is grown. The main management concerns are the equipment limitation and seedling mortality. The sandy surface layer restricts the use of wheeled equipment, especially when the soil is very dry. Using tracked or wide-tired vehicles helps to overcome the equipment limitation. The seedling mortality rate, which is caused by droughtiness, can be reduced by planting in furrows.

This soil is moderately well suited to grasses, such as improved bermudagrass and bahiagrass. The main management concerns are the droughtiness and the low nutrient-holding capacity. Frequent applications of fertilizer and manure are needed. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during dry periods help to keep the pasture in good condition.

This soil is moderately well suited to most engineering uses related to homesite development. Wetness and the restricted permeability are management concerns on sites for septic tank absorption fields. They can be overcome by using specially designed or modified conventional systems and by increasing the size of the absorption field. The limitations on sites used for dwellings without basements are slight. Wetness is a limitation on sites used for dwellings with basements. Installing tile drains around footings helps to prevent wet basements. Droughtiness is a hazard affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. It can be reduced by using well adapted plants and applying supplemental irrigation water during the growing season.

AaB—Ailey sand, moderately wet, 2 to 6 percent slopes. This very deep soil is on broad, gently sloping ridges and side slopes of the Sand Hills and Coastal Plain. It is well drained. Most areas are irregularly shaped. The areas are typically 10 to 50 acres in size but range from 5 to 300 acres. Slope lengths are typically 100 to 350 feet but range from 50 to 500 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 3 inches, brownish sand

Subsurface layer:
3 to 28 inches, brownish sand

Subsoil:
28 to 43 inches, yellowish, grayish, and reddish sandy loam and sandy clay loam
43 to 53 inches, mottled yellowish sandy clay loam that is very firm, brittle, and cemented in part of the mass

Substratum:
53 to 62 inches, yellowish sandy loam
62 to 72 inches, mottled grayish, reddish, and yellowish clay loam

Included with this soil in mapping are small areas of Alpin, Candor, Pelion, Troup, and Vaucluse soils. Also included are small areas of soils that have slopes of more than 6 percent and small areas of soils that have a surface layer of gravelly sand. Included soils make up about 15 percent of the map unit.

Important properties of the Ailey soil—

Permeability: Slow
Available water capacity: Low
Seasonal high water table: Perched at a depth of 4 to 6 feet
Surface runoff: Slow
Hazard of water erosion: Slight
Depth to bedrock: More than 60 inches

Most areas are used as woodland or cropland. A few areas are used for pasture, as habitat for wildlife, or for truck crops.

This soil is poorly suited to row crops and small grain. The main management concerns are droughtiness, a low nutrient-holding capacity, and the hazard of soil blowing. Fertilizers are more efficient if applied at intervals rather than in a single application. Conservation tillage, contour farming, contour stripcropping with close-growing grains or legumes, cover crops, and crop residue management increase

the available water capacity and the nutrient-holding capacity and reduce the hazard of soil blowing.

This soil is moderately well suited to the production of loblolly pine. Longleaf pine also is grown. The main management concerns are the equipment limitation and seedling mortality. The sandy surface layer restricts the use of wheeled equipment, especially when the soil is very dry. Using tracked or wide-tired vehicles helps to overcome the equipment limitation. The seedling mortality rate, which is caused by droughtiness, can be reduced by planting in furrows.

This soil is moderately well suited to grasses, such as improved bermudagrass and bahiagrass. The main management concerns are the droughtiness and the low nutrient-holding capacity. Frequent applications of fertilizer and manure are needed. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during dry periods help to keep the pasture in good condition.

This soil is moderately well suited to most engineering uses related to homesite development. Wetness and the restricted permeability are management concerns on sites for septic tank absorption fields. They can be overcome by using specially designed or modified conventional systems and by increasing the size of the absorption field. The limitations on sites used for dwellings without basements are slight. The wetness is a management concern on sites for dwellings with basements. Installing tile drains around footings helps to prevent wet basements. Droughtiness is a hazard affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. It can be reduced by using well adapted plants and applying supplemental irrigation water during the growing season.

AeC—Ailey sand, 6 to 10 percent slopes. This very deep soil is on narrow, strongly sloping ridges and side slopes of the Sand Hills and Coastal Plain. It is well drained. Most areas are irregularly shaped. The areas are typically 10 to 100 acres in size but range from 5 to 300 acres. Slope lengths are typically 100 to 200 feet but range from 50 to 300 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 6 inches, brownish sand

Subsurface layer:
6 to 25 inches, brownish sand

Subsoil:
25 to 35 inches, yellowish sandy clay loam
35 to 45 inches, yellowish sandy clay loam that is dense, compact, and brittle in part of the mass
45 to 53 inches, yellowish and reddish clay loam and sandy clay loam
53 to 63 inches, mottled reddish and yellowish coarse sandy loam

Included with this soil in mapping are small areas of Alpin, Emporia, Pelion, Troup, and Vaucluse soils. Also included are small areas of soils that have slopes of more than 10 percent or less than 6 percent and small areas of soils that have a surface layer of gravelly sand. Included soils make up about 15 percent of the map unit.

Important properties of the Ailey soil—

Permeability: Slow
Available water capacity: Low
Depth to a seasonal high water table: More than 6 feet
Surface runoff: Slow
Hazard of water erosion: Moderate
Depth to bedrock: More than 60 inches

Most areas are used as woodland or as habitat for wildlife. A few areas are used as pasture or cropland.

This soil is poorly suited to row crops and small grain. The main management concerns are droughtiness, a low nutrient-holding capacity, the hazard of soil blowing, and a moderate hazard of erosion. Conservation tillage, contour farming, contour stripcropping with close-growing grains or legumes, cover crops, and crop residue management increase the available water capacity and the nutrient-holding capacity, reduce the hazard of soil blowing, and help to control erosion. Fertilizers are more efficient if applied at intervals rather than in a single application.

This soil is moderately well suited to the production of loblolly pine. Longleaf pine also grows well. The main management concerns are the equipment limitation and seedling mortality. The sandy surface layer restricts the use of wheeled equipment, especially when the soil is very dry. Using tracked or wide-tired vehicles helps to overcome the equipment limitation. The seedling mortality rate, which is caused by droughtiness, can be reduced by planting in furrows.

This soil is poorly suited to pasture, but grasses, such as improved bermudagrass and bahiagrass, can be grown. Droughtiness and the low nutrient-holding capacity are the main management concerns. Frequent applications of fertilizer and manure are needed. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during dry periods help to keep the pasture in good condition.

This soil is moderately well suited to most engineering uses related to homesite development. The restricted permeability is a management concern on

sites for septic tank absorption fields. It can be overcome by increasing the size of the absorption field. The limitations on sites used for dwellings with or without basements are slight. Droughtiness is a hazard affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. It can be reduced by using well adapted plants and applying supplemental irrigation water during the growing season.

AeD—Ailey sand, 10 to 15 percent slopes. This very deep soil is on narrow, moderately steep ridges and side slopes of the Sand Hills and Coastal Plain. It is well drained. Most areas are irregularly shaped. The areas are typically 10 to 50 acres in size but range from 5 to 150 acres. Slope lengths are typically 100 to 150 feet but range from 10 to 250 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 6 inches, brownish sand

Subsurface layer:
6 to 25 inches, brownish sand

Subsoil:
25 to 35 inches, yellowish sandy clay loam
35 to 45 inches, yellowish sandy clay loam that is dense, compact, and brittle in part of the mass
45 to 53 inches, yellowish and reddish clay loam and sandy clay loam
53 to 63 inches, mottled reddish and yellowish coarse sandy loam

Included with this soil in mapping are small areas of Alpin, Emporia, Pelion, Troup, and Vaucluse soils. Also included are small areas of soils that have slopes of more than 15 percent and small areas of soils that have a surface layer of gravelly sand. Included soils make up about 15 percent of the map unit.

Important properties of the Ailey soil—

Permeability: Slow
Available water capacity: Low
Depth to a seasonal high water table: More than 6 feet
Surface runoff: Slow
Hazard of water erosion: Severe
Depth to bedrock: More than 60 inches

Most areas are used as woodland or as habitat for wildlife. A few areas are used for pasture.

This soil is generally not suited to row crops or small grain. The main management concerns are droughtiness, a low nutrient-holding capacity, the hazard of soil blowing, and a severe hazard of erosion.

This soil is moderately well suited to the production of loblolly pine. Longleaf pine also grows well. The main management concerns are the equipment limitation and seedling mortality. The sandy surface layer restricts the use of wheeled equipment, especially when the soil is very dry. Using tracked or wide-tired vehicles helps to overcome the equipment limitation. The seedling mortality rate, which is caused by droughtiness, can be reduced by planting in furrows.

This soil is poorly suited to pasture, but grasses, such as improved bermudagrass and bahiagrass, can be grown. Droughtiness and the low nutrient-holding capacity are the main management concerns. Frequent applications of fertilizer and manure are needed. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during dry periods help to keep the pasture in good condition.

This soil is moderately well suited to most engineering uses related to homesite development. The restricted permeability is a management concern on sites for septic tank absorption fields. It can be overcome by increasing the size of the absorption field. The slope is a limitation on sites for dwellings with or without basements. It can be overcome by cutting and filling and by modifying the design of the building. Droughtiness and the slope are limitations affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. These limitations can be overcome by using well adapted plants, applying supplemental irrigation water during the growing season, building roads and trails on the contour, and providing walkways to help protect the soil from heavy traffic.

AgB—Alaga sand, 0 to 4 percent slopes. This very deep soil is on nearly level and gently sloping flats and stream terraces on the Coastal Plain. It is somewhat excessively drained and is subject to rare flooding. Most areas are long and narrow. The areas are typically 25 to 50 acres in size but range from 5 to 100 acres. Slope lengths are typically 75 to 200 feet but range from 50 to 400 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 7 inches, brownish sand

Substratum:
7 to 52 inches, brownish loamy sand
52 to 80 inches, yellowish loamy sand

Included with this soil in mapping are small areas of Candor, Tetotum, and Wickham soils. Also included are small areas of soils that have a seasonal high water table within a depth of 4 feet and small areas of soils that have more clay in the subsoil than the Alaga soil. Included soils make up about 15 percent of the map unit.

Important properties of the Alaga soil—

Permeability: Rapid
Available water capacity: Low
Depth to a seasonal high water table: More than 6 feet
Surface runoff: Slow
Hazard of water erosion: Slight
Depth to bedrock: More than 60 inches
Flooding: Rare, during periods of abnormally high rainfall

Most areas are used as woodland or as habitat for wildlife. A few areas are used as cropland or pasture.

This soil is poorly suited to row crops and small grain. The main management concerns are droughtiness, a low nutrient-holding capacity, and the hazard of soil blowing. Conservation tillage, contour farming, contour stripcropping with close-growing grains or legumes, cover crops, and crop residue management increase the available water capacity and the nutrient-holding capacity and reduce the hazard of soil blowing. Fertilizers are more efficient if applied at intervals rather than in a single application.

This soil is moderately well suited to the production of loblolly pine. Longleaf pine also grows well. The main management concerns are the equipment limitation and seedling mortality. The sandy surface layer restricts the use of wheeled equipment, especially when the soil is very dry. Using tracked or wide-tired vehicles helps to overcome the equipment limitation. The seedling mortality rate, which is caused by droughtiness, can be reduced by planting in furrows.

This soil is moderately well suited to grasses, such as improved bermudagrass and bahiagrass. The main management concerns are the droughtiness and the low nutrient-holding capacity. Frequent applications of fertilizer and manure are needed. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during dry periods help to keep the pasture in good condition.

This soil is poorly suited to most engineering uses related to homesite development. The hazard of flooding is a management concern on sites for septic tank absorption fields and for dwellings with or without basements. Overcoming the flooding is difficult and expensive. The droughtiness is a hazard affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. It can be reduced by using well adapted plants and applying supplemental irrigation water during the growing season.

AmB—Alamance sandy loam, 1 to 6 percent slopes. This very deep soil is on gently sloping ridgetops and side slopes of the Piedmont. It is well drained. Most areas are irregularly shaped. The areas are typically 10 to 25 acres in size but range from 5 to 75 acres. Slope lengths are typically 100 to 200 feet but range from 50 to 400 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 6 inches, brownish sandy loam

Subsoil:
6 to 24 inches, yellowish silty clay loam
24 to 36 inches, yellowish silt loam that has reddish, white, and brownish mottles
36 to 44 inches, yellowish silt loam that has white and reddish mottles

Substratum:
44 to 65 inches, mottled brownish, white, and yellowish silt loam

Included with this soil in mapping are small areas of Badin, Chewacla, Goldston, Pageland, and Rion soils. Also included are small areas of soils that have slopes of less than 1 percent or more than 6 percent. Included soils make up about 15 percent of the map unit.

Important properties of the Alamance soil—

Permeability: Moderate
Available water capacity: High
Depth to a seasonal high water table: More than 6 feet
Surface runoff: Medium
Hazard of water erosion: Moderate
Depth to bedrock: More than 60 inches

Most areas are used as woodland. A few areas are used as cropland or pasture.

This soil is moderately well suited to row crops and small grain. The main management concern is the moderate hazard of erosion. Conservation tillage, contour farming, contour stripcropping, terraces, grassed waterways, and cover crops help to control runoff and erosion.

This soil is moderately well suited to the production of loblolly pine. Other species that grow well are yellow-poplar and eastern redcedar. The soil has few limitations affecting woodland use and management. Seedlings survive and grow well in areas of this soil.

This soil is moderately well suited to grasses, such as bahiagrass and fescue. The main management concern is the hazard of erosion. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is well suited to most engineering uses related to homesite development. The restricted permeability is a management concern on sites for septic tank absorption fields. It can be overcome by increasing the size of the absorption field. The

limitations on sites for dwellings with or without basements are slight. The limitations affecting the establishment of lawn grasses, plants, and shrubs used in landscaping also are slight.

ApB—Alpin sand, 0 to 6 percent slopes. This very deep soil is on broad, nearly level and gently sloping ridges and side slopes of the Sand Hills and Coastal Plain. It is excessively drained. Most areas are irregularly shaped. The areas are typically 10 to 100 acres in size but range from 5 to 500 acres. Slope lengths are typically 100 to 400 feet but range from 50 to 800 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 10 inches, brownish sand

Subsurface layer:
10 to 27 inches, yellowish sand
27 to 44 inches, brownish sand
44 to 49 inches, yellowish sand

Subsoil:
49 to 88 inches, brownish sand that has thin, alternating bands of loamy sand

Included with this soil in mapping are small areas of Ailey, Johnston, and Vaucluse soils. Also included are small areas of soils that have slopes of more than 6 percent and small areas of sandy soils that have a gravelly subsoil. Included soils make up about 15 percent of the map unit.

Important properties of the Alpin soil—

Permeability: Moderately rapid
Available water capacity: Low
Depth to a seasonal high water table: More than 6 feet
Surface runoff: Slow
Hazard of water erosion: Slight
Depth to bedrock: More than 60 inches

Most areas are used as woodland or as habitat for wildlife. A few areas are used as pasture or cropland or for truck crops, such as watermelons, cantaloupes, and peaches (fig. 4).

This soil is poorly suited to row crops and small grain. The main management concerns are droughtiness, a low nutrient-holding capacity, and the hazard of soil blowing. Conservation tillage, contour farming, contour stripcropping with close-growing grains or legumes, cover crops, and crop residue management increase the available water capacity and the nutrient-holding capacity and reduce the hazard of soil blowing. Fertilizers are more efficient if applied at intervals rather than in a single application.

This soil is moderately well suited to the production of longleaf pine and loblolly pine. Other species that grow well are turkey oak and blackjack oak. The main management concerns are the equipment limitation and seedling mortality. The sandy surface layer restricts the use of wheeled equipment, especially when the soil is very dry. Using tracked or wide-tired vehicles helps to overcome the equipment limitation. The seedling mortality rate, which is caused by droughtiness, can be reduced by planting in furrows.

This soil is poorly suited to pasture, but grasses, such as improved bermudagrass and bahiagrass, can be grown. Frequent applications of fertilizer and manure are needed. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during dry periods help to keep the pasture in good condition.

This soil is well suited to most engineering uses related to homesite development. The limitations on sites for septic tank absorption fields and for dwellings with or without basements are slight. The droughtiness is a hazard affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. It can be reduced by using well adapted plants and applying supplemental irrigation water during the growing season.

ApC—Alpin sand, 6 to 10 percent slopes. This very deep soil is on strongly sloping side slopes of the Sand Hills and Coastal Plain. It is excessively drained. Most areas are irregularly shaped. The areas are typically 10 to 100 acres in size but range from 5 to 500 acres. Slope lengths are typically 100 to 300 feet but range from 50 to 800 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 10 inches, brownish sand

Subsurface layer:
10 to 27 inches, yellowish sand
27 to 44 inches, brownish sand
44 to 49 inches, yellowish sand

Subsoil:
49 to 88 inches, brownish sand that has thin, alternating bands of loamy sand

Included with this soil in mapping are small areas of Ailey, Johnston, and Vaucluse soils. Also included are small areas of soils that have slopes of more than 10 percent and small areas of sandy soils that have a gravelly subsoil. Included soils make up about 15 percent of the map unit.

Important properties of the Alpin soil—

Permeability: Moderately rapid
Available water capacity: Low

Figure 4.—Young peach trees in an area of Alpin sand, 0 to 6 percent slopes.

Depth to a seasonal high water table: More than 6 feet
Surface runoff: Slow
Hazard of water erosion: Slight
Depth to bedrock: More than 60 inches

Most areas are used as woodland or as habitat for wildlife. A few areas are used as pasture or cropland or for truck crops, such as watermelons, peaches, and cantaloupes.

This soil is generally not suited to row crops or small grain. It is moderately well suited to truck crops, such as watermelons and cantaloupes. The main management concerns are droughtiness, a low nutrient-holding capacity, and the hazard of soil blowing.

This soil is moderately well suited to the production of loblolly pine and longleaf pine. Other species that grow well are turkey oak and blackjack oak. The main management concerns are the equipment limitation and seedling mortality. The sandy surface layer restricts the use of wheeled equipment, especially when the soil is very dry. Using tracked or wide-tired vehicles helps to overcome the equipment limitation. The seedling mortality rate, which is caused by droughtiness, can be reduced by planting in furrows.

This soil is poorly suited to pasture, but grasses, such as improved bermudagrass and bahiagrass, can be planted. The main limitations are the droughtiness and the low nutrient-holding capacity. Frequent applications of fertilizer and manure are needed. Proper stocking rates, pasture rotation, timely deferment of

grazing, and restricted use during dry periods help to keep the pasture in good condition.

This soil is moderately well suited to most engineering uses related to homesite development. The slope is a limitation on sites for septic tank absorption fields. It can be overcome by using step-down boxes between the absorption lines and installing the lines on the contour. The slope is also a limitation on sites for dwellings with or without basements. It can be overcome by cutting and filling and by modifying the design of the building. Droughtiness is a hazard affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. It can be reduced by using well adapted plants and applying supplemental irrigation water during the growing season.

ApD—Alpin sand, 10 to 15 percent slopes. This very deep soil is on moderately steep side slopes adjacent to drainageways of the Sand Hills and Coastal Plain. It is excessively drained. Most areas are irregularly shaped. The areas are typically 10 to 100 acres in size but range from 5 to 500 acres. Slope lengths are typically 100 to 200 feet but range from 50 to 500 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 10 inches, brownish sand

Subsurface layer:
10 to 27 inches, yellowish sand
27 to 44 inches, brownish sand
44 to 49 inches, yellowish sand

Subsoil:
49 to 88 inches, brownish sand that has thin, alternating bands of loamy sand

Included with this soil in mapping are small areas of Ailey, Johnston, and Vaucluse soils. Also included are small areas of sandy soils that have a gravelly subsoil and small areas of soils that have slopes of more than 15 percent or less than 10 percent. Included soils make up about 15 percent of the map unit.

Important properties of the Alpin soil—

Permeability: Moderately rapid
Available water capacity: Low
Depth to a seasonal high water table: More than 6 feet
Surface runoff: Slow or medium
Hazard of water erosion: Moderate
Depth to bedrock: More than 60 inches

Most areas are used as woodland or as habitat for wildlife. A few areas are used as pasture or cropland or for truck crops, such as watermelons, peaches, and cantaloupes.

This soil is generally not suited to row crops or small grain. It is poorly suited to truck crops, such as watermelons and cantaloupes. The main management concerns are droughtiness, a low nutrient-holding capacity, the slope, and the hazard of soil blowing.

This soil is moderately well suited to the production of longleaf pine and loblolly pine. Other species that grow well are turkey oak and blackjack oak. The main management concerns are the equipment limitation and seedling mortality. The sandy surface layer restricts the use of wheeled equipment, especially when the soil is very dry. Using tracked or wide-tired vehicles helps to overcome the equipment limitation. The seedling mortality rate, which is caused by droughtiness, can be reduced by planting in furrows.

This soil is poorly suited to pasture, but grasses, such as improved bermudagrass and bahiagrass, can be planted. The main limitations are the droughtiness and the low nutrient-holding capacity. Frequent applications of fertilizer and manure are needed. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during dry periods help to keep the pasture in good condition.

This soil is moderately well suited to most engineering uses related to homesite development. The slope is a limitation on sites for septic tank absorption fields. It can be overcome by using step-down boxes between the absorption lines and installing the lines on the contour. The slope is also a limitation on sites for dwellings with or without basements. It can be overcome by cutting and filling and by modifying the design of the building. Droughtiness is a hazard affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. It can be reduced by using well adapted plants and applying supplemental irrigation water during the growing season.

BaB—Badin silt loam, 2 to 6 percent slopes. This moderately deep soil is on broad, gently sloping ridges and side slopes of the Piedmont. It is well drained. Most areas are irregularly shaped. The areas are typically 10 to 150 acres in size but range from 5 to 350 acres. Slope lengths are typically 100 to 250 feet but range from 50 to 300 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 6 inches, brownish silt loam

Subsoil:
6 to 9 inches, yellowish silty clay loam
9 to 23 inches, reddish silty clay
23 to 33 inches, reddish channery silty clay loam and silt loam

Substratum:
33 to 40 inches, multicolored, weathered, fractured slate

Bedrock:
40 inches, multicolored, hard, jointed slate

Included with this soil in mapping are small areas of Alamance, Georgeville, Goldston, Mayodan, and Pageland soils. Also included are small areas of soils that have slopes of less than 2 percent or more than 6 percent and small areas of soils that have more sand in the subsoil than the Badin soil. Included soils make up about 15 percent of the map unit.

Important properties of the Badin soil—

Permeability: Moderate
Available water capacity: Low
Depth to a seasonal high water table: More than 6 feet
Surface runoff: Medium
Hazard of water erosion: Moderate
Depth to soft bedrock: 20 to 40 inches
Depth to hard bedrock: 40 to 60 inches

Most areas of this soil are used as cropland or pasture. A few areas are used as woodland.

This soil is moderately well suited to row crops and small grain. The main management concern is the hazard of erosion. Conservation tillage, contour farming, contour stripcropping, terraces, grassed waterways, and cover crops help to control runoff and erosion.

This soil is moderately well suited to the production of loblolly pine. Other species that grow well are Virginia pine, shortleaf pine, and white oak. The main management concern is the windthrow hazard. Trees are subject to windthrow because of the restricted rooting depth. Seedlings survive and grow well in areas of this soil.

This soil is moderately well suited to grasses, such as fescue. The main management concern is the hazard of erosion. A seedbed should be prepared on the contour or across the slope where practical. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is moderately well suited to most engineering uses related to homesite development. The depth to bedrock is a limitation on sites for septic tank absorption fields. It can be overcome by using a special layout and by increasing the size of the absorption field. The depth to bedrock and the shrink-swell potential are limitations on sites for dwellings with basements. The shrink-swell potential is also a limitation on sites for dwellings without basements. The highly weathered bedrock can be ripped with heavy machinery, or structural designs that do not penetrate the bedrock can be used. The effects of shrinking and swelling can be minimized by backfilling with coarser textured material. The depth to bedrock is a limitation affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. Plant cover can be established and maintained by applying fertilizer, seeding, mulching, and land shaping.

BaC—Badin silt loam, 6 to 10 percent slopes. This moderately deep soil is on narrow, strongly sloping ridgetops and side slopes of the Piedmont. It is well drained. Most areas are irregularly shaped. The areas are typically 10 to 100 acres in size but range from 5 to 150 acres. Slope lengths are typically 100 to 200 feet but range from 50 to 350 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 6 inches, brownish silt loam

Subsoil:
6 to 9 inches, yellowish silty clay loam
9 to 23 inches, reddish silty clay
23 to 33 inches, reddish channery silty clay loam and silt loam

Substratum:
33 to 40 inches, multicolored, weathered, fractured slate

Bedrock:
40 inches, multicolored, hard, jointed slate

Included with this soil in mapping are small areas of Goldston and Poindexter soils. Also included are small areas of soils that have slopes of less than 10 percent or more than 15 percent, small areas of soils that have a surface layer of channery silt loam, and small areas of soils that have less silt in the subsoil than the Badin soil. Included soils make up about 15 percent of the map unit.

Important properties of the Badin soil—

Permeability: Moderate
Available water capacity: Low
Depth to a seasonal high water table: More than 6 feet
Surface runoff: Medium or rapid
Hazard of water erosion: Severe
Depth to soft bedrock: 20 to 40 inches
Depth to hard bedrock: 40 to 60 inches

Most areas are used as cropland or pasture. A few areas are used as woodland.

This soil is poorly suited to row crops and small grain. The main management concern is the severe hazard of erosion. Conservation tillage, contour farming, contour stripcropping, terraces, grassed waterways, and

cover crops help to control runoff and erosion.

This soil is moderately well suited to the production of loblolly pine. Other species that grow well are Virginia pine, shortleaf pine, and white oak. The main management concern is the windthrow hazard. Trees are subject to windthrow because of the restricted rooting depth. Seedlings survive and grow well in areas of this soil.

This soil is poorly suited to pasture, but grasses, such as tall fescue, can be grown. The main management concern is the hazard of erosion. A seedbed should be prepared on the contour or across the slope where practical. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is moderately well suited to most engineering uses related to homesite development. The depth to bedrock is a limitation on sites for septic tank absorption fields. It can be overcome by using a special layout and by increasing the size of the absorption field. The depth to bedrock, the shrink-swell potential, and the slope are management concerns on sites for dwellings with basements. The shrink-swell potential and the slope are also concerns on sites for dwellings without basements. The highly weathered bedrock can be ripped with heavy machinery, or structural designs that do not penetrate the bedrock and that conform to the shape of the slope can be used. The effects of shrinking and swelling can be minimized by backfilling with coarser textured material. The depth to bedrock and the slope are limitations affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. Plant cover can be established and maintained by applying fertilizer, seeding, mulching, and land shaping.

BaD—Badin silt loam, 10 to 15 percent slopes. This moderately deep soil is on narrow, moderately steep ridges and side slopes of the Piedmont. It is well drained. Most areas are irregularly shaped. The areas are typically 100 to 300 acres in size but range from 5 to 350 acres. Slope lengths are typically 100 to 200 feet but range from 50 to 250 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 6 inches, brownish silt loam

Subsoil:
6 to 9 inches, yellowish silty clay loam
9 to 23 inches, reddish silty clay
23 to 33 inches, reddish channery silty clay loam and silt loam

Substratum:
33 to 40 inches, multicolored, weathered, fractured slate

Bedrock:
40 inches, multicolored, hard, jointed slate

Included with this soil in mapping are small areas of Goldston and Georgeville soils. Also included are small areas of soils that have slopes of less than 10 percent or more than 15 percent, small areas of soils that have a surface layer of channery silt loam, and small areas of soils that have less silt in the subsoil than the Badin soil. Included soils make up about 15 percent of the map unit.

Important properties of the Badin soil—

Permeability: Moderate
Available water capacity: Low
Depth to a seasonal high water table: More than 6 feet
Surface runoff: Rapid
Hazard of water erosion: Severe
Depth to soft bedrock: 20 to 40 inches
Depth to hard bedrock: 40 to 60 inches

Most areas of this soil are used as woodland or pasture. A few areas are used as cropland.

This soil is poorly suited to row crops and small grain. The main management concern is the severe hazard of erosion. Conservation tillage, contour farming, contour stripcropping, terraces, grassed waterways, and cover crops help to control runoff and erosion.

This soil is moderately well suited to the production of loblolly pine. Other species that grow well are Virginia pine, shortleaf pine, and white oak. The main management concern is the windthrow hazard. Trees are subject to windthrow because of the restricted rooting depth. Seedlings survive and grow well in areas of this soil.

This soil is poorly suited to pasture, but grasses, such as fescue, can be grown. The hazard of erosion and the slope are the main management concerns. A seedbed should be prepared on the contour or across the slope where practical. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is moderately well suited to most engineering uses related to homesite development. The depth to bedrock is a limitation on sites for septic tank absorption fields. It can be overcome by using a special layout and by increasing the size of the absorption field. The depth to bedrock, the shrink-swell potential, and the slope are management concerns on sites for dwellings with basements. The shrink-swell potential and the slope are also concerns on sites for dwellings

without basements. The highly weathered bedrock can be ripped with heavy machinery, or structural designs that do not penetrate the bedrock and that conform to the shape of the slope can be used. The effects of shrinking and swelling can be minimized by backfilling with coarser textured material. The depth to bedrock and the slope are limitations affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. Plant cover can be established and maintained by applying fertilizer, seeding, mulching, and land shaping.

BaE—Badin silt loam, 15 to 25 percent slopes. This moderately deep soil is on steep side slopes of the Piedmont. It is well drained. Most areas are irregularly shaped. The areas are typically 100 to 300 acres in size but range from 5 to 350 acres. Slope lengths are typically 100 to 200 feet but range from 50 to 250 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 6 inches, brownish silt loam

Subsoil:
6 to 9 inches, yellowish silty clay loam
9 to 23 inches, reddish silty clay
23 to 33 inches, reddish channery silty clay loam and silt loam

Substratum:
33 to 40 inches, multicolored, weathered, fractured slate

Bedrock:
40 inches, multicolored, hard, jointed slate

Included with this soil in mapping are small areas of Goldston, Pacolet, and Poindexter soils. Also included are small areas of soils that have slopes of more than 25 percent or less than 15 percent and small areas of soils that have a surface layer of channery silt loam. Included soils make up about 15 percent of the map unit.

Important properties of the Badin soil—

Permeability: Moderate
Available water capacity: Low
Depth to a seasonal high water table: More than 6 feet
Surface runoff: Rapid
Hazard of water erosion: Severe
Depth to soft bedrock: 20 to 40 inches
Depth to hard bedrock: 40 to 60 inches

Most areas of this soil are used as woodland or pasture. A few areas are used as cropland.

This soil is generally not suited to row crops or small grain. The main management concerns are the slope and the severe hazard of erosion.

This soil is moderately well suited to the production of loblolly pine. Other species that grow well are Virginia pine and shortleaf pine. The main management concerns are the hazard of erosion, the equipment limitation, and the windthrow hazard. Using harvesting methods that minimize disturbance of the soil, establishing skid trails, log landings, and temporary logging roads so that they do not lead to drainageways, moving logs on the contour, and plowing fire lanes on the contour can reduce the hazard of erosion and the equipment limitation. Trees are subject to windthrow because of the restricted rooting depth. Seedlings survive and grow well in areas of this soil.

This soil is very poorly suited to pasture, but grasses, such as fescue, can be grown. The hazard of erosion and the slope are the main management concerns. A seedbed should be prepared on the contour or across the slope where practical. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is poorly suited to most engineering uses related to homesite development. The depth to bedrock and the slope are limitations on sites for septic tank absorption fields. They can be overcome by using a special layout, increasing the size of the absorption field, using step-down boxes between the absorption lines, and installing the lines on the contour. The depth to bedrock, the shrink-swell potential, and the slope are management concerns on sites for dwellings with basements. The shrink-swell potential and the slope are also concerns on sites for dwellings without basements. The highly weathered bedrock can be ripped with heavy machinery, or structural designs that do not penetrate the bedrock and that conform to the shape of the slope can be used. The effects of shrinking and swelling can be minimized by backfilling with coarser textured material. The depth to bedrock and the slope are limitations affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. Plant cover can be established and maintained by applying fertilizer, seeding, mulching, and land shaping.

BdB2—Badin silty clay loam, 2 to 6 percent slopes, eroded. This moderately deep soil is on gently sloping ridges and side slopes of the Piedmont. It is well drained. Most areas are irregularly shaped. The areas are typically 10 to 150 acres in size but range from 5 to 300 acres. Slope lengths are typically 100 to 250 feet but range from 50 to 300 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 6 inches, brownish silty clay loam

Subsoil:
6 to 9 inches, yellowish silty clay loam
9 to 23 inches, reddish silty clay
23 to 33 inches, reddish channery silty clay loam and silt loam

Substratum:
33 to 40 inches, multicolored, weathered, fractured slate

Bedrock:
40 inches, multicolored, hard, jointed slate

Included with this soil in mapping are small areas of Georgeville, Goldston, Mayodan, and Pageland soils. Also included are small areas of soils that have slopes of less than 2 percent or more than 6 percent, small areas of soils that have less silt in the subsoil than the Badin soil, and small areas of soils that have a surface layer of channery silty clay loam. Included soils make up about 15 percent of the map unit.

Important properties of the Badin soil—

Permeability: Moderate
Available water capacity: Low
Depth to a seasonal high water table: More than 6 feet
Surface runoff: Medium
Hazard of water erosion: Moderate
Depth to soft bedrock: 20 to 40 inches
Depth to hard bedrock: 40 to 60 inches

Most areas of this soil are used as cropland or pasture. A few areas are used as woodland.

This soil is moderately well suited to row crops and small grain. The main management concerns are the hazard of erosion and the effects of past erosion. Conservation tillage, contour farming, contour stripcropping, terraces, grassed waterways, and cover crops help to control runoff and erosion. Returning crop residue to the soil improves tilth and increases the content of organic matter.

This soil is moderately well suited to the production of loblolly pine. Other species that grow well are Virginia pine and shortleaf pine. The main management concerns are the hazard of erosion, the equipment limitation, seedling mortality, and the windthrow hazard. Using harvesting methods that minimize disturbance of the soil, establishing skid trails, log landings, and temporary logging roads so that they do not lead to drainageways, moving logs on the contour, and plowing fire lanes on the contour can reduce the hazard of erosion and the equipment limitation. The seedling mortality rate, which is caused by the effects of past erosion, can be reduced by bedding and planting in furrows. Trees are subject to windthrow because of the restricted rooting depth.

This soil is moderately well suited to grasses, such as fescue. The main management concern is the hazard of erosion. A seedbed should be prepared on the contour or across the slope where practical. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is moderately well suited to most engineering uses related to homesite development. The depth to bedrock is a limitation on sites for septic tank absorption fields. It can be overcome by using a special layout and by increasing the size of the absorption field. The depth to bedrock and the shrink-swell potential are limitations on sites for dwellings with basements. The shrink-swell potential is also a concern on sites for dwellings without basements. The highly weathered bedrock can be ripped with heavy machinery, or structural designs that do not penetrate the bedrock can be used. The effects of shrinking and swelling can be minimized by backfilling with coarser textured material. The depth to bedrock is a limitation affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. Plant cover can be established and maintained by applying fertilizer, seeding, mulching, and land shaping.

BdC2—Badin silty clay loam, 6 to 10 percent slopes, eroded. This moderately deep soil is on narrow, strongly sloping ridges and side slopes of the Piedmont. It is well drained. Most areas are irregularly shaped. The areas are typically 10 to 100 acres in size but range from 5 to 150 acres. Slope lengths are typically 100 to 200 feet but range from 50 to 250 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 6 inches, brownish silty clay loam

Subsoil:
6 to 9 inches, yellowish silty clay loam
9 to 23 inches, reddish silty clay
23 to 33 inches, reddish channery silty clay loam and silt loam

Substratum:
33 to 40 inches, multicolored, weathered, fractured slate

Bedrock:
40 inches, multicolored, hard, jointed slate

Included with this soil in mapping are small areas of Georgeville, Goldston, Mayodan, and Pageland soils. Also included are small areas of soils that have slopes of less than 6 percent or more than 10 percent, small areas of soils that have less silt in the subsoil than the Badin soil, and small areas of soils that have a surface

layer of channery silty clay loam. Included soils make up about 15 percent of the map unit.

Important properties of the Badin soil—

Permeability: Moderate
Available water capacity: Low
Depth to a seasonal high water table: More than 6 feet
Surface runoff: Rapid
Hazard of water erosion: Severe
Depth to soft bedrock: 20 to 40 inches
Depth to hard bedrock: 40 to 60 inches

Most areas of this soil are used as cropland or pasture. A few areas are used as woodland.

This soil is poorly suited to row crops and small grain. The main management concerns are the hazard of erosion and the effects of past erosion. Conservation tillage, contour farming, contour stripcropping, terraces, grassed waterways, and cover crops help to control runoff and erosion. Returning crop residue to the soil improves tilth and increases the content of organic matter.

This soil is moderately well suited to the production of loblolly pine. Other species that grow well are Virginia pine and shortleaf pine. The main management concerns are the hazard of erosion, the equipment limitation, seedling mortality, and the windthrow hazard. Using harvesting methods that minimize disturbance of the soil, establishing skid trails, log landings, and temporary logging roads so that they do not lead to drainageways, moving logs on the contour, and plowing fire lanes on the contour can reduce the hazard of erosion and the equipment limitation. The seedling mortality rate, which is caused by the effects of past erosion, can be reduced by bedding and planting in furrows. Trees are subject to windthrow because of the restricted rooting depth.

This soil is poorly suited to pasture, but grasses, such as fescue, can be grown. The main management concern is the hazard of erosion. A seedbed should be prepared on the contour or across the slope where practical. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is moderately well suited to most engineering uses related to homesite development. The depth to bedrock is a limitation on sites for septic tank absorption fields. It can be overcome by using a special layout and by increasing the size of the absorption field. The depth to bedrock, the shrink-swell potential, and the slope are management concerns on sites for dwellings with basements. The shrink-swell potential and the slope are also concerns on sites for dwellings without basements. The highly weathered bedrock can be ripped with heavy machinery, or structural designs that do not penetrate the bedrock and that conform to the shape of the slope can be used. The effects of shrinking and swelling can be minimized by backfilling with coarser textured material. The depth to bedrock and the slope are limitations affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. Plant cover can be established and maintained by applying fertilizer, seeding, mulching, and land shaping.

Bf—Bibb sandy loam, frequently flooded. This very deep soil is on narrow flood plains along major and minor streams on the Coastal Plain. It is poorly drained and frequently flooded. The areas are typically 150 to 250 acres in size but range from 100 to 500 acres. Slope lengths are typically 100 to 200 feet but range from 50 to 500 feet. Slopes are dominantly less than 2 percent.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 7 inches, brownish sandy loam

Substratum:
7 to 50 inches, grayish loam and sandy loam
50 to 60 inches, grayish sand

Included with this soil in mapping are small areas of Chewacla, Johnston, and Ogeechee soils. Also included are small areas of soils on terraces that are better drained than the Bibb soil. Included soils make up about 15 percent of the map unit.

Important properties of the Bibb soil—

Permeability: Moderate
Available water capacity: Moderate
Depth to a seasonal high water table: 0.5 foot to 1.5 feet
Surface runoff: Very slow
Hazard of water erosion: None
Depth to bedrock: More than 60 inches
Flooding: Frequent, for brief or long periods

Most areas are used as woodland or as habitat for wildlife. A few areas are used for pasture.

This soil is generally not suited to row crops or small grain. The main management concerns are the frequent flooding and wetness.

This soil is well suited to the production of water-tolerant hardwoods, such as sweetgum, water oak, and blackgum. The soil is poorly suited to loblolly pine because of the flooding and the wetness. The main management concerns are the equipment limitation, seedling mortality, the windthrow hazard, and plant competition. Removing excess water, using wider tires on equipment, and bedding, planting, and harvesting trees during dry periods reduce the equipment

limitation. The seedling mortality rate can be reduced by planting suitable species at the proper times and by planting on raised beds. Trees are subject to windthrow because of the restricted rooting depth. Competing vegetation can be controlled by proper site preparation, such as burning, spraying, cutting, and girdling.

This soil is poorly suited to pasture, but grasses, such as fescue, can be grown. The main management concerns are the wetness and the flooding. Overcoming the flooding is generally not economically feasible. Drainage can be improved by maintaining open ditches and surface drains. Grazing should be delayed until the soil has drained sufficiently and is firm enough to withstand trampling by livestock. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is generally not suited to most engineering uses related to homesite development because of the flooding and the wetness. These limitations are difficult and expensive to overcome.

BoB—Bonneau sand, 0 to 4 percent slopes. This very deep soil is on nearly level or gently sloping, low ridges on the Coastal Plain. It is well drained. Most areas are irregularly shaped. The areas are typically 10 to 50 acres in size but range from 5 to 150 acres. Slope lengths are typically 100 to 300 feet but range from 50 to 400 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 12 inches, brownish sand

Subsurface layer:
12 to 25 inches, brownish sand

Subsoil:
25 to 42 inches, yellowish sandy loam
42 to 49 inches, yellowish sandy clay loam that has reddish and brownish mottles
49 to 72 inches, mottled yellowish, grayish, and reddish sandy clay loam

Included with this soil in mapping are small areas of Candor, Noboco, and Troup soils. Also included are small areas of soils that have slopes of more than 4 percent. Included soils make up about 10 percent of the map unit.

Important properties of the Bonneau soil—

Permeability: Moderate
Available water capacity: Low
Depth to a seasonal high water table: 3.5 to 5.0 feet
Surface runoff: Slow
Hazard of water erosion: Slight
Depth to bedrock: More than 60 inches

Most areas are used as pasture or woodland. A few areas are used as cropland or as habitat for wildlife.

This soil is moderately well suited to row crops and small grain (fig. 5). The main management concerns are droughtiness, the hazard of soil blowing, and a low nutrient-holding capacity. Conservation tillage, contour farming, contour stripcropping with close-growing grains or legumes, cover crops, and crop residue management increase the available water capacity and the nutrient-holding capacity and reduce the hazard of soil blowing. Fertilizers are more efficient if applied at intervals rather than in a single application.

This soil is moderately well suited to the production of loblolly pine. Other species that grow well are longleaf pine and hickory. The main management concerns are the equipment limitation and seedling mortality. The sandy surface layer restricts the use of wheeled equipment, especially when the soil is very dry. Using tracked or wide-tired vehicles helps to overcome the equipment limitation. The seedling mortality rate, which is caused by droughtiness, can be reduced by planting in furrows.

This soil is moderately well suited to grasses, such as improved bermudagrass and bahiagrass. The main management concerns are the droughtiness and the low nutrient-holding capacity. Frequent applications of fertilizer and manure are needed. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during dry periods help to keep the pasture in good condition.

This soil is moderately well suited to most engineering uses related to homesite development. Wetness is a limitation on sites for septic tank absorption fields. It can be overcome by using specially designed or modified conventional systems. The limitations on sites used for dwellings without basements are slight. The wetness is a limitation on sites used for dwellings with basements. Installing tile drains around footings helps to prevent wet basements. Droughtiness and the sandy surface texture are limitations affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. These limitations can be overcome by using well adapted plants and applying supplemental irrigation water during the growing season.

CaB—Candor sand, 0 to 6 percent slopes. This very deep soil is on broad, nearly level or gently sloping ridges and side slopes of the Sand Hills and Coastal Plain. It is somewhat excessively drained. Most areas are irregularly shaped. The areas are typically 10 to 100 acres in size but range from 5 to 500 acres. Slope

Figure 5.—Soybeans in an area of Bonneau sand, 0 to 4 percent slopes.

lengths are typically 100 to 400 feet but range from 50 to 800 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 6 inches, brownish sand

Subsurface layer:
6 to 25 inches, brownish sand

Upper subsoil:
25 to 42 inches, brownish loamy sand

Next layer:
42 to 60 inches, yellowish sand

Lower subsoil:
60 to 67 inches, yellowish sandy loam that has brownish mottles
67 to 80 inches, mottled yellowish, brownish, and grayish sandy clay loam

Included with this soil in mapping are small areas of Ailey, Bibb, Johnston, Troup, and Vaucluse soils. Also included are small areas of soils that have slopes of more than 6 percent and small areas of soils that have a surface layer of gravelly sand. Included soils make up about 15 percent of the map unit.

Important properties of the Candor soil—

Permeability: Rapid in the upper part, moderate or moderately slow in the lower part
Available water capacity: Low
Depth to a seasonal high water table: More than 6 feet
Surface runoff: Slow

Hazard of water erosion: Slight
Depth to bedrock: More than 60 inches

Most areas are used as woodland. A few areas are used as pasture or cropland or for truck crops, such as watermelons, peaches, and cantaloupes.

This soil is poorly suited to row crops and small grain. It is moderately well suited to truck crops, such as watermelons and cantaloupes. The main management concerns are droughtiness, a low nutrient-holding capacity, and the hazard of soil blowing. Conservation tillage, contour farming, contour stripcropping with close-growing grains or legumes, cover crops, and crop residue management increase the available water capacity and the nutrient-holding capacity and reduce the hazard of soil blowing. Fertilizers are more efficient if applied at intervals rather than in a single application.

This soil is moderately well suited to the production of loblolly pine and longleaf pine. Other species that grow well are turkey oak and blackjack oak. The main management concerns are the equipment limitation and seedling mortality. The sandy surface layer restricts the use of wheeled equipment, especially when the soil is very dry. Using tracked or wide-tired vehicles helps to overcome the equipment limitation. The seedling mortality rate, which is caused by droughtiness, can be reduced by planting in furrows.

This soil is moderately well suited to grasses (fig. 6), such as improved bermudagrass and bahiagrass. The main management concerns are the droughtiness and the low nutrient-holding capacity. Frequent applications of fertilizer and manure are needed. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during dry periods help to keep the pasture in good condition.

This soil is well suited to most engineering uses related to homesite development. The limitations on sites for septic tank absorption fields and for dwellings with or without basements are slight. Droughtiness is a hazard affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. It can be reduced by using well adapted plants and applying supplemental irrigation water during the growing season.

CaC—Candor sand, 6 to 10 percent slopes. This very deep soil is on strongly sloping ridges and side slopes of the Sand Hills and Coastal Plain. It is somewhat excessively drained. Most areas are irregularly shaped. The areas are typically 10 to 200 acres in size but range from 10 to 500 acres. Slope lengths are typically 100 to 300 feet but range from 50 to 500 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 6 inches, brownish sand

Subsurface layer:
6 to 25 inches, brownish sand

Upper subsoil:
25 to 42 inches, brownish loamy sand

Next layer:
42 to 60 inches, yellowish sand

Lower subsoil:
60 to 67 inches, yellowish sandy loam that has brownish mottles
67 to 80 inches, mottled yellowish, brownish, and grayish sandy clay loam

Included with this soil in mapping are small areas of Ailey, Bibb, Johnston, and Vaucluse soils. Also included are small areas of soils that have slopes of less than 6 percent or more than 10 percent and small areas of soils that have a surface layer of gravelly sand. Included soils make up about 15 percent of the map unit.

Important properties of the Candor soil—

Permeability: Rapid in the upper part, moderate or moderately slow in the lower part
Available water capacity: Low
Depth to a seasonal high water table: More than 6 feet
Surface runoff: Slow
Hazard of water erosion: Moderate
Depth to bedrock: More than 60 inches

Most areas are used as woodland or as habitat for wildlife. A few areas are used as pasture, cropland, or woodland or for truck crops, such as watermelons, peaches, and cantaloupes.

This soil is poorly suited to row crops and small grain. It is moderately well suited to truck crops, such as watermelons and cantaloupes. The main management concerns are droughtiness, a low nutrient-holding capacity, and the hazard of soil blowing. Conservation tillage, contour farming, contour stripcropping with close-growing grains or legumes, cover crops, and crop residue management increase the available water capacity and the nutrient-holding capacity and reduce the hazard of soil blowing. Fertilizers are more efficient if applied at intervals rather than in a single application.

This soil is moderately well suited to the production of loblolly pine and longleaf pine. Other species that grow well are turkey oak and blackjack oak. The main management concerns are the equipment limitation and seedling mortality. The sandy surface layer restricts the use of wheeled equipment, especially when the soil is

Figure 6.—Coastal bermudagrass in an area of Candor sand, 0 to 6 percent slopes.

very dry. Using tracked or wide-tired vehicles helps to overcome the equipment limitation. The seedling mortality rate, which is caused by droughtiness, can be reduced by planting in furrows.

This soil is moderately well suited to grasses, such as improved bermudagrass and bahiagrass. The main management concerns are the droughtiness and the low nutrient-holding capacity. Frequent applications of fertilizer and manure are needed. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during dry periods help to keep the pasture in good condition.

This soil is moderately well suited to most engineering uses related to homesite development. The slope is a management concern on sites for septic tank absorption fields. Using step-down boxes between the absorption lines and installing the lines on the contour help to ensure the proper functioning of septic tank absorption fields. The slope is a limitation on sites for dwellings with or without basements. It can be overcome by cutting and filling and by modifying the design of the building. Droughtiness is a hazard affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. It can be reduced by using well adapted plants and applying supplemental irrigation water during the growing season.

CaD—Candor sand, 10 to 15 percent slopes. This very deep soil is on moderately steep ridges and side slopes of the Sand Hills and Coastal Plain. It is

somewhat excessively drained. Most areas are irregularly shaped. The areas are typically 10 to 100 acres in size but range from 5 to 500 acres. Slope lengths are typically 100 to 200 feet but range from 50 to 400 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 6 inches, brownish sand

Subsurface layer:
6 to 25 inches, brownish sand

Upper subsoil:
25 to 42 inches, brownish loamy sand

Next layer:
42 to 60 inches, yellowish sand

Lower subsoil:
60 to 67 inches, yellowish sandy loam that has brownish mottles
67 to 80 inches, mottled yellowish, brownish, and grayish sandy clay loam

Included with this soil in mapping are small areas of Ailey, Bibb, Johnston, and Vaucluse soils. Also included are small areas of soils that have slopes of less than 10 percent or more than 15 percent and small areas of soils that have a surface layer of gravelly sand. Included soils make up about 20 percent of the map unit.

Important properties of the Candor soil—

Permeability: Rapid in the upper part, moderate or moderately slow in the lower part
Available water capacity: Low
Depth to a seasonal high water table: More than 6 feet
Surface runoff: Slow
Hazard of water erosion: Severe
Depth to bedrock: More than 60 inches

Most areas are used as woodland or as habitat for wildlife. A few areas are used for pasture.

This soil is poorly suited to row crops and small grain. It also is poorly suited to truck crops, such as watermelons and cantaloupes. The main management concerns are droughtiness, a low nutrient-holding capacity, the slope, the hazard of soil blowing, and the hazard of erosion. Conservation tillage, contour farming, contour stripcropping with close-growing grains or legumes, cover crops, and crop residue management increase the available water capacity and the nutrient-holding capacity, reduce the hazard of soil blowing, and control erosion. Fertilizers are more efficient if applied at intervals rather than in a single application.

This soil is moderately well suited to the production of loblolly pine and longleaf pine. Other species that grow well are turkey oak and blackjack oak. The main management concerns are the equipment limitation and seedling mortality. The sandy surface layer restricts the use of wheeled equipment, especially when the soil is very dry. Using tracked or wide-tired vehicles helps to overcome the equipment limitation. The seedling mortality rate, which is caused by droughtiness, can be reduced by planting in furrows.

This soil is poorly suited to pasture, but grasses, such as improved bermudagrass and bahiagrass, can be grown. The main management concerns are the droughtiness and the low nutrient-holding capacity. Frequent applications of fertilizer and manure are needed. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during dry periods help to keep the pasture in good condition.

This soil is moderately well suited to most engineering uses related to homesite development. The slope is a limitation on sites for septic tank absorption fields. Using step-down boxes between the absorption lines and installing the lines on the contour help to ensure the proper functioning of septic tank absorption fields. The slope is a limitation on sites for dwellings with or without basements. It can be overcome by cutting and filling and by modifying the design of the building. Droughtiness is a hazard affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. It can be reduced by using well adapted plants and applying supplemental irrigation water during the growing season.

CcB—Cecil sandy loam, 2 to 6 percent slopes. This very deep soil is on gently sloping ridges and side slopes of the Piedmont. It is well drained. Most areas are irregularly shaped. The areas are typically 10 to 50 acres in size but range from 5 to 200 acres. Slope lengths are typically 200 to 500 feet but range from 100 to 500 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 6 inches, brownish sandy loam

Subsoil:
6 to 36 inches, reddish clay
36 to 52 inches, reddish clay loam that has yellowish mottles
52 to 60 inches, reddish sandy clay loam and clay loam that have yellowish mottles

Included with this soil in mapping are small areas of Badin, Georgeville, and Rion soils. Also included are small areas of soils that have slopes of less than 2 percent or more than 6 percent. Included soils make up less than 15 percent of the map unit.

Important properties of the Cecil soil—

Permeability: Moderate
Available water capacity: Moderate
Depth to a seasonal high water table: More than 6 feet
Surface runoff: Medium
Hazard of water erosion: Moderate
Depth to bedrock: More than 60 inches

Most areas are used as pasture or woodland. A few areas are used as cropland.

This soil is well suited to row crops and small grain. The main management concern is the hazard of erosion. Conservation tillage, contour farming, contour stripcropping, terraces, grassed waterways, and cover crops help to control runoff and erosion.

This soil is moderately well suited to the production of loblolly pine. Other species that grow well are shortleaf pine and Virginia pine. There are no major limitations affecting woodland use and management. Seedlings survive and grow well in areas of this soil.

This soil is moderately well suited to grasses, such as fescue. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is well suited to most engineering uses related to homesite development. The restricted permeability is a management concern on sites for septic tank absorption fields. It can be overcome by increasing the size of the absorption field. The limitations on sites used for dwellings with or without basements are slight. The limitations affecting the establishment of lawn grasses, plants, and shrubs used in landscaping also are slight.

CeB2—Cecil sandy clay loam, 2 to 6 percent slopes, eroded. This very deep soil is on gently sloping ridges and side slopes of the Piedmont. It is well drained. Most areas are irregularly shaped. The areas are typically 10 to 150 acres in size but range from 5 to 200 acres. Slope lengths are typically 100 to 500 feet but range from 50 to 500 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 2 inches, reddish sandy clay loam

Subsoil:
2 to 32 inches, reddish clay
32 to 48 inches, reddish clay loam that has yellowish mottles
48 to 60 inches, reddish sandy clay loam and clay loam that have yellowish mottles

Included with this soil in mapping are small areas of Badin, Georgeville, and Rion soils. Also included are small areas of soils that have slopes of less than 2 percent or more than 6 percent. Included soils make up less than 15 percent of the map unit.

Important properties of the Cecil soil—

Permeability: Moderate
Available water capacity: Moderate
Depth to a seasonal high water table: More than 6 feet
Surface runoff: Medium
Hazard of water erosion: Moderate
Depth to bedrock: More than 60 inches

Most areas are used as pasture or woodland. A few areas are used as cropland.

This soil is moderately well suited to row crops and small grain. The main management concerns are the hazard of erosion and the effects of past erosion. Conservation tillage, contour farming, contour stripcropping, terraces, grassed waterways, and cover crops help to control runoff and erosion. Returning crop residue to the soil improves tilth and increases the content of organic matter.

This soil is moderately well suited to the production of loblolly pine. Other species that grow well are shortleaf pine and Virginia pine. The main management concerns are the equipment limitation and seedling mortality. Using tracked or wide-tired vehicles helps to overcome the equipment limitation during wet periods. The seedling mortality rate, which is caused by the effects of past erosion, can be reduced by bedding and planting in furrows.

This soil is poorly suited to pasture, but grasses, such as fescue, can be grown. The main management concern is the hazard of erosion. A seedbed should be prepared on the contour or across the slope where practical. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is well suited to most engineering uses related to homesite development. The restricted permeability is a management concern on sites for septic tank absorption fields. It can be overcome by increasing the size of the absorption field. The limitations on sites used for dwellings with or without basements are slight. The limitations affecting the establishment of lawn grasses, plants, and shrubs used in landscaping also are slight.

CeC2—Cecil sandy clay loam, 6 to 10 percent slopes, eroded. This very deep soil is on narrow, strongly sloping ridges and side slopes of the Piedmont. It is well drained. Most areas are irregularly shaped. The areas are typically 10 to 150 acres in size but range from 5 to 350 acres. Slope lengths are typically 100 to 250 feet but range from 50 to 350 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 2 inches, reddish sandy clay loam

Subsoil:
2 to 32 inches, reddish clay
32 to 48 inches, reddish clay loam that has yellowish mottles
48 to 60 inches, reddish sandy clay loam and clay loam that have yellowish mottles

Included with this soil in mapping are small areas of Badin, Pacolet, and Rion soils. Also included are small areas of soils that have slopes of more than 10 percent or less than 6 percent. Included soils make up about 15 percent of the map unit.

Important properties of the Cecil soil—

Permeability: Moderate
Available water capacity: Moderate
Depth to a seasonal high water table: More than 6 feet
Surface runoff: Medium or rapid
Hazard of water erosion: Severe
Depth to bedrock: More than 60 inches

Most areas are used as woodland or pasture. A few areas are used as cropland.

This soil is poorly suited to row crops and small grain. The main management concerns are the hazard of erosion and the effects of past erosion. Conservation tillage, contour farming, contour stripcropping, terraces, grassed waterways, and cover crops help to control runoff and erosion. Returning crop residue to the soil improves tilth and increases the content of organic matter.

This soil is moderately well suited to the production of loblolly pine. Other species that grow well are shortleaf pine and Virginia pine. The main management concerns are the equipment limitation and seedling mortality. Using tracked or wide-tired vehicles helps to overcome the equipment limitation during wet periods. The seedling mortality rate, which is caused by the effects of past erosion, can be reduced by bedding and planting in furrows.

This soil is poorly suited to pasture, but grasses, such as fescue, can be grown. The main management concern is the hazard of erosion. A seedbed should be prepared on the contour or across the slope where practical. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is well suited to most engineering uses related to homesite development. The restricted permeability and the slope are limitations on sites for septic tank absorption fields. They can be overcome by increasing the size of the absorption field, using drop boxes, and installing the absorption lines on the contour. The slope is a limitation on sites for dwellings with or without basements. It can be overcome by cutting and filling and by modifying the design of the building. The slope is also a limitation affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. Plant cover can be established and maintained by applying fertilizer, seeding, mulching, and land shaping.

Ch—Chewacla clay loam, frequently flooded. This very deep soil is on narrow, nearly level flood plains along major and minor streams of the Piedmont and Coastal Plain. It is somewhat poorly drained and frequently flooded. Most areas are irregularly shaped. The areas are typically 50 to 100 acres in size but range from 25 to 200 acres. Slope lengths are typically 100 to 300 feet but range from 50 to 1,000 feet. Slopes are dominantly less than 1 percent but range from 0 to 2 percent.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 7 inches, brownish clay loam

Subsoil:
7 to 14 inches, yellowish loam that has grayish mottles
14 to 22 inches, yellowish loam that has grayish and reddish mottles
22 to 38 inches, mottled grayish, brownish, and reddish loam
38 to 50 inches, mottled grayish and brownish sandy loam and sandy clay loam

Substratum:
50 to 65 inches, stratified, grayish loamy sand, sandy loam, and sandy clay loam

Included with this soil in mapping are small areas of Chastain, Hornsville, Johnston, Riverview, and Wickham soils. Also included are small areas of soils that are protected from flooding. Included soils make up about 15 percent of the map unit.

Important properties of the Chewacla soil—

Permeability: Moderate
Available water capacity: High
Depth to a seasonal high water table: 0.5 foot to 1.5 feet
Surface runoff: Slow
Hazard of water erosion: Slight
Flooding: Frequent, for brief periods
Depth to bedrock: More than 60 inches

Most areas are used as woodland. A few areas are used as cropland or pasture.

This soil is moderately well suited to row crops and small grain. The main management concerns are the

flooding and wetness. Protecting the soil from flooding is generally impractical because of the size and shape of the areas. The effects of flooding can be reduced by using short-season crops that are planted after the spring flooding and harvested before the fall and winter flooding. Returning crop residue to the soil helps to maintain good tilth and the content of organic matter.

This soil is well suited to the production of loblolly pine. Other species that grow well are sweetgum and yellow-poplar. The main management concerns are the equipment limitation, the windthrow hazard, and plant competition. Removing excess water, using wider tires on equipment, and bedding, planting, and harvesting trees during dry periods reduce the equipment limitation. Trees are subject to windthrow because of the restricted rooting depth. Seedlings survive and grow well if competing vegetation is controlled. Competing vegetation can be controlled by proper site preparation, such as burning, spraying, cutting, and girdling.

This soil is moderately well suited to fescue. The main limitations are the flooding and wetness. Overcoming the flooding is generally not economically feasible. Drainage can be improved by maintaining open ditches and surface drains. Grazing should be delayed until the soil has drained sufficiently and is firm enough to withstand trampling by livestock. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is generally not suited to most engineering uses related to homesite development because of the flooding and the wetness. These limitations are difficult and expensive to overcome.

Cm—Chewacla-Chastain complex, frequently flooded. These very deep soils are on nearly level flood plains along major and minor streams of the Piedmont and Coastal Plain. The Chewacla soil is somewhat poorly drained, and the Chastain soil is poorly drained. Both soils are frequently flooded. Most areas are irregularly shaped. The areas are typically 50 to 100 acres in size but range from 25 to 200 acres. They are about 45 percent Chewacla soil, 40 percent Chastain soil, and 15 percent other soils. The Chewacla and Chastain soils occur as areas so closely intermingled that it was not practical to map them separately. Slope lengths are typically 100 to 500 feet but range from 50 to 600 feet. Slopes are dominantly less than 1 percent but range from 0 to 2 percent.

Typically, the layers of the Chewacla soil are as follows—

Surface layer:
0 to 7 inches, brownish clay loam

Subsoil:
7 to 14 inches, yellowish loam that has grayish mottles
14 to 22 inches, yellowish loam that has grayish and reddish mottles
22 to 38 inches, mottled grayish, brownish, and reddish loam
38 to 50 inches, mottled grayish and brownish sandy loam and sandy clay loam

Substratum:
50 to 65 inches, stratified, grayish loamy sand, sandy loam, and sandy clay loam

Important properties of the Chewacla soil—

Permeability: Moderate
Available water capacity: High
Depth to a seasonal high water table: 0.5 foot to 1.5 feet
Surface runoff: Slow
Hazard of water erosion: Slight
Flooding: Frequent, for brief periods
Depth to bedrock: More than 60 inches

Typically, the layers of the Chastain soil are as follows—

Surface layer:
0 to 6 inches, brownish silt loam that has reddish mottles

Subsoil:
6 to 50 inches, grayish clay that has yellowish and brownish mottles
50 to 65 inches, grayish silty clay loam that has yellowish mottles

Important properties of the Chastain soil—

Permeability: Slow
Available water capacity: Moderate
Seasonal high water table: At the surface to 1 foot below the surface
Surface runoff: Very slow
Hazard of water erosion: Slight
Flooding: Frequent, for very long periods
Depth to bedrock: More than 60 inches

Included with these soils in mapping are small areas of Bibb, Hornsville, Johnston, Riverview, and Tetotum soils. Also included are small areas of sandy soils on natural levees on stream terraces and small areas that are protected from flooding. Included soils make up about 15 percent of the map unit.

Most areas of the Chewacla and Chastain soils are used as woodland. A few areas are used for pasture.

These soils are generally not suited to row crops or small grain. The main management concerns are wetness and the frequent flooding.

These soils are moderately well suited to the production of loblolly pine and sweetgum. The Chastain soil is also suited to water-tolerant hardwoods. Other species that grow well are yellow-poplar and American sycamore. The main management concerns are the equipment limitation, seedling mortality on the Chastain soil, the windthrow hazard, and plant competition. Removing excess water, using wider tires on equipment, and bedding, planting, and harvesting trees during dry periods reduce the equipment limitation. The seedling mortality rate can be reduced by planting suitable species at the proper times and by planting on raised beds. Trees are subject to windthrow because of the restricted rooting depth. Competing vegetation can be controlled by proper site preparation, such as burning, spraying, cutting, and girdling.

These soils are poorly suited to pasture, but grasses, such as fescue, can be planted. The main management concerns are the flooding and the wetness. Overcoming the flooding is generally not economically feasible. Drainage can be improved by maintaining open ditches and surface drains. Grazing should be delayed until the soil has drained sufficiently and is firm enough to withstand trampling by livestock. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

These soils are generally not suited to most engineering uses related to homesite development because of the flooding and the wetness. These limitations are difficult and expensive to overcome.

CrA—Claycreek silt loam, 0 to 2 percent slopes. This very deep soil is on broad, nearly level ridges and flats in the Triassic Basin of the Piedmont. It is moderately well drained. Most areas are irregularly shaped. The areas are typically 10 to 30 acres in size but range from 5 to 100 acres. Slope lengths are typically 100 to 300 feet but range from 50 to 350 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 4 inches, brownish silt loam

Subsoil:
4 to 15 inches, brownish silt loam
15 to 22 inches, brownish silty clay loam
22 to 33 inches, mottled yellowish and grayish silty clay loam
33 to 39 inches, mottled yellowish and grayish silt loam

Substratum:
39 to 63 inches, mottled yellowish, grayish, brownish, and reddish silty clay loam

Included with this soil in mapping are small areas of Alamance, Chewacla, Mayodan, and Riverview soils. Also included are small areas of soils that have a clayey subsoil and small areas of soils that have slopes of more than 2 percent. Included soils make up about 15 percent of the map unit.

Important properties of the Claycreek soil—

Permeability: Moderately slow
Available water capacity: High
Seasonal high water table: Perched at a depth of 1.5 to 3.0 feet
Surface runoff: Medium
Hazard of water erosion: Slight
Depth to bedrock: More than 60 inches

Most areas are used as cropland. A few areas are used as pasture or woodland.

This soil is moderately well suited to row crops and small grain. Wetness is the main limitation. Because of the moderately slow permeability, shallow surface drains and open ditches commonly are used to lower the water table. Returning crop residue to the soil helps to maintain good tilth and the content of organic matter.

This soil is moderately well suited to the production of loblolly pine. Other species that grow well are sweetgum and shortleaf pine. The main management concern is plant competition. Seedlings survive and grow well if competing vegetation is controlled. Competing vegetation can be controlled by proper site preparation, such as burning, spraying, cutting, and girdling.

This soil is moderately well suited to grasses, such as improved bermudagrass and fescue. The main management concern is wetness. Drainage can be improved by maintaining open ditches and surface drains. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is moderately well suited to most engineering uses related to homesite development. It is generally not suited to use as a site for dwellings with basements, however, because the wetness and the shrink-swell potential are difficult and expensive to overcome. The wetness and the restricted permeability are management concerns on sites for septic tank absorption fields. They can be overcome by using specially designed or modified conventional systems and by increasing the size of the absorption field. The wetness is a management concern on sites for dwellings without basements. It can be overcome by adding suitable fill material, shaping the area, and installing a drainage system. The wetness is a limitation affecting the establishment of lawn grasses, plants, and

shrubs used in landscaping. Plants that can tolerate a seasonal high water table should be selected.

CrB—Claycreek silt loam, 2 to 6 percent slopes. This very deep soil is on gently sloping ridges and side slopes in the Triassic Basin of the Piedmont. It is moderately well drained. Most areas are irregularly shaped. The areas are typically 10 to 50 acres in size but range from 5 to 150 acres. Slope lengths are typically 100 to 200 feet but range from 50 to 250 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 4 inches, brownish silt loam

Subsoil:
4 to 15 inches, brownish silt loam
15 to 22 inches, brownish silty clay loam
22 to 33 inches, mottled yellowish and grayish silty clay loam
33 to 39 inches, mottled yellowish and grayish silt loam

Substratum:
39 to 63 inches, mottled yellowish, grayish, brownish, and reddish silty clay loam

Included with this soil in mapping are small areas of Alamance, Chewacla, Mayodan, and Riverview soils. Also included are small areas of soils that have a clayey subsoil and small areas of soils that have slopes of more than 6 percent. Included soils make up less than 15 percent of the map unit.

Important properties of the Claycreek soil—

Permeability: Moderately slow
Available water capacity: High
Seasonal high water table: Perched at a depth of 1.5 to 3.0 feet
Surface runoff: Medium
Hazard of water erosion: Moderate
Depth to bedrock: More than 60 inches

Most areas are used as cropland. A few areas are used as pasture or woodland.

This soil is moderately well suited to row crops and small grain. The main management concern is the moderate hazard of erosion. Conservation tillage, contour farming, contour stripcropping, terraces, grassed waterways, and cover crops help to control runoff and erosion. Returning crop residue to the soil helps to maintain good tilth and the content of organic matter.

This soil is moderately well suited to the production of loblolly pine. Other species that grow well are sweetgum and shortleaf pine. The main management concern is plant competition. Seedlings survive and grow well if competing vegetation is controlled. Competing vegetation can be controlled by proper site preparation, such as burning, spraying, cutting, and girdling.

This soil is moderately well suited to grasses, such as improved bermudagrass and fescue. The main management concern is wetness. Drainage can be improved by maintaining open ditches and surface drains. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is moderately well suited to most engineering uses related to homesite development. It is generally not suited to use as a site for dwellings with basements, however, because the wetness and the shrink-swell potential are difficult and expensive to overcome. The wetness and the restricted permeability are management concerns on sites for septic tank absorption fields. They can be overcome by using specially designed or modified conventional systems and by increasing the size of the absorption field. The wetness is a management concern on sites for dwellings without basements. It can be overcome by adding suitable fill material, shaping the area, and installing a drainage system. The wetness is a limitation affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. Plants that can tolerate a seasonal high water table should be selected.

Cx—Coxville sandy loam. This very deep soil is in nearly level, oval depressions and broad, flat areas on the Coastal Plain. It is poorly drained. Most areas are oval or irregularly shaped. The areas are typically 10 to 20 acres in size but range from 5 to 100 acres. Slope lengths are typically 100 to 500 feet but range from 50 to 800 feet. Slopes range from 0 to 2 percent.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 6 inches, grayish sandy loam

Subsoil:
6 to 9 inches, brownish clay loam that has grayish mottles
9 to 24 inches, grayish clay loam
24 to 31 inches, grayish clay that has brownish mottles
31 to 54 inches, grayish clay that has reddish mottles
54 to 60 inches, grayish clay that has yellowish mottles

Substratum:
60 to 70 inches, white clay

Included with this soil in mapping are small areas of Smithboro and Woodington soils. Also included are small areas of soils that have a black surface layer more than 10 inches thick. Included soils make up about 10 percent of the map unit.

Important properties of the Coxville soil—

Permeability: Moderately slow
Available water capacity: Moderate
Seasonal high water table: At the surface to 1.5 feet below the surface
Surface runoff: Slow
Hazard of water erosion: Slight
Depth to bedrock: More than 60 inches

Most areas are used as cropland. A few areas are used as woodland or pasture.

This soil is well suited to row crops and small grain. Wetness is the main limitation. Because of the moderately slow permeability, shallow surface drains and open ditches commonly are used to lower the water table. Returning crop residue to the soil helps to maintain good tilth and the content of organic matter.

This soil is well suited to the production of loblolly pine and longleaf pine. Sweetgum also grows well. The main management concerns are the equipment limitation, seedling mortality, the windthrow hazard, and plant competition. Removing excess water, using wider tires on equipment, and bedding, planting, and harvesting trees during dry periods reduce the equipment limitation. The seedling mortality rate can be reduced by planting suitable species at the proper times and by planting on raised beds. Trees are subject to windthrow because of the restricted rooting depth. Competing vegetation can be controlled by proper site preparation, such as burning, spraying, cutting, and girdling.

This soil is well suited to pasture grasses, such as bahiagrass and improved bermudagrass. The main management concern is wetness. Drainage can be improved by maintaining open ditches and surface drains. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is poorly suited to most engineering uses related to homesite development. It is generally not suited to septic tank absorption fields because of the wetness and the restricted permeability. These limitations are difficult and expensive to overcome. The soil is not suited to use as a site for dwellings with basements because of the wetness. The wetness is also a management concern on sites for dwellings without basements. It can be overcome by adding suitable fill material, shaping the area, and installing a drainage system. The wetness is a limitation affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. It limits the selection of desirable species and encourages competition from undesirable species. Installing a drainage system, shaping the land to increase the runoff rate, and using plants that can tolerate a seasonal high water table help to overcome the wetness.

EmA—Emporia loamy sand, 0 to 2 percent slopes. This very deep soil is on low, nearly level ridges in broad, flat areas and on interstream divides of the Coastal Plain. It is well drained. Most areas are irregularly shaped. The areas are typically 10 to 50 acres in size but range from 5 to 150 acres. Slope lengths are typically 100 to 350 feet but range from 50 to 500 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 7 inches, brownish loamy sand

Subsurface layer:
7 to 10 inches, brownish loamy sand

Subsoil:
10 to 18 inches, brownish sandy clay loam
18 to 37 inches, yellowish sandy clay loam that has reddish mottles
37 to 48 inches, yellowish sandy clay loam that has brownish, grayish, and reddish mottles
48 to 56 inches, mottled grayish, yellowish, and reddish sandy clay

Substratum:
56 to 65 inches, mottled yellowish, grayish, and reddish, stratified sandy clay loam and sandy loam

Included with this soil in mapping are small areas of Ailey, Pelion, and Vaucluse soils. These soils make up about 15 percent of the map unit.

Important properties of the Emporia soil—

Permeability: Moderately slow or slow
Available water capacity: Moderate
Seasonal high water table: Perched at a depth of 3.0 to 4.5 feet
Surface runoff: Slow
Hazard of water erosion: Slight
Depth to bedrock: More than 60 inches

Most areas are used as cropland. A few areas are used as pasture or woodland.

This soil is well suited to row crops and small grain. There are no major management concerns. Returning crop residue to the soil helps to maintain good tilth and the content of organic matter.

This soil is moderately well suited to the production of loblolly pine. Sweetgum also grows well. The main management concerns are seedling mortality and plant competition. The seedling mortality rate, which is caused by droughtiness, can be reduced by planting in furrows. Competing vegetation can be controlled by proper site preparation, such as burning, spraying, cutting, and girdling.

This soil is moderately well suited to grasses, such as bahiagrass and improved bermudagrass. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is moderately suited to most engineering uses related to homesite development. Wetness and the restricted permeability are management concerns on sites for septic tank absorption fields. They can be overcome by using specially designed or modified conventional systems and by increasing the size of the absorption field. The limitations on sites used for dwellings without basements are slight. The wetness and the shrink-swell potential are management concerns on sites for dwellings with basements. Installing tile drains around footings helps to prevent wet basements. The effects of shrinking and swelling can be minimized by using proper engineering designs and by backfilling with coarser textured material. Droughtiness is a hazard affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. Irrigation is needed during dry periods.

EmB—Emporia loamy sand, 2 to 6 percent slopes. This very deep soil is on low, gently sloping ridges on the Coastal Plain. It is well drained. Most areas are irregularly shaped. The areas are typically 10 to 50 acres in size but range from 5 to 150 acres. Slope lengths are typically 100 to 300 feet but range from 50 to 450 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 7 inches, brownish loamy sand

Subsurface layer:
7 to 10 inches, brownish loamy sand

Subsoil:
10 to 18 inches, brownish sandy clay loam
18 to 37 inches, yellowish sandy clay loam that has reddish mottles
37 to 48 inches, yellowish sandy clay loam that has brownish, grayish, and reddish mottles
48 to 56 inches, mottled grayish, yellowish, and reddish sandy clay

Substratum:
56 to 65 inches, mottled yellowish, grayish, and reddish, stratified sandy clay loam and sandy loam

Included with this soil in mapping are small areas of Ailey, Pelion, and Vaucluse soils. Also included are small areas of soils that have slopes of less than 2 percent or more than 6 percent. Included soils make up about 10 percent of the map unit.

Important properties of the Emporia soil—

Permeability: Moderately slow or slow
Available water capacity: Moderate
Seasonal high water table: Perched at a depth of 3.0 to 4.5 feet
Surface runoff: Medium
Hazard of water erosion: Moderate
Depth to bedrock: More than 60 inches

Most areas are used as cropland. A few areas are used as pasture or woodland.

This soil is well suited to row crops and small grain. The main management concern is the moderate hazard of erosion. Conservation tillage, contour farming, contour stripcropping, terraces, grassed waterways, and cover crops help to control runoff and erosion.

This soil is moderately well suited to the production of loblolly pine. Sweetgum also grows well. The main management concerns are seedling mortality and plant competition. The seedling mortality rate, which is caused by droughtiness, can be reduced by planting in furrows. Competing vegetation can be controlled by proper site preparation, such as burning, spraying, cutting, and girdling.

This soil is moderately well suited to grasses, such as bahiagrass and improved bermudagrass. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is moderately well suited to most engineering uses related to homesite development. Wetness and the restricted permeability are management concerns on sites for septic tank absorption fields. They can be overcome by using specially designed or modified conventional systems and by increasing the size of the absorption field. The limitations on sites used for dwellings without basements are slight. The wetness and the shrink-swell potential are management concerns on sites for dwellings with basements. Installing tile drains around footings helps to prevent wet basements. The effects of shrinking and swelling can be minimized by using proper engineering designs and by backfilling with coarser textured material. Droughtiness is a hazard

affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. Irrigation is needed during dry periods.

EmC—Emporia loamy sand, 6 to 10 percent slopes. This very deep soil is on strongly sloping side slopes of the Coastal Plain. It is well drained. Most areas are irregularly shaped. The areas are typically 10 to 50 acres in size but range from 5 to 150 acres. Slope lengths are typically 100 to 300 feet but range from 50 to 350 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 7 inches, brownish loamy sand

Subsurface layer:
7 to 10 inches, brownish loamy sand

Subsoil:
10 to 18 inches, brownish sandy clay loam
18 to 37 inches, yellowish sandy clay loam that has reddish mottles
37 to 48 inches, yellowish sandy clay loam that has brownish, grayish, and reddish mottles
48 to 56 inches, mottled grayish, yellowish, and reddish sandy clay

Substratum:
56 to 65 inches, mottled yellowish, grayish, and reddish, stratified sandy clay loam and sandy loam

Included with this soil in mapping are small areas of Ailey, Pelion, and Vaucluse soils. Also included are small areas of soils that have slopes of less than 6 percent or more than 10 percent. Included soils make up about 10 percent of the map unit.

Important properties of the Emporia soil—

Permeability: Moderately slow or slow
Available water capacity: Moderate
Seasonal high water table: Perched at a depth of 3.0 to 4.5 feet
Surface runoff: Medium
Hazard of water erosion: Severe
Depth to bedrock: More than 60 inches

Most areas are used as cropland. A few areas are used as pasture or woodland.

This soil is moderately well suited to row crops and small grain. The main management concern is the hazard of erosion. Conservation tillage, contour farming, contour stripcropping, terraces, grassed waterways, and cover crops help to control runoff and erosion.

This soil is moderately well suited to the production of loblolly pine. Sweetgum also grows well. The main management concerns are seedling mortality and plant competition. The seedling mortality rate, which is caused by droughtiness, can be reduced by planting in furrows. Competing vegetation can be controlled by proper site preparation, such as burning, spraying, cutting, and girdling.

This soil is moderately well suited to grasses, such as bahiagrass and improved bermudagrass. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is moderately well suited to most engineering uses related to homesite development. Wetness and the restricted permeability are management concerns on sites for septic tank absorption fields. They can be overcome by using specially designed or modified conventional systems and by increasing the size of the absorption field. The slope is a limitation on sites for dwellings without basements. It can be overcome by cutting and filling and by modifying the design of the building. The wetness, the slope, and the shrink-swell potential are management concerns on sites for dwellings with basements. Installing tile drains around footings helps to prevent wet basements. The effects of shrinking and swelling can be minimized by using proper engineering designs and by backfilling with coarser textured material. The droughtiness and the slope are limitations affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. Irrigation is needed during dry periods. Plant cover can be established and maintained by applying fertilizer, seeding, mulching, and land shaping.

GeB—Georgeville loam, 2 to 6 percent slopes. This very deep soil is on narrow, gently sloping ridges and side slopes of the Piedmont. It is well drained. Most areas are irregularly shaped. The areas are typically 10 to 150 acres in size but range from 5 to 200 acres. Slope lengths are typically 100 to 250 feet but range from 50 to 450 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 5 inches, brownish loam

Subsoil:
5 to 42 inches, reddish silty clay
42 to 60 inches, mottled reddish and yellowish clay loam

Included with this soil in mapping are small areas of Alamance, Badin, and Chewacla soils. Also included are small areas of soils that have slopes of more than 6 percent or less than 2 percent. Included soils make up about 15 percent of the map unit.

Important properties of the Georgeville soil—

Permeability: Moderate
Available water capacity: Moderate
Depth to a seasonal high water table: More than 6 feet
Surface runoff: Medium
Hazard of water erosion: Moderate
Depth to bedrock: More than 60 inches

Most areas are used as cropland or pasture. A few areas are used as woodland.

This soil is well suited to row crops and small grain. The main management concern is the hazard of erosion. Conservation tillage, contour farming, contour stripcropping, terraces, grassed waterways, and cover crops help to control runoff and erosion. Returning crop residue to the soil helps to maintain good tilth and the content of organic matter.

This soil is moderately well suited to the production of loblolly pine. Other species that grow well are longleaf pine and shortleaf pine. No major limitations affect woodland use and management. Seedlings survive and grow well in areas of this soil.

This soil is moderately well suited to grasses, such as fescue. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is well suited to most engineering uses related to homesite development. The restricted permeability is a management concern on sites for septic tank absorption fields. It can be overcome by increasing the size of the absorption field. The limitations on sites used for dwellings with or without basements are slight. The limitations affecting the establishment of lawn grasses, plants, and shrubs used in landscaping also are slight.

GeC—Georgeville loam, 6 to 10 percent slopes. This very deep soil is on narrow, strongly sloping ridges and side slopes of the Piedmont. It is well drained. Most areas are irregularly shaped. The areas are typically 10 to 50 acres in size but range from 5 to 100 acres. Slope lengths are typically 100 to 250 feet but range from 50 to 450 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 5 inches, brownish loam

Subsoil:
5 to 42 inches, reddish silty clay
42 to 60 inches, mottled reddish and yellowish clay loam

Included with this soil in mapping are small areas of Alamance, Badin, and Chewacla soils. Also included are small areas of soils that have slopes of more than 10 percent. Included soils make up about 15 percent of the map unit.

Important properties of the Georgeville soil—

Permeability: Moderate
Available water capacity: Moderate
Depth to a seasonal high water table: More than 6 feet
Surface runoff: Medium or rapid
Hazard of water erosion: Severe
Depth to bedrock: More than 60 inches

Most areas are used as cropland. A few areas are used as pasture or woodland.

This soil is moderately well suited to row crops and small grain. The main management concern is the hazard of erosion. Conservation tillage, contour farming, contour stripcropping, terraces, grassed waterways, and cover crops help to control runoff and erosion. Returning crop residue to the soil helps to maintain good tilth and the content of organic matter.

This soil is moderately well suited to the production of loblolly pine. Other species that grow well are longleaf pine and shortleaf pine. No major limitations affect woodland use and management. Seedlings survive and grow well in areas of this soil.

This soil is moderately well suited to grasses, such as fescue. The main management concern is the hazard of erosion. A seedbed should be prepared on the contour or across the slope where practical. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is moderately well suited to most engineering uses related to homesite development. The restricted permeability and the slope are limitations on sites for septic tank absorption fields. They can be overcome by increasing the size of the absorption field, using drop boxes, and installing the absorption lines on the contour. The slope is also a limitation on sites for dwellings with or without basements. It can be overcome by cutting and filling and by modifying the design of the building. The slope is a limitation affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. Plant cover can be established and maintained by applying fertilizer, seeding, mulching, and land shaping.

GgB2—Georgeville silty clay loam, 2 to 6 percent slopes, eroded. This very deep soil is on broad, gently sloping ridges and side slopes of the Piedmont. It is well drained. Most areas are irregularly shaped. The areas are typically 10 to 150 acres in size but range from 5 to 200 acres. Slope lengths generally are 100 to 250 feet but range from 50 to 450 feet.

Typically, the layers of this soil are as follows—

Figure 7.—Wheat in an area of Georgeville silty clay loam, 2 to 6 percent slopes, eroded.

Surface layer:
0 to 3 inches, reddish silty clay loam

Subsoil:
3 to 42 inches, reddish silty clay
42 to 60 inches, mottled reddish and yellowish clay loam

Included with this soil in mapping are small areas of Badin and Chewacla soils. Also included are small areas of soils that have slopes of more than 6 percent or less than 2 percent. Included soils make up about 15 percent of the map unit.

Important properties of the Georgeville soil—

Permeability: Moderate
Available water capacity: Moderate
Depth to a seasonal high water table: More than 6 feet
Surface runoff: Medium
Hazard of water erosion: Moderate
Depth to bedrock: More than 60 inches

Most areas are used as cropland or pasture. A few areas are used as woodland.

This soil is moderately well suited to row crops and small grain (fig. 7). The main management concerns are the hazard of erosion and the effects of past erosion. Conservation tillage, contour farming, contour stripcropping, terraces, grassed waterways, and cover crops help to control runoff and erosion. Returning crop residue to the soil improves tilth and increases the content of organic matter.

This soil is moderately well suited to the production of loblolly pine. Other species that grow well are longleaf pine and Virginia pine. The main management concerns are the equipment limitation and seedling mortality. Using tracked or wide-tired vehicles helps to overcome the equipment limitation during wet periods. The seedling mortality rate, which is caused by the effects of past erosion, can be reduced by bedding and planting in furrows.

This soil is moderately well suited to grasses, such as fescue. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is well suited to most engineering uses related to homesite development. The restricted permeability is a management concern on sites for septic tank absorption fields. It can be overcome by increasing the size of the absorption field. The

limitations on sites used for dwellings with or without basements are slight. The limitations affecting the establishment of lawn grasses, plants, and shrubs used in landscaping also are slight.

GgC2—Georgeville silty clay loam, 6 to 10 percent slopes, eroded. This very deep soil is on narrow, strongly sloping ridges and side slopes of the Piedmont. It is well drained. Most areas are irregularly shaped. The areas are typically 10 to 100 acres in size but range from 5 to 150 acres. Slope lengths are typically 100 to 200 feet but range from 50 to 300 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 3 inches, reddish silty clay loam

Subsoil:
3 to 42 inches, reddish silty clay
42 to 60 inches, mottled reddish and yellowish clay loam

Included with this soil in mapping are small areas of Alamance, Badin, and Chewacla soils. Also included are small areas of soils that have slopes of more than 10 percent or less than 6 percent. Included soils make up about 15 percent of the map unit.

Important properties of the Georgeville soil—

Permeability: Moderate
Available water capacity: Moderate
Depth to a seasonal high water table: More than 6 feet
Surface runoff: Medium or rapid
Hazard of water erosion: Severe
Depth to bedrock: More than 60 inches

Most areas are used as woodland or pasture. A few areas are used as cropland.

This soil is poorly suited to row crops and small grain. The main management concerns are the hazard of erosion and the effects of past erosion. Conservation tillage, contour farming, contour stripcropping, terraces, grassed waterways, and cover crops help to control runoff and erosion. Returning crop residue to the soil improves tilth and increases the content of organic matter.

This soil is moderately well suited to the production of loblolly pine. Other species that grow well are longleaf pine and Virginia pine. The main management concerns are the equipment limitation and seedling mortality. Using tracked or wide-tired vehicles helps to overcome the equipment limitation during wet periods. The seedling mortality rate, which is caused by the effects of past erosion, can be reduced by bedding and planting in furrows.

This soil is poorly suited to pasture, but grasses, such as fescue, can be grown. The main management concern is the hazard of erosion. A seedbed should be prepared on the contour or across the slope where practical. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is moderately well suited to most engineering uses related to homesite development. The restricted permeability and the slope are limitations on sites for septic tank absorption fields. They can be overcome by increasing the size of the absorption field, using drop boxes, and installing the absorption lines on the contour. The slope is also a limitation on sites for dwellings with or without basements. It can be overcome by cutting and filling and by modifying the design of the building. The slope is a limitation affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. Plant cover can be established and maintained by applying fertilizer, seeding, mulching, and land shaping.

GoA—Goldsboro sandy loam, 0 to 2 percent slopes. This very deep soil is on broad, nearly level interstream divides of the Coastal Plain. It is moderately well drained. Most areas are irregularly shaped. The areas are typically 10 to 25 acres in size but range from 5 to 75 acres. Slope lengths are typically 150 to 400 feet but range from 50 to 500 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 9 inches, brownish sandy loam

Subsoil:
9 to 26 inches, yellowish sandy clay loam that has brownish mottles
26 to 42 inches, brownish sandy clay loam that has grayish mottles
42 to 67 inches, mottled brownish, grayish, yellowish, and reddish sandy clay loam
67 to 75 inches, mottled brownish, grayish, yellowish, and reddish, stratified sandy loam, sandy clay loam, and sandy clay

Included with this soil in mapping are small areas of Bonneau, Emporia, Noboco, Ogeechee, Woodington, and Coxville soils. Also included are areas of soils that have slopes of more than 2 percent. Included soils make up about 15 percent of the map unit.

Important properties of the Goldsboro soil—

Permeability: Moderate
Available water capacity: Moderate
Depth to a seasonal high water table: 2 to 3 feet
Surface runoff: Slow

Hazard of water erosion: Slight
Depth to bedrock: More than 60 inches

Most areas are used as cropland. A few areas are used as woodland or pasture.

This soil is well suited to row crops and small grain. Wetness is the main limitation. Surface drains, open ditches, and tile drains are used to lower the water table. Returning crop residue to the soil helps to maintain good tilth and the content of organic matter.

This soil is well suited to the production of loblolly pine. Other species that grow well are longleaf pine and sweetgum. The main management concern is plant competition. Seedlings survive and grow well if competing vegetation is controlled. Competing vegetation can be controlled by proper site preparation, such as burning, spraying, cutting, and girdling.

This soil is well suited to grasses, such as bahiagrass and fescue. The main management concern is wetness. Drainage can be improved by maintaining open ditches and surface drains. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is poorly suited to most engineering uses related to homesite development. It is generally not suited to use as a site for dwellings with basements because overcoming the wetness is difficult and expensive. The wetness is also a management concern on sites for septic tank absorption fields. Shallow placement of filter lines and additions of fill material improve the functioning of the absorption field. The wetness is a management concern on sites for dwellings without basements. It can be overcome by adding suitable fill material, shaping the area, and installing a drainage system. The limitations affecting the establishment of lawn grasses, plants, and shrubs used in landscaping are slight.

GtB—Goldston channery silt loam, 2 to 6 percent slopes. This shallow soil is on gently sloping ridgetops of the Piedmont. It is well drained to excessively drained. Most areas are irregularly shaped. The areas are typically 10 to 50 acres in size but range from 5 to 100 acres. Slope lengths are typically 100 to 150 feet but range from 50 to 200 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 3 inches, brownish channery silt loam

Subsoil:
3 to 12 inches, brownish extremely channery silt loam

Substratum:
12 to 24 inches, greenish, weathered, fractured slate

Bedrock:
24 inches, multicolored, hard, jointed slate

Included with this soil in mapping are small areas of Alamance, Badin, and Pageland soils. Also included are small areas of soils that have slopes of less than 2 percent or more than 6 percent. Included soils make up about 15 percent of the map unit.

Important properties of the Goldston soil—

Permeability: Moderately rapid
Available water capacity: Very low
Depth to a seasonal high water table: More than 6 feet
Surface runoff: Medium or rapid
Hazard of water erosion: Moderate
Depth to soft bedrock: 10 to 20 inches
Depth to hard bedrock: 20 to 40 inches

Most areas of this soil are used as pasture or woodland. A few areas are used as cropland.

This soil is poorly suited to row crops and small grain. The main management concerns are the hazard of erosion, the restricted rooting depth, and droughtiness. Conservation tillage, contour farming, contour stripcropping, terraces, grassed waterways, and cover crops help to control runoff and erosion and conserve moisture.

This soil is poorly suited to the production of loblolly pine. Shortleaf pine and Virginia pine grow well. The main management concerns are seedling mortality and the windthrow hazard. The seedling mortality rate, which is caused by droughtiness, can be reduced by planting in furrows. Trees are subject to windthrow because of the restricted rooting depth.

This soil is poorly suited to pasture, but grasses, such as fescue, can be grown. The main management concerns are the droughtiness and the restricted rooting depth. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during dry periods help to keep the pasture in good condition.

This soil is poorly suited to most engineering uses related to homesite development. The depth to bedrock is a management concern on sites for septic tank absorption fields. A community sewage system may be used, or a better suited site can be selected. The depth to bedrock is a management concern on sites for dwellings with basements. The depth to bedrock and large stones are management concerns on sites for dwellings without basements. The weathered bedrock can be ripped with heavy machinery, or structural designs that do not penetrate the bedrock can be used. The large stones should be removed. The depth to

bedrock is a limitation affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. Plant cover can be established and maintained by applying fertilizer, seeding, mulching, and land shaping.

GtC—Goldston channery silt loam, 6 to 10 percent slopes. This shallow soil is on strongly sloping side slopes and ridgetops of the Piedmont. It is well drained to excessively drained. Most areas are irregularly shaped. The areas are typically 10 to 300 acres in size but range from 5 to 400 acres. Slope lengths are typically 100 to 200 feet but range from 50 to 300 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 3 inches, brownish channery silt loam

Subsoil:
3 to 12 inches, brownish extremely channery silt loam

Substratum:
12 to 24 inches, greenish, weathered, fractured slate

Bedrock:
24 inches, multicolored, hard, jointed slate

Included with this soil in mapping are small areas of Alamance, Badin, Chewacla, and Pageland soils. Also included are small areas of soils that have hard bedrock within a depth of 20 inches and small areas of soils that have slopes of less than 6 percent or more than 15 percent. Included soils make up about 15 percent of the map unit.

Important properties of the Goldston soil—

Permeability: Moderately rapid
Available water capacity: Very low
Depth to a seasonal high water table: More than 6 feet
Surface runoff: Rapid
Hazard of water erosion: Severe
Depth to soft bedrock: 10 to 20 inches
Depth to hard bedrock: 20 to 40 inches

Most areas of this soil are used as woodland or pasture. A few areas are used as cropland.

This soil is poorly suited to row crops and small grain. The main management concerns are the hazard of erosion, the restricted rooting depth, and droughtiness. Conservation tillage, contour farming, contour stripcropping, terraces, grassed waterways, and cover crops help to control runoff and erosion and conserve moisture.

This soil is poorly suited to the production of loblolly pine. Shortleaf pine and Virginia pine grow well. The main management concerns are seedling mortality and the windthrow hazard. The seedling mortality rate, which is caused by droughtiness, can be reduced by planting in furrows. Trees are subject to windthrow because of the restricted rooting depth.

This soil is poorly suited to pasture, but grasses, such as fescue, can be grown. The main limitations are the droughtiness, the restricted rooting depth, and the hazard of erosion. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during dry periods help to keep the pasture in good condition. A seedbed should be prepared on the contour or across the slope where practical.

This soil is poorly suited to most engineering uses related to homesite development. The depth to bedrock is a management concern on sites for septic tank absorption fields. A community sewage system may be used, or a better suited site can be selected. The depth to bedrock is also a limitation on sites for dwellings with basements. The slope, the depth to bedrock, and large stones are management concerns on sites for dwellings without basements. The slope can be overcome by proper design. The weathered bedrock can be ripped with heavy machinery, or structural designs that do not penetrate the bedrock can be used. The large stones should be removed. The depth to bedrock is a limitation affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. Plant cover can be established and maintained by applying fertilizer, seeding, mulching, and land shaping.

GtD—Goldston channery silt loam, 10 to 15 percent slopes. This shallow soil is on moderately steep side slopes and narrow ridges of the Piedmont. It is well drained to excessively drained. Most areas are irregularly shaped. The areas are typically 50 to 150 acres in size but range from 5 to 300 acres. Slope lengths are typically 100 to 250 feet but range from 5 to 250 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 3 inches, brownish channery silt loam

Subsoil:
3 to 12 inches, brownish extremely channery silt loam

Substratum:
12 to 24 inches, greenish, weathered, fractured slate

Bedrock:
24 inches, multicolored, hard, jointed slate

Included with this soil in mapping are small areas of Alamance, Chewacla, and Riverview soils. Also included are small areas of soils that have hard bedrock

within a depth of 20 inches and small areas of soils that have slopes of less than 10 percent or more than 15 percent. Included soils make up about 15 percent of the map unit.

Important properties of the Goldston soil—

Permeability: Moderately rapid
Available water capacity: Very low
Depth to a seasonal high water table: More than 6 feet
Surface runoff: Rapid
Hazard of water erosion: Severe
Depth to soft bedrock: 10 to 20 inches
Depth to hard bedrock: 20 to 40 inches

Most areas of this soil are used as woodland. A few areas are used for pasture.

This soil is poorly suited to row crops and small grain. The main management concerns are the hazard of erosion, the restricted rooting depth, and droughtiness. Conservation tillage, contour farming, contour stripcropping, terraces, grassed waterways, and cover crops help to control runoff and erosion and conserve moisture.

This soil is poorly suited to the production of loblolly pine. Shortleaf pine and Virginia pine grow well. The main management concerns are seedling mortality and the windthrow hazard. The seedling mortality rate, which is caused by droughtiness, can be reduced by planting in furrows. Trees are subject to windthrow because of the restricted rooting depth.

This soil is poorly suited to pasture, but grasses, such as fescue, can be grown. The main limitations are the droughtiness, the restricted rooting depth, and the hazard of erosion. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during dry periods help to keep the pasture in good condition. A seedbed should be prepared on the contour or across the slope where practical.

This soil is poorly suited to most engineering uses related to homesite development. The depth to bedrock is a limitation on sites for septic tank absorption fields. A community sewage system may be used, or a better suited site can be selected. The depth to bedrock is also a limitation on sites for dwellings with basements. The slope, the depth to bedrock, and large stones are management concerns on sites for dwellings without basements. The slope can be overcome by proper design. The weathered bedrock can be ripped with heavy machinery, or structural designs that do not penetrate the bedrock can be used. The large stones should be removed. The depth to bedrock is a limitation affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. Plant cover can be established and maintained by applying fertilizer, seeding, mulching, and land shaping.

GtF—Goldston channery silt loam, 15 to 40 percent slopes. This shallow soil is on steep side slopes and narrow ridges of the Piedmont. It is well drained to excessively drained. Most areas are irregularly shaped. The areas are typically 50 to 150 acres in size but range from 5 to 300 acres. Slope lengths are typically 100 to 300 feet but range from 50 to 350 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 3 inches, brownish channery silt loam

Subsoil:
3 to 12 inches, brownish channery silt loam

Substratum:
12 to 24 inches, greenish, weathered, fractured slate

Bedrock:
24 inches, multicolored, hard, jointed slate

Included with this soil in mapping are small areas of Alamance and Pageland soils. Also included are small areas of soils that have hard bedrock within a depth of 20 inches and small areas of soils that have slopes of less than 25 percent or more than 40 percent. Included soils make up about 15 percent of the map unit.

Important properties of the Goldston soil—

Permeability: Moderately rapid
Available water capacity: Very low
Depth to a seasonal high water table: More than 6 feet
Surface runoff: Very rapid
Hazard of water erosion: Severe
Depth to soft bedrock: 10 to 20 inches
Depth to hard bedrock: 20 to 40 inches

Most areas are used as woodland. A few areas are used as pasture or cropland.

This soil is generally not suited to row crops or small grain because of the slope and the hazard of erosion.

This soil is poorly suited to the production of loblolly pine. Shortleaf pine and Virginia pine grow well. The main management concerns are the hazard of erosion, the equipment limitation, seedling mortality, and the windthrow hazard. Using harvesting methods that minimize disturbance of the soil, establishing skid trails, log landings, and temporary logging roads so that they do not lead to drainageways, moving logs on the contour, and plowing fire lanes on the contour can reduce the hazard of erosion and the equipment limitation. The seedling mortality rate, which is caused by droughtiness, can be reduced by planting in furrows. Trees are subject to windthrow because of the restricted rooting depth.

This soil is poorly suited to pasture, but grasses, such as fescue, can be grown. The main management concerns are droughtiness, the restricted rooting depth, the slope, and the hazard of erosion. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during dry periods help to keep the pasture in good condition. A seedbed should be prepared on the contour or across the slope where practical.

This soil is poorly suited to most engineering uses related to homesite development. The depth to bedrock and the slope are management concerns on sites for septic tank absorption fields. A community sewage system may be used, or a better suited site can be selected. The depth to bedrock and the slope are also concerns on sites for dwellings with or without basements. The slope can be overcome by proper design. The weathered bedrock can be ripped with heavy machinery, or structural designs that do not penetrate the bedrock can be used. Large stones should be removed. The depth to bedrock is a limitation affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. Plant cover can be established and maintained by applying fertilizer, seeding, mulching, and land shaping.

HnA—Hornsville sandy loam, 0 to 2 percent slopes. This very deep soil is on nearly level stream terraces on the Coastal Plain. It is moderately well drained and is subject to rare flooding. Most areas are irregularly shaped. The areas are typically 15 to 30 acres in size but range from 5 to 200 acres. Slope lengths are typically 150 to 350 feet but range from 50 to 600 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 7 inches, brownish sandy loam

Subsoil:
7 to 18 inches, yellowish clay that has reddish mottles
18 to 36 inches, brownish sandy clay that has yellowish, reddish, and grayish mottles
36 to 45 inches, mottled yellowish, grayish, and reddish sandy clay loam and sandy loam

Substratum:
45 to 60 inches, mottled grayish and yellowish sandy loam

Included with this soil in mapping are small areas of Alaga, Chewacla, and Wickham soils. Also included are small areas of soils that have slopes of more than 2 percent, small areas of eroded soils, and areas of soils that have a surface layer of gravelly sandy loam. Included soils make up about 15 percent of the map unit.

Important properties of the Hornsville soil—

Permeability: Moderately slow
Available water capacity: Moderate
Depth to a seasonal high water table: 2.5 to 3.5 feet
Surface runoff: Slow
Hazard of water erosion: Slight
Depth to bedrock: More than 60 inches
Flooding: Rare, during periods of abnormally high rainfall

Most areas are used as cropland or woodland. A few areas are used for pasture.

This soil is well suited to row crops and small grain. Wetness is the main limitation. Because of the moderately slow permeability, shallow surface drains and open ditches commonly are used to lower the water table. Returning crop residue to the soil helps to maintain good tilth and the content of organic matter.

This soil is well suited to the production of loblolly pine. Other species that grow well are sweetgum and yellow-poplar. The main management concerns are the equipment limitation, seedling mortality, and plant competition. Removing excess water, using wider tires on equipment, and bedding, planting, and harvesting trees during dry periods reduce the equipment limitation. The seedling mortality rate can be reduced by planting suitable species at the proper times and by planting on raised beds. Competing vegetation can be controlled by proper site preparation, such as burning, spraying, cutting, and girdling.

This soil is well suited to grasses, such as bahiagrass and improved bermudagrass. The main management concern is wetness. Drainage can be improved by maintaining open ditches and surface drains. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is poorly suited to most engineering uses related to homesite development. It is generally not suited to use as a site for dwellings with or without basements because overcoming the flooding is difficult and expensive. The wetness and the restricted permeability are management concerns on sites for septic tank absorption fields. They can be overcome by using specially designed or modified conventional systems and by increasing the size of the absorption field. The limitations affecting the establishment of lawn grasses, plants, and shrubs used in landscaping are slight.

HnB—Hornsville sandy loam, 2 to 6 percent slopes. This very deep soil is in gently sloping areas on stream terraces on the Coastal Plain. It is moderately well drained and is subject to rare flooding. Most areas are irregularly shaped. The areas are typically 10 to 25 acres in size but range from 5 to 40 acres. Slope lengths are typically 50 to 150 feet but range from 25 to 300 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 7 inches, brownish sandy loam

Subsoil:
7 to 18 inches, yellowish clay that has reddish mottles
18 to 36 inches, brownish sandy clay that has yellowish, reddish, and grayish mottles
36 to 45 inches, mottled yellowish, grayish, and reddish sandy clay loam and sandy loam

Substratum:
45 to 60 inches, mottled grayish and yellowish sandy loam

Included with this soil in mapping are small areas of Alaga, Chewacla, Ogeechee, and Wickham soils. Also included are small areas of soils that have slopes of less than 2 percent or more than 6 percent, small areas of severely eroded soils, and areas of soils that have a surface layer of gravelly sandy loam. Included soils make up about 15 percent of the map unit.

Important properties of the Hornsville soil—

Permeability: Moderately slow
Available water capacity: Moderate
Depth to a seasonal high water table: 2.5 to 3.5 feet
Surface runoff: Medium
Hazard of water erosion: Moderate
Depth to bedrock: More than 60 inches
Flooding: Rare, during periods of abnormally high rainfall

Most areas are used as cropland or woodland. A few areas are used for pasture.

This soil is well suited to row crops and small grain. The main management concern is the hazard of erosion. Conservation tillage, contour farming, contour stripcropping, terraces, grassed waterways, and cover crops help to control runoff and erosion.

This soil is well suited to the production of loblolly pine. Other species that grow well are sweetgum and yellow-poplar. The main management concerns are the equipment limitation, seedling mortality, and plant competition. Removing excess water, using wider tires on equipment, and bedding, planting, and harvesting trees during dry periods reduce the equipment limitation. The seedling mortality rate can be reduced by planting suitable species at the proper times and by planting on raised beds. Competing vegetation can be controlled by proper site preparation, such as burning, spraying, cutting, and girdling.

This soil is moderately well suited to grasses, such as bahiagrass and improved bermudagrass. The main limitation is wetness. Drainage can be improved by maintaining open ditches and surface drains. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is poorly suited to most engineering uses related to homesite development. It is generally not suited to use as a site for dwellings with or without basements because overcoming the flooding is difficult and expensive. The wetness and the restricted permeability are management concerns on sites for septic tank absorption fields. They can be overcome by using specially designed or modified conventional systems and by increasing the size of the absorption field. The limitations affecting the establishment of lawn grasses, plants, and shrubs used in landscaping are slight.

Jo—Johnston sandy loam, frequently flooded. This very deep soil is on nearly level flood plains along streams of the Sand Hills and Coastal Plain. It is very poorly drained and is frequently flooded or ponded. Most areas are long and narrow. The areas are typically 50 to 100 acres in size but range from 5 to 200 acres. Slope lengths are typically 100 to 300 feet but range from 50 to 600 feet. Slopes are 0 to 2 percent.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 25 inches, black sandy loam
25 to 38 inches, grayish sandy loam

Substratum:
38 to 60 inches, grayish loamy sand and sand

Included with this soil in mapping are small areas of Ogeechee, Chastain, Chewacla, and Bibb soils. Also included are small areas of sandy soils that are better drained than the Johnston soil and are on natural levees on stream terraces. Included soils make up about 15 percent of the map unit.

Important properties of the Johnston soil—

Permeability: Moderately rapid or rapid
Available water capacity: Moderate
Seasonal high water table: 1.0 foot above to 1.5 feet below the surface
Surface runoff: Very slow or ponded
Hazard of water erosion: Slight

Depth to bedrock: More than 60 inches
Flooding: Frequent, for brief or long periods

Most areas are used as woodland or as habitat for wildlife. A few areas are used for pasture.

This soil is generally not suited to row crops or small grain. The main management concerns are wetness, the ponding, and the frequent flooding.

This soil is well suited to the production of water-tolerant hardwoods, such as water oak and sweetgum. Other species that grow well are yellow-poplar, water tupelo, and baldcypress. The soil is poorly suited to loblolly pine because of the flooding, the ponding, and the wetness. The main management concerns are the equipment limitation, seedling mortality, the windthrow hazard, and plant competition. Removing excess water, using wider tires on equipment, and bedding, planting, and harvesting trees during dry periods reduce the equipment limitation. The seedling mortality rate can be reduced by planting suitable species at the proper times and by planting on raised beds. Trees are subject to windthrow because of the restricted rooting depth. Competing vegetation can be controlled by proper site preparation, such as burning, spraying, cutting, and girdling.

This soil is very poorly suited to pasture. The main limitations are the frequent flooding, the ponding, and the wetness. Overcoming the flooding is generally not economically feasible.

This soil is generally not suited to most engineering uses related to homesite development because of the flooding and the ponding. These limitations are difficult and expensive to overcome.

KeB—Kenansville sand, 0 to 4 percent slopes. This very deep soil is on nearly level or gently sloping uplands of the Coastal Plain. It is well drained. Most areas are irregularly shaped. The areas are typically 15 to 70 acres in size but range from 5 to 100 acres. Slope lengths are typically 100 to 300 feet but range from 50 to 500 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 8 inches, brownish sand

Subsurface layer:
8 to 30 inches, brownish sand

Subsoil:
30 to 41 inches, yellowish sandy loam
41 to 52 inches, brownish loamy sand

Substratum:
52 to 70 inches, yellowish sand that has brownish mottles

Included with this soil in mapping are small areas of Alpin, Troup, and Vaucluse soils. Also included are small areas of soils that have slopes of more than 4 percent. Included soils make up about 15 percent of the map unit.

Important properties of the Kenansville soil—

Permeability: Moderate or moderately rapid
Available water capacity: Low
Depth to a seasonal high water table: More than 6 feet
Surface runoff: Slow
Hazard of water erosion: Slight
Depth to bedrock: More than 60 inches

Most areas are used as woodland or as habitat for wildlife. A few areas are used as pasture or cropland or for truck crops, such as watermelons, peaches, and cantaloupes.

This soil is moderately suited to row crops and small grain. The main management concerns are droughtiness, a low nutrient-holding capacity, and the hazard of soil blowing. Conservation tillage, contour farming, contour stripcropping with close-growing grains or legumes, cover crops, and crop residue management increase the available water capacity and the nutrient-holding capacity and reduce the hazard of soil blowing. Fertilizers are more efficient if applied at intervals rather than in a single application.

This soil is moderately well suited to the production of loblolly pine. Longleaf pine also grows well. The main management concerns are the equipment limitation and seedling mortality. The sandy surface layer restricts the use of wheeled equipment, especially when the soil is very dry. Using tracked or wide-tired vehicles helps to overcome the equipment limitation. The seedling mortality rate, which is caused by droughtiness, can be reduced by planting in furrows.

This soil is well suited to grasses, such as improved bermudagrass and bahiagrass. The main management concerns are the droughtiness and the low nutrient-holding capacity. Frequent applications of fertilizer and manure are needed. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during dry periods help to keep the pasture in good condition.

This soil is well suited to most engineering uses related to homesite development. The limitations on sites for septic tank absorption fields and for dwellings with or without basements are slight. Droughtiness is a hazard affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. It can be reduced by using well adapted plants and applying supplemental irrigation water during the growing season.

LuB—Lucy sand, 0 to 6 percent slopes. This very deep soil is on broad, nearly level ridgetops and gently sloping side slopes of the Coastal Plain. It is well drained. Most areas are irregularly shaped. The areas are typically 15 to 40 acres in size but range from 5 to 50 acres. Slope lengths are typically 200 to 300 feet but range from 50 to 400 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 7 inches, brownish sand

Subsurface layer:
7 to 23 inches, brownish sand and loamy sand

Subsoil:
23 to 30 inches, reddish sandy loam
30 to 72 inches, reddish sandy clay loam

Included with this soil in mapping are small areas of Ailey, Bonneau, Candor, and Troup soils. Also included are small areas of soils that have slopes of more than 6 percent. Included soils make up less than 15 percent of the map unit.

Important properties of the Lucy soil—

Permeability: Moderate
Available holding capacity: Low
Depth to a seasonal high water table: More than 6 feet
Surface runoff: Slow
Hazard of water erosion: Slight
Depth to bedrock: More than 60 inches

Most areas are used as pasture or woodland. A few areas are used as cropland or as habitat for wildlife.

This soil is moderately well suited to row crops and small grain. The main management concerns are droughtiness, a low nutrient-holding capacity, and the hazard of soil blowing. Conservation tillage, contour farming, contour stripcropping with close-growing grains or legumes, cover crops, and crop residue management increase the available water capacity and the nutrient-holding capacity and reduce the hazard of soil blowing. Fertilizers are more efficient if applied at intervals rather than in a single application.

This soil is moderately well suited to the production of loblolly pine. Longleaf pine also grows well. The main management concerns are the equipment limitation and seedling mortality. The sandy surface layer restricts the use of wheeled equipment, especially when the soil is very dry. Using tracked or wide-tired vehicles helps to overcome the equipment limitation. The seedling mortality rate, which is caused by droughtiness, can be reduced by planting in furrows.

This soil is moderately well suited to grasses, such as improved bermudagrass and bahiagrass. The main management concerns are the droughtiness and the low nutrient-holding capacity. Frequent applications of fertilizer and manure are needed. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during dry periods help to keep the pasture in good condition.

This soil is well suited to most engineering uses related to homesite development. The limitations on sites for septic tank absorption fields and for dwellings with or without basements are slight. Droughtiness is a hazard affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. It can be reduced by using well adapted plants and applying supplemental irrigation water during the growing season.

MaB—Mayodan silt loam, 2 to 6 percent slopes. This very deep soil is on broad, gently sloping ridgetops and side slopes in the Triassic Basin of the Piedmont. It is well drained. Most areas are irregularly shaped. The areas are typically 20 to 150 acres in size but range from 5 to 300 acres. Slope lengths are typically 100 to 300 feet but range from 50 to 500 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 7 inches, brownish silt loam

Subsoil:
7 to 33 inches, reddish silty clay
33 to 47 inches, brownish silty clay loam

Substratum:
47 to 60 inches, mottled yellowish, grayish, and reddish loam

Included with this soil in mapping are small areas of Badin, Claycreek, and Riverview soils. Also included are small areas of soils that have slopes of less than 2 percent or more than 6 percent and small areas of soils that have a surface layer of gravelly silt loam. Included soils make up about 15 percent of the map unit.

Important properties of the Mayodan soil—

Permeability: Moderate
Available water capacity: Moderate
Depth to a seasonal high water table: More than 6 feet
Surface runoff: Medium
Hazard of water erosion: Moderate
Depth to bedrock: More than 60 inches

Most areas are used as cropland. A few areas are used as pasture or woodland.

This soil is well suited to row crops and small grain. The main management concern is the hazard of erosion. Conservation tillage, contour farming, contour stripcropping, terraces, grassed waterways, and cover crops help to control runoff and erosion. Returning crop

residue to the soil helps to maintain good tilth and the content of organic matter.

This soil is moderately well suited to the production of loblolly pine. Other species that grow well are shortleaf pine and Virginia pine. Few limitations affect woodland use and management. Seedlings survive and grow well in areas of this soil.

This soil is moderately well suited to grasses, such as fescue. The main management concern is the hazard of erosion. A seedbed should be prepared on the contour or across the slope where practical. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is moderately well suited to most engineering uses related to homesite development. The restricted permeability is a management concern on sites for septic tank absorption fields. It can be overcome by increasing the size of the absorption field. The shrink-swell potential is a management concern on sites for dwellings with or without basements. The effects of shrinking and swelling can be minimized by using proper engineering designs and by backfilling with coarser textured material. The limitations affecting the establishment of lawn grasses, plants, and shrubs used in landscaping are slight.

MdC2—Mayodan silty clay loam, 6 to 10 percent slopes, eroded. This very deep soil is on narrow, strongly sloping ridgetops and side slopes in the Triassic Basin of the Piedmont. It is well drained. Most areas are irregularly shaped. The areas are typically 20 to 50 acres in size but range from 5 to 100 acres. Slope lengths are typically 100 to 250 feet but range from 50 to 450 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 5 inches, brownish silty clay loam

Subsoil:
5 to 33 inches, reddish silty clay
33 to 47 inches, brownish silty clay loam

Substratum:
47 to 60 inches, mottled yellowish, grayish, and reddish loam

Included with this soil in mapping are small areas of Badin, Claycreek, and Riverview soils. Also included are small areas of soils that have slopes of less than 6 percent or more than 10 percent and small areas of soils that have a surface layer of gravelly silt loam. Included soils make up about 15 percent of the map unit.

Important properties of the Mayodan soil—

Permeability: Moderate
Available water capacity: Moderate
Depth to a seasonal high water table: More than 6 feet
Surface runoff: Medium or rapid
Hazard of water erosion: Severe
Depth to bedrock: More than 60 inches

Most areas are used as cropland. A few areas are used for pasture.

This soil is poorly suited to row crops and small grain. The main management concern is the hazard of erosion and the effects of past erosion. Conservation tillage, contour farming, contour stripcropping, terraces, grassed waterways, and cover crops help to control runoff and erosion. Returning crop residue to the soil improves tilth and increases the content of organic matter.

This soil is moderately well suited to the production of loblolly pine. Other species that grow well are shortleaf pine and Virginia pine. The main management concerns are the equipment limitation and seedling mortality. Using tracked or wide-tired vehicles helps to overcome the equipment limitation during wet periods. The seedling mortality rate, which is caused by the effects of past erosion, can be reduced by bedding and planting in furrows.

This soil is moderately well suited to grasses, such as fescue. The main management concern is the hazard of erosion. A seedbed should be prepared on the contour or across the slope where practical. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is moderately well suited to most engineering uses related to homesite development. The restricted permeability and the slope are limitations on sites for septic tank absorption fields. They can be overcome by increasing the size of the absorption field, using drop boxes, and installing the absorption lines on the contour. The slope and the shrink-swell potential are limitations on sites for dwellings with or without basements. These limitations can be overcome by cutting and filling, by modifying the design of the building, and by backfilling with coarser textured material. The slope is a limitation affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. Plant cover can be established and maintained by applying fertilizer, seeding, mulching, and land shaping.

NoA—Noboco loamy sand, 0 to 2 percent slopes. This very deep, well drained soil is on low ridges in broad, flat areas and interstream divides of the Coastal

Plain. Most areas are irregularly shaped. The areas are typically 10 to 30 acres in size but range from 5 to 150 acres. Slope lengths are typically 100 to 350 feet but range from 50 to 500 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 9 inches, brownish loamy sand

Subsurface layer:
9 to 15 inches, brownish loamy sand

Subsoil:
15 to 22 inches, yellowish sandy clay loam
22 to 42 inches, yellowish sandy clay loam that has reddish and brownish mottles
42 to 65 inches, yellowish sandy clay loam that has brownish, reddish, and grayish mottles

Included with this soil in mapping are small areas of Goldsboro, Emporia, and Bonneau soils. Also included are small areas of soils that have slopes of more than 2 percent. Included soils make up about 15 percent of the map unit.

Important properties of the Noboco soil—

Permeability: Moderate
Available water capacity: Moderate
Depth to a seasonal high water table: 2.5 to 4.0 feet
Surface runoff: Slow
Hazard of water erosion: Slight
Depth to bedrock: More than 60 inches

Most areas are used as cropland. A few areas are used as pasture or woodland.

This soil is well suited to row crops and small grain. There are no major management concerns. Returning crop residue to the soil helps to maintain good tilth and the content of organic matter.

This soil is moderately well suited to the production of loblolly pine. Longleaf pine also grows well. The main management concern is plant competition. Seedlings survive and grow well if competing vegetation is controlled. Competing vegetation can be controlled by proper site preparation, such as burning, spraying, cutting, and girdling.

This soil is well suited to pasture grasses, such as bahiagrass and improved bermudagrass. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is moderately well suited to most engineering uses related to homesite development. Wetness is a management concern on sites for septic tank absorption fields. It can be overcome by using specially designed or modified conventional systems. The limitations on sites used for dwellings without basements are slight. The wetness is a limitation on sites used for dwellings with basements. Installing tile drains around footings helps to prevent wet basements. The limitations affecting the establishment of lawn grasses, plants, and shrubs are slight.

Og—Ogeechee sandy loam. This very deep soil is on broad, nearly level flats, in slight depressions, and in shallow drainageways on the Coastal Plain. It is poorly drained. The areas are typically 10 to 150 acres in size but range from 5 to 200 acres. Slope lengths are typically 100 to 300 feet but range from 50 to 500 feet. Slopes are less than 1 percent.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 8 inches, grayish sandy loam

Subsoil:
8 to 55 inches, grayish sandy clay loam that has yellowish and reddish mottles

Substratum:
55 to 65 inches, stratified grayish sandy loam and sandy clay loam

Included with this soil in mapping are small areas of Bibb and Pelion soils. Also included are small areas of soils that have a black surface layer more than 20 inches thick. Included soils make up about 15 percent of the map unit.

Important properties of the Ogeechee soil—

Permeability: Moderate
Available water capacity: Moderate
Seasonal high water table: At the surface to 1 foot below the surface
Surface runoff: Slow
Hazard of water erosion: Slight
Depth to bedrock: More than 60 inches

Most areas are used as woodland or pasture. A few areas are used as cropland or as habitat for wildlife.

This soil is well suited to row crops and small grain. Wetness is the main limitation. A system of tile drains and open ditches helps to remove excess water. Returning crop residue to the soil helps to maintain good tilth and the content of organic matter.

This soil is well suited to the production of loblolly pine. Other species that grow well are sweetgum and pond pine. The main management concerns are the equipment limitation, seedling mortality, the windthrow hazard, and plant competition. Removing excess water, using wider tires on equipment, and bedding, planting, and harvesting trees during dry periods reduce the equipment limitation. The seedling mortality rate can be reduced by planting suitable species at the proper times

and by planting on raised beds. Trees are subject to windthrow because of the restricted rooting depth. Competing vegetation can be controlled by proper site preparation, such as burning, spraying, cutting, and girdling.

This soil is well suited to grasses, such as bahiagrass. The wetness is the main limitation. Drainage can be improved by maintaining open ditches and surface drains. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is poorly suited to most engineering uses related to homesite development. It is generally not suited to septic tank absorption fields or dwellings with basements because the wetness is difficult and expensive to overcome. The wetness is also a concern on sites for dwellings without basements. It can be overcome by adding suitable fill material, shaping the area, and installing a drainage system. The wetness is a limitation affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. Installing a drainage system, shaping the land to increase the runoff rate, and using plants that can tolerate a seasonal high water table help to overcome the wetness.

PaC2—Pacolet clay loam, 6 to 10 percent slopes, eroded. This very deep soil is on narrow, strongly sloping ridgetops and side slopes of the Piedmont. It is well drained. Most areas are irregularly shaped. The areas are typically 50 to 100 acres in size but range from 5 to 150 acres. Slope lengths are typically 100 to 250 feet but range from 50 to 350 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 3 inches, reddish clay loam

Subsoil:
3 to 22 inches, reddish clay
22 to 32 inches, reddish loam

Substratum:
32 to 60 inches, reddish loam that has yellowish mottles

Included with this soil in mapping are small areas of Badin and Rion soils. Also included are small areas of soils that have slopes of more than 10 percent or less than 6 percent, small areas of soils that have sandy and loamy Coastal Plain sediments on the surface, and small areas of soils that have boulders on the surface. Included soils make up about 15 percent of the map unit.

Important properties of the Pacolet soil—

Permeability: Moderate
Available water capacity: Moderate
Depth to a seasonal high water table: More than 6 feet
Surface runoff: Rapid
Hazard of water erosion: Severe
Depth to bedrock: More than 60 inches

Most areas are used as woodland. A few areas are used as pasture or cropland.

This soil is poorly suited to row crops and small grain. The main management concerns are the hazard of erosion and the effects of past erosion. Conservation tillage, contour farming, contour stripcropping, terraces, grassed waterways, and cover crops help to control runoff and erosion. Returning crop residue to the soil improves tilth and increases the content of organic matter.

This soil is moderately well suited to the production of loblolly pine and shortleaf pine. Yellow-poplar also grows well. The main management concerns are the hazard of erosion, the equipment limitation, and seedling mortality. Using harvesting methods that minimize disturbance of the soil, establishing skid trails, log landings, and temporary logging roads so that they do not lead to drainageways, moving logs on the contour, and plowing fire lanes on the contour can reduce the hazard of erosion. Using tracked or wide-tired vehicles helps to overcome the equipment limitation during wet periods. The seedling mortality rate, which is caused by the effects of past erosion, can be reduced by bedding and planting in furrows.

This soil is poorly suited to pasture, but grasses, such as fescue, can be grown. The main management concern is the hazard of erosion. A seedbed should be prepared on the contour or across the slope where practical. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is moderately well suited to most engineering uses related to homesite development. The restricted permeability and the slope are limitations on sites for septic tank absorption fields. They can be overcome by increasing the size of the absorption field, using drop boxes, and installing the absorption lines on the contour. The slope is a limitation on sites for dwellings with or without basements. It can be overcome by cutting and filling and by modifying the design of the building. The slope is also a limitation affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. Plant cover can be established and maintained by applying fertilizer, seeding, mulching, and land shaping.

PaD2—Pacolet clay loam, 10 to 15 percent slopes, eroded. This very deep soil is on narrow, moderately steep side slopes near drainageways of the Piedmont. It is well drained. Most areas are irregularly shaped. The areas are typically 50 to 200 acres in size but range from 5 to 350 acres. Slope lengths are typically 100 to 200 feet but range from 50 to 250 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 3 inches, reddish clay loam

Subsoil:
3 to 22 inches, reddish clay
22 to 32 inches, reddish loam

Substratum:
32 to 60 inches, reddish loam that has yellowish mottles

Included with this soil in mapping are small areas of Badin and Rion soils. Also included are small areas of soils that have boulders and stones on the surface and areas of soils that have slopes of less than 10 percent or more than 15 percent. Included soils make up about 15 percent of the map unit.

Important properties of the Pacolet soil—

Permeability: Moderate
Available water capacity: Moderate
Depth to a seasonal high water table: More than 6 feet
Surface runoff: Rapid
Hazard of water erosion: Severe
Depth to bedrock: More than 60 inches

Most areas are used as pasture or woodland. A few areas are used as cropland.

This soil is poorly suited to row crops and small grain. The main management concerns are the hazard of erosion and the effects of past erosion. Conservation tillage, contour farming, contour stripcropping, terraces, grassed waterways, and cover crops help to control runoff and erosion. Returning crop residue to the soil improves tilth and increases the content of organic matter.

This soil is moderately well suited to the production of loblolly pine and shortleaf pine. Yellow-poplar also grows well. The main management concerns are the hazard of erosion, the equipment limitation, and seedling mortality. Using harvesting methods that minimize disturbance of the soil, establishing skid trails, log landings, and temporary logging roads so that they do not lead to drainageways, moving logs on the contour, and plowing fire lanes on the contour can reduce the hazard of erosion. Using tracked or wide-tired vehicles helps to overcome the equipment limitation during wet periods. The seedling mortality rate, which is caused by the effects of past erosion, can be reduced by bedding and planting in furrows.

This soil is poorly suited to pasture, but grasses, such as fescue, can be grown. The main management concerns are the slope and the hazard of erosion. A seedbed should be prepared on the contour or across the slope where practical. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is moderately well suited to most engineering uses related to homesite development. The restricted permeability and the slope are limitations on sites for septic tank absorption fields. They can be overcome by increasing the size of the absorption field, using drop boxes, and installing the absorption lines on the contour. The slope is also a limitation on sites for dwellings with or without basements. It can be overcome by cutting and filling and by modifying the design of the building. The slope is a limitation affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. Plant cover can be established and maintained by applying fertilizer, seeding, mulching, and land shaping.

PaE2—Pacolet clay loam, 15 to 25 percent slopes, eroded. This very deep soil is on steep side slopes near drainageways of the Piedmont. It is well drained. Most areas are irregularly shaped. The areas are typically 50 to 100 acres in size but range from 5 to 250 acres. Slope lengths are typically 100 to 200 feet but range from 50 to 250 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 3 inches, reddish clay loam

Subsoil:
3 to 22 inches, reddish clay
22 to 32 inches, reddish loam

Substratum:
32 to 60 inches, reddish loam that has yellowish mottles

Included with this soil in mapping are small areas of Badin and Rion soils. Also included are small areas of soils that have boulders and stones on the surface and areas of soils that have slopes of less than 15 percent or more than 25 percent. Included soils make up about 15 percent of the map unit.

Important properties of the Pacolet soil—

Permeability: Moderate
Available water capacity: Moderate
Depth to a seasonal high water table: More than 6 feet

Surface runoff: Rapid
Hazard of water erosion: Severe
Depth to bedrock: More than 60 inches

Most areas are used as pasture or woodland. Very few areas are used as cropland.

This soil is generally not suited to row crops or small grain. The main management concerns are the hazard of erosion, the effects of past erosion, and the slope.

This soil is moderately well suited to the production of loblolly pine and shortleaf pine. Yellow-poplar also grows well. The main management concerns are the hazard of erosion, the equipment limitation, and seedling mortality. Using harvesting methods that minimize disturbance of the soil, establishing skid trails, log landings, and temporary logging roads so that they do not lead to drainageways, moving logs on the contour, and plowing fire lanes on the contour can reduce the hazard of erosion and the equipment limitation. The seedling mortality rate, which is caused by the effects of past erosion, can be reduced by bedding and planting in furrows.

This soil is poorly suited to pasture, but grasses, such as fescue, can be grown. The main management concerns are the slope and the hazard of erosion. A seedbed should be prepared on the contour or across the slope where practical. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is poorly suited to most engineering uses related to homesite development. The restricted permeability and the slope are limitations on sites for septic tank absorption fields. They can be overcome by increasing the size of the absorption field, using step-down boxes between the absorption lines, and installing the lines on the contour. The slope is a limitation on sites for dwellings with or without basements. It can be overcome by cutting and filling and by modifying the design of the building. The slope is also a limitation affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. Plant cover can be established and maintained by applying fertilizer, seeding, mulching, and land shaping.

PgB—Pageland silt loam, 2 to 6 percent slopes. This moderately deep soil is on gently sloping interstream divides and around the head of drainageways in the Piedmont. It is moderately well drained. Most areas are irregularly shaped. The areas are typically 50 to 100 acres in size but range from 5 to 300 acres. Slope lengths are typically 100 to 200 feet but range from 50 to 300 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 7 inches, brownish silt loam

Subsoil:
7 to 19 inches, yellowish silty clay loam that has brownish mottles
19 to 26 inches, brownish silty clay loam that has grayish mottles
26 to 33 inches, mottled brownish, yellowish, and grayish silty clay loam

Substratum:
33 inches, multicolored, weathered, fractured slate

Included with this soil in mapping are small areas of Alamance and Goldston soils. Also included are small areas of soils that have a subsoil of sandy clay loam and small areas of soils that have slopes of less than 2 percent or more than 6 percent. Included soils make up about 15 percent of the map unit.

Important properties of the Pageland soil—

Permeability: Moderately slow
Available water capacity: Low
Seasonal high water table: Perched at a depth of 1.5 to 3.0 feet
Surface runoff: Medium
Hazard of water erosion: Moderate
Depth to soft bedrock: 20 to 40 inches
Depth to hard bedrock: More than 60 inches

Most areas are used as cropland or woodland. A few areas are used for pasture.

This soil is moderately well suited to row crops and small grain. The main management concern is the hazard of erosion. Conservation tillage, contour farming, contour stripcropping, terraces, grassed waterways, and cover crops help to control runoff and erosion.

This soil is poorly suited to the production of loblolly pine. Shortleaf pine grows well. The main management concern is plant competition. Seedlings survive and grow well if competing vegetation is controlled. Competing vegetation can be controlled by proper site preparation, such as burning, spraying, cutting, and girdling.

This soil is moderately well suited to grasses, such as improved bermudagrass and fescue. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is poorly suited to most engineering uses related to homesite development. It is generally not suited to use as a site for dwellings with basements because the wetness is difficult and expensive to overcome. The wetness, the depth to bedrock, and the restricted permeability are management concerns on

sites for septic tank absorption fields. They can be overcome by using specially designed or modified conventional systems and by increasing the size of the absorption field. The wetness is a management concern on sites for dwellings without basements. It can be overcome by adding suitable fill material, shaping the area, and installing a drainage system. The wetness is also a limitation affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. Plants that can tolerate a seasonal high water table should be selected.

PlA—Pelion loamy sand, 0 to 2 percent slopes. This very deep soil is on nearly level ridges and foot slopes of the Coastal Plain and Sand Hills. It is moderately well drained. Most areas are irregularly shaped. The areas are typically 10 to 20 acres in size but range from 5 to 30 acres. Slope lengths are typically 150 to 300 feet but range from 50 to 1,000 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 7 inches, brownish loamy sand

Subsurface layer:
7 to 14 inches, brownish loamy sand

Subsoil:
14 to 19 inches, yellowish sandy clay loam
19 to 45 inches, yellowish sandy clay loam that is firm, dense, compact, and brittle in part of the mass and has grayish mottles

Substratum:
45 to 66 inches, stratified yellowish, grayish, and reddish, sandy and loamy material

Included with this soil in mapping are small areas of Ailey, Candor, and Vaucluse soils. Also included are small areas of soils that have slopes of more than 2 percent, areas of severely eroded soils, and small seepy areas. Included areas make up about 15 percent of the map unit.

Important properties of the Pelion soil—

Permeability: Moderately slow or slow
Available water capacity: Low
Seasonal high water table: Perched at a depth of 1.0 to 2.5 feet
Surface runoff: Slow
Hazard of water erosion: Slight
Depth to bedrock: More than 60 inches

Most areas are used as woodland or as habitat for wildlife. A few areas are used as cropland or pasture.

This soil is moderately well suited to row crops and small grain. The main management concerns are wetness and the restricted rooting depth. Because of the restricted permeability, shallow surface drains and open ditches commonly are used to lower the water table. Returning crop residue to the soil helps to maintain good tilth and the content of organic matter.

This soil is moderately well suited to the production of loblolly pine. Longleaf pine also grows well. The main management concerns are the equipment limitation and the windthrow hazard. The sandy surface layer restricts the use of wheeled equipment, especially when the soil is very dry. Using tracked or wide-tired vehicles helps to overcome the equipment limitation. Trees are subject to windthrow because of the restricted rooting depth. Seedlings survive and grow well in areas of this soil.

This soil is moderately well suited to grasses, such as bahiagrass and improved bermudagrass. The main limitation is the restricted rooting depth. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during dry periods help to keep the pasture in good condition.

This soil is poorly suited to most engineering uses related to homesite development. It is generally not suited to use as a site for dwellings with basements because the wetness is difficult and expensive to overcome. The wetness and the restricted permeability are management concerns on sites for septic tank absorption fields. They can be overcome by using specially designed or modified conventional systems and by increasing the size of the absorption field. The wetness is a management concern on sites for dwellings without basements. It can be overcome by adding suitable fill material, shaping the area, and installing a drainage system. The wetness and droughtiness are limitations affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. Plants that can tolerate a seasonal high water table and the droughtiness should be selected if drainage and irrigation are not provided.

PlB—Pelion loamy sand, 2 to 6 percent slopes. This very deep soil is on broad, gently sloping ridgetops and side slopes of the Coastal Plain and Sand Hills. It is moderately well drained. Most areas are irregularly shaped. The areas are typically 10 to 30 acres in size but range from 5 to 150 acres. Slope lengths are typically 150 to 300 feet but range from 50 to 500 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 7 inches, brownish loamy sand

Subsurface layer:
7 to 14 inches, brownish loamy sand

Subsoil:
14 to 19 inches, yellowish sandy clay loam

19 to 45 inches, yellowish sandy clay loam that is firm, dense, compact, and brittle in part of the mass and has grayish mottles

Substratum:
45 to 66 inches, stratified yellowish, grayish, and reddish, sandy and loamy material

Included with this soil in mapping are small areas of Ailey, Candor, and Vaucluse soils. Also included are small areas of soils that have slopes of more than 6 percent, areas of severely eroded soils, and small seepy areas. Included areas make up about 15 percent of the map unit.

Important properties of the Pelion soil—

Permeability: Moderately slow or slow
Available water capacity: Low
Seasonal high water table: Perched at a depth of 1.0 to 2.5 feet
Surface runoff: Medium
Hazard of water erosion: Moderate
Depth to bedrock: More than 60 inches

Most areas are used as woodland or as habitat for wildlife. A few areas are used as cropland or pasture.

This soil is poorly suited to row crops and small grain. The main management concerns are a restricted rooting depth and the hazard of erosion. Conservation tillage, contour farming, contour stripcropping, terraces, grassed waterways, and cover crops help to control runoff and erosion and conserve moisture.

This soil is moderately well suited to the production of loblolly pine. Longleaf pine also grows well. The main management concerns are the equipment limitation and the windthrow hazard. The sandy surface layer restricts the use of wheeled equipment, especially when the soil is very dry. Using tracked or wide-tired vehicles helps to overcome the equipment limitation. Trees are subject to windthrow because of the restricted rooting depth. Seedlings survive and grow well in areas of this soil.

This soil is moderately well suited to grasses, such as bahiagrass and improved bermudagrass. The main limitation is the restricted rooting depth. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during dry periods help to keep the pasture in good condition.

This soil is poorly suited to most engineering uses related to homesite development. It is generally not suited to dwellings with basements because the wetness is difficult and expensive to overcome. The wetness and the restricted permeability are management concerns on sites for septic tank absorption fields. They can be overcome by using specially designed or modified conventional systems and by increasing the size of the absorption field. The wetness is a management concern on sites for dwellings without basements. It can be overcome by adding suitable fill material, shaping the area, and installing a drainage system. The wetness and droughtiness are limitations affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. Plants that can tolerate a seasonal high water table and the droughtiness should be selected if drainage and irrigation are not provided.

PIC—Pelion loamy sand, 6 to 10 percent slopes. This very deep soil is on narrow, strongly sloping ridgetops and side slopes of the Coastal Plain and Sand Hills. It is moderately well drained. Most areas are long and narrow. The areas are typically 10 to 30 acres in size but range from 5 to 100 acres. Slope lengths are typically 100 to 200 feet but range from 50 to 350 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 7 inches, brownish loamy sand

Subsurface layer:
7 to 14 inches, brownish loamy sand

Subsoil:
14 to 19 inches, yellowish sandy clay loam
19 to 45 inches, yellowish sandy clay loam that is firm, dense, compact, and brittle in part of the mass and has grayish mottles

Substratum:
45 to 66 inches, stratified yellowish, grayish, and reddish, sandy and loamy material

Included with this soil in mapping are small areas of Ailey, Candor, and Vaucluse soils. Also included are small areas of soils that have slopes of more than 10 percent, small areas of severely eroded soils, and small seepy areas. Included areas make up about 15 percent of the map unit.

Important properties of the Pelion soil—

Permeability: Moderately slow or slow
Available water capacity: Low
Seasonal high water table: Perched at a depth of 1.0 to 2.5 feet
Surface runoff: Medium
Hazard of water erosion: Severe
Depth to bedrock: More than 60 inches

Most areas are used as woodland or as habitat for wildlife. A few areas are used as cropland or pasture.

This soil is poorly suited to row crops and small grain. The main management concerns are the hazard of erosion and a restricted rooting depth. Conservation tillage, contour farming, contour stripcropping, terraces,

grassed waterways, and cover crops help to control runoff and erosion and conserve moisture.

This soil is moderately well suited to the production of loblolly pine. Longleaf pine also grows well. The main management concerns are the equipment limitation and the windthrow hazard. The sandy surface layer restricts the use of wheeled equipment, especially when the soil is very dry. Using tracked or wide-tired vehicles helps to overcome the equipment limitation. Trees are subject to windthrow because of the restricted rooting depth. Seedlings survive and grow well in areas of this soil.

This soil is moderately well suited to grasses, such as bahiagrass and improved bermudagrass. The main management concerns are the restricted rooting depth and the hazard of erosion. A seedbed should be prepared on the contour or across the slope where practical. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during dry periods help to keep the pasture in good condition.

This soil is very poorly suited to most engineering uses related to homesite development. It is generally not suited to use as a site for dwellings with basements because the wetness is difficult and expensive to overcome. The wetness and the restricted permeability are management concerns on sites for septic tank absorption fields. They can be overcome by using specially designed or modified conventional systems and by increasing the size of the absorption field. The wetness is a management concern on sites for dwellings without basements. It can be overcome by adding suitable fill material, shaping the area, and installing a drainage system. The wetness, droughtiness, and the slope are limitations affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. Plants that can tolerate a seasonal high water table and the droughtiness should be selected if drainage and irrigation are not provided. Plant cover can be established and maintained by applying fertilizer, seeding, mulching, and land shaping.

PID—Pelion loamy sand, 10 to 15 percent slopes. This very deep soil is on moderately steep side slopes of the Coastal Plain and Sand Hills. It is moderately well drained. Most areas are long and narrow. The areas are typically 10 to 20 acres in size but range from 5 to 150 acres. Slope lengths are typically 100 to 300 feet but range from 50 to 350 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 7 inches, brownish loamy sand

Subsurface layer:
7 to 14 inches, brownish loamy sand

Subsoil:
14 to 19 inches, yellowish sandy clay loam
19 to 45 inches, yellowish sandy clay loam that is firm, dense, compact, and brittle in part of the mass and has grayish mottles

Substratum:
45 to 66 inches, stratified yellowish, grayish, and reddish, sandy and loamy material

Included with this soil in mapping are small areas of Ailey, Candor, and Vaucluse soils. These soils make up about 15 percent of the map unit.

Important properties of the Pelion soil—

Permeability: Moderately slow or slow
Available water capacity: Low
Seasonal high water table: Perched at a depth of 1.0 to 2.5 feet
Surface runoff: Medium
Hazard of water erosion: Severe
Depth to bedrock: More than 60 inches

Most areas are used as woodland or as habitat for wildlife. A few areas are used as cropland or pasture.

This soil is generally not suited to row crops or small grain. The main management concerns are the hazard of erosion, the restricted rooting depth, and the slope.

This soil is moderately well suited to the production of loblolly pine. Longleaf pine also grows well. The main management concerns are the equipment limitation and the windthrow hazard. The sandy surface layer restricts the use of wheeled equipment, especially when the soil is very dry. Using tracked or wide-tired vehicles helps to overcome the equipment limitation. Trees are subject to windthrow because of the restricted rooting depth. Seedlings survive and grow well in areas of this soil.

This soil is poorly suited to pasture, but grasses, such as bahiagrass and improved bermudagrass, can be grown. The main management concerns are the restricted rooting depth, the slope, and the hazard of erosion. A seedbed should be prepared on the contour or across the slope where practical. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during dry periods help to keep the pasture in good condition.

This soil is very poorly suited to most engineering uses related to homesite development. It is generally not suited to use as a site for dwellings with basements because the wetness is difficult and expensive to overcome. The wetness and the restricted permeability are management concerns on sites for septic tank absorption fields. They can be overcome by using specially designed or modified conventional systems and by increasing the size of the absorption field. The

wetness is a management concern on sites for dwellings without basements. It can be overcome by adding suitable fill material, shaping the area, and installing a drainage system. The wetness, droughtiness, and the slope are limitations affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. Plants that can tolerate a seasonal high water table and the droughtiness should be selected if drainage and irrigation are not provided. Plant cover can be established and maintained by applying fertilizer, seeding, mulching, and land shaping.

PxF—Poindexter fine sandy loam, 15 to 35 percent slopes. This moderately deep soil is on steep, narrow ridges and side slopes of the Piedmont. It is well drained. Most areas are irregularly shaped. The areas are typically 50 to 100 acres in size but range from 35 to 350 acres. Slope lengths are typically 100 to 200 feet but range from 50 to 250 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 5 inches, brownish fine sandy loam

Subsoil:
5 to 17 inches, brownish loam that has reddish mottles

Substratum:
17 to 24 inches, yellowish silt loam that has reddish and grayish mottles
24 to 60 inches, multicolored, weathered, basic rock

Included with this soil in mapping are small areas of Goldston and Pacolet soils. Also included are small areas of soils that have a surface layer of gravelly fine sandy loam, small areas of soils that have slopes of more than 25 percent, and small areas of soils that have a subsoil of clay. Included soils make up about 15 percent of the map unit.

Important properties of the Poindexter soil—

Permeability: Moderate
Available water capacity: Low
Depth to a seasonal high water table: More than 6 feet
Surface runoff: Medium or high
Hazard of water erosion: Severe
Depth to soft bedrock: 20 to 40 inches
Depth to hard bedrock: More than 60 inches

Most areas of this soil are used as woodland. A few areas are used for pasture.

This soil is generally not suited to row crops or small grain. The main management concerns are the hazard of erosion and the slope.

This soil is moderately well suited to the production of loblolly pine. Other species that grow well are shortleaf pine and Virginia pine. The main management concerns are the hazard of erosion and the equipment limitation. Using harvesting methods that minimize disturbance of the soil, establishing skid trails, log landings, and temporary logging roads so that they do not lead to drainageways, moving logs on the contour, and plowing fire lanes on the contour can reduce the hazard of erosion and the equipment limitation. Seedlings survive and grow well in areas of this soil.

This soil is poorly suited to pasture, but grasses, such as fescue, can be grown. The main management concerns are the slope and the hazard of erosion. A seedbed should be prepared on the contour or across the slope where practical. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is poorly suited to most engineering uses related to homesite development. The slope is a limitation on sites for septic tank absorption fields. It can be overcome by using step-down boxes between the absorption lines and installing the lines on the contour. The depth to bedrock also is a limitation on sites for septic tank absorption fields. It can be overcome by using a special layout and by increasing the size of the absorption field. The slope is a limitation on sites for dwellings with or without basements. It can be overcome by cutting and filling and by modifying the design of the building. The slope is also a limitation affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. Plant cover can be established and maintained by applying fertilizer, seeding, mulching, and land shaping.

Qz—Quartzipsamments, sloping. This map unit is in areas where soil has been deposited, disturbed, or removed by machinery to a depth of more than 2 feet. The soils are excessively drained. Most areas are irregularly shaped. The areas are typically 50 to 100 acres in size but range from 3 to 200 acres. Slopes are typically 2 to 8 percent.

These soils are sandy material that is being removed for commercial use or for use as fill material. They are generally sand or loamy sand and are variable in color.

Included in mapping are small areas of Ailey, Candor, and Troup soils and Udorthents. Also included are small areas of undisturbed soils and small areas of soils that have a gravelly surface layer. Included soils make up less than 20 percent of the total acreage.

Characteristics of this map unit are so variable that onsite investigation is needed to determine the soil properties that affect a particular use.

Most areas of these soils do not support vegetation. Some areas are used as woodland.

These soils are generally not suited to row crops or small grain.

These soils are poorly suited to the production of loblolly pine. Virginia pine grows well. If the soils are used as woodland, reshaping may be needed. The main management concerns are the equipment limitation and seedling mortality. The sandy surface layer restricts the use of wheeled equipment, especially when the soils are very dry. Using tracked or wide-tired vehicles helps to overcome the equipment limitation. The seedling mortality rate, which is caused by droughtiness, can be reduced by planting in furrows.

These soils are moderately well suited to grasses, such as bahiagrass and improved bermudagrass. If the soils are used as pasture, reshaping may be needed. Frequent applications of fertilizer and manure are needed. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during dry periods help to keep the pasture in good condition.

These soils are poorly suited to most engineering uses related to homesite development. Onsite investigation is needed to determine the suitability for any proposed use.

RnB—Rion sandy loam, 2 to 6 percent slopes. This very deep soil is on gently sloping ridgetops and side slopes of the Piedmont. It is well drained. Most areas are irregularly shaped. The areas are typically 50 to 150 acres in size but range from 5 to 200 acres. Slope lengths are typically 150 to 300 feet but range from 100 to 500 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 3 inches, brownish sandy loam

Subsurface layer:
3 to 15 inches, yellowish sandy loam

Subsoil:
15 to 35 inches, yellowish sandy clay loam

Substratum:
35 to 60 inches, mottled yellowish and white sandy loam

Included with this soil in mapping are small areas of Ailey, Badin, Cecil, and Poindexter soils. Also included are small areas of soils that have slopes of more than 6 percent or less than 2 percent; areas of soils that have cobbles, stones, and boulders on the surface; and areas of soils that have a surface layer of coarse sandy loam. Included soils make up about 15 percent of the map unit.

Important properties of the Rion soil—

Permeability: Moderate
Available water capacity: Moderate
Depth to a seasonal high water table: More than 6 feet
Surface runoff: Medium
Hazard of water erosion: Moderate
Depth to bedrock: More than 60 inches

Most areas are used as cropland. A few areas are used for pasture.

This soil is moderately well suited to row crops and small grain. The main management concern is the hazard of erosion. Conservation tillage, contour farming, contour stripcropping, terraces, grassed waterways, and cover crops help to control runoff and erosion.

This soil is moderately well suited to the production of loblolly pine. Other species that grow well are shortleaf pine and yellow-poplar. Few limitations affect woodland use and management. Seedlings survive and grow well in areas of this soil.

This soil is moderately well suited to grasses, such as fescue and improved bermudagrass. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during dry periods help to keep the pasture in good condition.

This soil is well suited to most engineering uses related to homesite development. The limitations on sites for septic tank absorption fields and for dwellings with or without basements are slight. Droughtiness is a hazard affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. It can be reduced by using well adapted plants and applying supplemental irrigation water during the growing season.

RoD—Rion sandy loam, 6 to 15 percent slopes, very bouldery. This very deep soil is on strongly sloping or moderately steep ridgetops and side slopes adjacent to streams and flood plains of the Piedmont. It is well drained. Boulders cover as much as 3 percent of the surface area. Most areas are irregularly shaped. The areas are typically 50 to 100 acres in size but range from 5 to 200 acres. Slope lengths are typically 100 to 200 feet but range from 50 to 250 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 3 inches, brownish sandy loam

Subsurface layer:
3 to 15 inches, yellowish sandy loam

Subsoil:
15 to 35 inches, yellowish sandy clay loam

Substratum:
35 to 60 inches, mottled yellowish and white sandy loam

Included with this soil in mapping are small areas of Badin, Cecil, and Poindexter soils. Also included are small areas of soils that have slopes of more than 15 percent and areas of soils that have a surface layer of coarse sandy loam. Included soils make up about 15 percent of the map unit.

Important properties of the Rion soil—

Permeability: Moderate
Available water capacity: Moderate
Depth to a seasonal high water table: More than 6 feet
Surface runoff: Medium
Hazard of water erosion: Severe
Depth to bedrock: More than 60 inches

Most areas are used as woodland. A few areas are used for pasture.

This soil is generally not suited to row crops or small grain. The main management concerns are boulders and stones on the surface and the hazard of erosion. The boulders and stones on the surface interfere with the use of tillage and harvesting equipment.

This soil is moderately well suited to the production of loblolly pine. Other species that grow well are shortleaf pine and white oak. The main management concerns are the equipment limitation and seedling mortality. The boulders and stones on the surface can interfere with planting, harvesting, yarding, and other activities involving the use of equipment (fig. 8). The seedling mortality rate, which is caused by droughtiness, can be reduced by planting in furrows.

This soil is poorly suited to pasture, but grasses, such as fescue and improved bermudagrass, can be grown. The main limitations are the boulders on the surface and the hazard of erosion. The boulders and stones interfere with the use of equipment. A seedbed should be prepared on the contour or across the slope where practical. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during dry periods help to keep the pasture in good condition.

This soil is poorly suited to most engineering uses related to homesite development. The slope is a limitation on sites for septic tank absorption fields. It is also a limitation on sites for dwellings with or without basements. It can be overcome by cutting and filling and by modifying the design of the building. The slope and the boulders on the surface are management concerns affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. These limitations are difficult and expensive to overcome.

RoF—Rion sandy loam, 15 to 40 percent slopes, very bouldery. This very deep soil is on moderately steep or steep side slopes adjacent to streams and flood plains of the Piedmont. It is well drained. Boulders cover as much as 3 percent of the surface area. Most areas are irregularly shaped. The areas are typically 75 to 200 acres in size but range from 5 to 300 acres. Slope lengths are typically 100 to 150 feet but range from 50 to 200 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 3 inches, brownish sandy loam

Subsurface layer:
3 to 15 inches, yellowish sandy loam

Subsoil:
15 to 35 inches, yellowish sandy clay loam

Substratum:
35 to 60 inches, mottled yellowish and white sandy loam

Included with this soil in mapping are small areas of Badin, Cecil, and Poindexter soils. Also included are small areas of soils that have slopes of less than 15 percent and areas of soils that have a surface layer of coarse sandy loam. Included soils make up about 25 percent of the map unit.

Important properties of the Rion soil—

Permeability: Moderate
Available water capacity: Moderate
Depth to a seasonal high water table: More than 6 feet
Surface runoff: Rapid
Hazard of water erosion: Severe
Depth to bedrock: More than 60 inches

Most areas are used as woodland. A few areas are used for pasture.

This soil is generally not suited to row crops or small grain. The main management concerns are boulders and stones on the surface, the hazard of erosion, and the slope. The boulders and stones on the surface interfere with the use of tillage and harvesting equipment.

This soil is moderately well suited to the production of loblolly pine. Other species that grow well are shortleaf pine and white oak. The main management concerns are the hazard of erosion, the equipment limitation, and seedling mortality. Using harvesting methods that minimize disturbance of the soil, establishing skid trails, log landings, and temporary logging roads so that they do not lead to drainageways, moving logs on the contour, and plowing fire lanes on

Figure 8.—Boulders and stones on the surface in an area of Rion sandy loam, 6 to 15 percent slopes, very bouldery.

the contour can reduce the hazard of erosion and the equipment limitation. The boulders and stones on the surface can interfere with planting, harvesting, yarding, and other activities involving the use of equipment. The seedling mortality rate, which is caused by droughtiness, can be reduced by planting in furrows.

This soil is very poorly suited to pasture. The main management concerns are the boulders on the surface, the slope, and the hazard of erosion. The boulders and stones interfere with the use of equipment.

This soil is generally not suited to most engineering uses related to homesite development. The slope and the boulders and large stones are management concerns on sites for septic tank absorption fields and for dwellings with or without basements. These limitations are difficult and expensive to overcome.

Rv—Riverview silt loam, frequently flooded. This very deep soil is on nearly level natural levees and narrow, long flood plains along major and minor streams of the Piedmont and Coastal Plain. It is well drained and is subject to frequent flooding. Most areas are long and narrow. The areas are typically 20 to 50 acres in size but range from 5 to more than 100 acres. Slope lengths are typically 100 to 300 feet but range from 50 to 600 feet. Slopes are generally 0 to 2 percent.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 3 inches, brownish silt loam

Subsoil:
3 to 38 inches, brownish loam and silty clay loam

Substratum:
38 to 60 inches, brownish loam

Included with this soil in mapping are small areas of Bibb, Chewacla, and Chastain soils. Also included are small areas of soils that are sandy throughout and small areas of soils near streams that have slopes of more than 2 percent. Included soils make up about 15 percent of the map unit.

Important properties of the Riverview soil—

Permeability: Moderate
Available water capacity: High
Depth to a seasonal high water table: 3 to 5 feet
Surface runoff: Slow
Hazard of water erosion: Slight
Depth to bedrock: More than 60 inches
Flooding: Frequent, for brief periods

Most areas are used as woodland. A few areas are used as cropland or pasture.

This soil is moderately well suited to row crops and small grain. The main management concern is the frequent flooding. Overcoming the flooding is generally not economically feasible. The effects of flooding can be reduced by using short-season crops that are planted after the spring flooding and harvested before the fall and winter flooding. Returning crop residue to the soil helps to maintain good tilth and the content of organic matter.

This soil is well suited to the production of loblolly pine. Other species that grow well are yellow-poplar and sweetgum. The main management concern is plant competition. Seedlings survive and grow well if competing vegetation is controlled. Competing vegetation can be controlled by proper site preparation, such as burning, spraying, cutting, and girdling.

This soil is moderately well suited to grasses, such as bahiagrass and improved bermudagrass. The main management concern is the frequent flooding. Overcoming the flooding is generally not economically feasible. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is generally not suited to most engineering uses related to homesite development. The flooding and the wetness are difficult and expensive to overcome.

Sm—Smithboro loam. This very deep soil is on broad, nearly level interstream divides of the Coastal Plain. It is somewhat poorly drained. Most areas are irregularly shaped. The areas are typically 10 to 50 acres in size but range from 5 to 150 acres. Slope lengths are typically 100 to 400 feet but range from 50 to 500 feet. Slopes are 0 to 2 percent.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 8 inches, brownish loam

Subsoil:
8 to 13 inches, mottled brownish and grayish clay loam
13 to 41 inches, grayish clay loam and clay that have brownish and reddish mottles
41 to 65 inches, mottled grayish, yellowish, and reddish clay loam and clay
65 to 80 inches, mottled grayish, brownish, and reddish clay

Included with this soil in mapping are small areas of Coxville, Goldsboro, and Ogeechee soils. These soils make up about 15 percent of the map unit.

Important properties of the Smithboro soil—

Permeability: Slow
Available water capacity: High
Depth to a seasonal high water table: 0.5 foot to 1.5 feet
Surface runoff: Slow
Hazard of water erosion: Slight
Depth to bedrock: More than 60 inches

Most areas are used as woodland or cropland. A few areas are used for pasture.

This soil is well suited to row crops and small grain (fig. 9). The main hazard is wetness. Because of the slow permeability, shallow surface drains and open ditches commonly are used to lower the water table. Returning crop residue to the soil helps to maintain good tilth and the content of organic matter.

This soil is well suited to the production of loblolly pine. Other species that grow well are sweetgum and American sycamore. The main management concerns are the equipment limitation, seedling mortality, the windthrow hazard, and plant competition. Removing excess water, using wider tires on equipment, and bedding, planting, and harvesting trees during dry periods reduce the equipment limitation. The seedling mortality rate can be reduced by planting suitable species at the proper times and by planting on raised beds. Trees are subject to windthrow because of the restricted rooting depth. Competing vegetation can be controlled by proper site preparation, such as burning, spraying, cutting, and girdling.

This soil is well suited to grasses, such as bahiagrass and fescue. The main management concern is wetness. Drainage can be improved by maintaining open ditches and surface drains. Proper stocking rates,

Figure 9.—Corn in an area of Smithboro loam.

pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.This soil is poorly suited to most engineering uses related to homesite development. It is generally not suited to use as a site for dwellings with basements because the wetness is difficult and expensive to overcome. The wetness and the restricted permeability are management concerns on sites for septic tank absorption fields. They can be overcome by using specially designed or modified conventional systems and by increasing the size of the absorption field. The wetness is a management concern on sites for dwellings without basements. It can be overcome by adding suitable fill material, shaping the area, and installing a drainage system. The wetness is also a limitation affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. It limits the selection of desirable species and encourages competition from undesirable species. Installing a drainage system, shaping the land to increase the runoff rate, and using plants that can tolerate a seasonal high water table help to overcome the wetness.

TeA—Tetotum sandy loam, 0 to 2 percent slopes. This very deep soil is on nearly level stream terraces on the Piedmont and Coastal Plain. It is moderately well drained and is subject to rare flooding. Most areas are irregularly shaped. The areas are typically 10 to 20 acres in size but range from 5 to 40 acres. Slope lengths are typically 10 to 350 feet but range from 50 to 500 feet.

Typically, the layers of this soil are as follows—

Surface layer:

0 to 5 inches, brownish sandy loam

Subsoil:

5 to 8 inches, yellowish loam

8 to 23 inches, yellowish clay loam that has reddish mottles

23 to 34 inches, yellowish clay loam that has brownish, reddish, and grayish mottles

34 to 58 inches, grayish clay loam that has brownish and reddish mottles

Substratum:

58 to 65 inches, mottled grayish, brownish, and yellowish sandy clay loam

Included with this soil in mapping are small areas of Alaga, Chewacla, and Wickham soils. Also included are small areas of soils that have a surface layer of gravelly sandy loam. Included soils make up about 15 percent of the map unit.

Important properties of the Tetotum soil—

Permeability: Moderate
Available water capacity: High
Depth to a seasonal high water table: 1.5 to 2.5 feet
Surface runoff: Slow
Hazard of water erosion: Slight
Depth to bedrock: More than 60 inches
Flooding: Rare, during periods of abnormally high rainfall

Most areas are used as cropland. A few areas are used as woodland or pasture.

This soil is well suited to row crops and small grain (fig. 10). A system of tile drains and open ditches helps to remove excess water. Returning crop residue to the soil helps to maintain good tilth and the content of organic matter.

This soil is moderately well suited to the production of loblolly pine. Other species that grow well are yellow-poplar and sweetgum. The main management concern is plant competition. Seedlings survive and grow well if competing vegetation is controlled. Competing vegetation can be controlled by proper site preparation, such as burning, spraying, cutting, and girdling.

This soil is well suited to grasses, such as bahiagrass and fescue. The main management concern is wetness. Drainage can be improved by maintaining open ditches and surface drains. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is poorly suited to most engineering uses

Figure 10.—No-till soybeans planted in the stubble of harvested wheat in an area of Tetotum sandy loam, 0 to 2 percent slopes.

related to homesite development. It is generally not suited to use as a site for dwellings with or without basements because overcoming the flooding and the wetness is difficult and expensive. The wetness is a management concern on sites for septic tank absorption fields. It can be overcome by using specially designed or modified conventional systems. The wetness is also a limitation affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. Installing a drainage system, shaping the land to increase the runoff rate, and using plants that can tolerate a seasonal high water table help to overcome the wetness.

TeB—Tetotum sandy loam, 2 to 6 percent slopes. This very deep soil is on gently sloping stream terraces on the Piedmont and Coastal Plain. It is moderately well drained and is subject to rare flooding. Most areas are irregularly shaped. The areas are typically 10 to 20 acres in size but range from 5 to 40 acres. Slope lengths are typically 50 to 150 feet but range from 25 to 300 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 5 inches, brownish sandy loam

Subsoil:
5 to 8 inches, yellowish loam
8 to 23 inches, yellowish clay loam that has reddish mottles
23 to 34 inches, yellowish clay loam that has brownish, reddish, and grayish mottles
34 to 58 inches, grayish clay loam that has brownish and reddish mottles

Substratum:
58 to 65 inches, mottled grayish, brownish, and yellowish sandy clay loam

Included with this soil in mapping are small areas of Alaga, Chewacla, and Wickham soils. Also included are small areas of soils that have slopes of less than 2 percent or more than 6 percent, small areas of severely eroded soils, and small areas of soils that have a surface layer of gravelly sandy loam. Included soils make up about 15 percent of the map unit.

Important properties of the Tetotum soil—

Permeability: Moderate
Available water capacity: High
Depth to a seasonal high water table: 1.5 to 2.5 feet
Surface runoff: Medium
Hazard of water erosion: Moderate
Depth to bedrock: More than 60 inches
Flooding: Rare, during periods of abnormally high rainfall

Most areas are used as woodland. A few areas are used as cropland or pasture.

This soil is well suited to row crops and small grain. The main management concerns are wetness and the hazard of erosion. Conservation tillage, contour farming, contour stripcropping, terraces, grassed waterways, and cover crops help to control runoff and erosion. A system of tile drains and open ditches helps to remove excess water.

This soil is moderately well suited to the production of loblolly pine. Other species that grow well are yellow-poplar and sweetgum. The main management concern is plant competition. Seedlings survive and grow well if competing vegetation is controlled. Competing vegetation can be controlled by proper site preparation, such as burning, spraying, cutting, and girdling.

This soil is well suited to grasses, such as bahiagrass and fescue. The main management concern is the wetness. Drainage can be improved by maintaining open ditches and surface drains. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is poorly suited to most engineering uses related to homesite development. It is generally not suited to use as a site for dwellings with or without basements because overcoming the flooding and the wetness is difficult and expensive. The wetness is a management concern on sites for septic tank absorption fields. It can be overcome by using specially designed or modified conventional systems. The wetness is also a limitation affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. Installing a drainage system, shaping the land to increase the runoff rate, and using plants that can tolerate a seasonal high water table help to overcome the wetness.

TrB—Troup sand, 0 to 6 percent slopes. This very deep soil is on broad, nearly level and gently sloping ridges and side slopes of the Sand Hills and Coastal Plain. It is somewhat excessively drained. Most areas are irregularly shaped. The areas are typically 10 to 150 acres in size but range from 10 to 500 acres. Slope lengths are typically 100 to 350 feet but range from 100 to 1,000 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 6 inches, brownish sand

Subsurface layer:
6 to 25 inches, brownish sand

25 to 55 inches, yellowish loamy sand and sand

Subsoil:
55 to 85 inches, reddish sandy loam

Included with this soil in mapping are small areas of Ailey, Alpin, and Kenansville soils. Also included are small areas of soils that have slopes of more than 6 percent. Included soils make up less than 15 percent of the map unit.

Important properties of the Troup soil—

Permeability: Moderately rapid in the upper part, moderate in the lower part
Available water capacity: Low
Depth to a seasonal high water table: More than 6 feet
Surface runoff: Slow
Hazard of water erosion: Slight
Depth to bedrock: More than 60 inches

Most areas are used as woodland or pasture or as habitat for wildlife. A few areas are used as cropland.

This soil is poorly suited to row crops and small grain. It is moderately well suited to truck crops, such as watermelons and cantaloupes. The main management concerns are droughtiness, a low nutrient-holding capacity, and the hazard of soil blowing. Conservation tillage, contour farming, contour stripcropping with close-growing grains or legumes, cover crops, and crop residue management increase the available water capacity and the nutrient-holding capacity and reduce the hazard of soil blowing. Fertilizers are more efficient if applied at intervals rather than in a single application.

This soil is moderately well suited to the production of loblolly pine and longleaf pine. Other species that grow well are blackjack oak and post oak. The main management concerns are the equipment limitation and seedling mortality. The sandy surface layer restricts the use of wheeled equipment, especially when the soil is very dry. Using tracked or wide-tired vehicles helps to overcome the equipment limitation. The seedling mortality rate, which is caused by droughtiness, can be reduced by planting in furrows.

This soil is moderately well suited to grasses, such as improved bermudagrass and bahiagrass. The main management concerns are the droughtiness and the low nutrient-holding capacity. Frequent applications of fertilizer and manure are needed. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during dry periods help to keep the pasture in good condition.

This soil is well suited to most engineering uses related to homesite development. The limitations on sites for septic tank absorption fields and for dwellings with or without basements are slight. Droughtiness is a hazard affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. It can be reduced by using well adapted plants and applying supplemental irrigation water during the growing season.

TrC—Troup sand, 6 to 10 percent slopes. This very deep soil is on strongly sloping ridges and side slopes of the Sand Hills and Coastal Plain. It is somewhat excessively drained. Most areas are irregularly shaped. The areas are typically 10 to 100 acres in size but range from 5 to 250 acres. Slope lengths are typically 100 to 350 feet but range from 50 to 500 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 6 inches, brownish sand

Subsurface layer:
6 to 25 inches, brownish sand
25 to 55 inches, yellowish loamy sand and sand

Subsoil:
55 to 85 inches, reddish sandy loam

Included with this soil in mapping are small areas of Ailey, Alpin, and Kenansville soils. Also included are small areas of soils that have slopes of more than 10 percent. Included soils make up less than 15 percent of the map unit.

Important properties of the Troup soil—

Permeability: Moderately rapid in the upper part, moderate in the lower part
Available water capacity: Low
Depth to a seasonal high water table: More than 6 feet
Surface runoff: Slow
Hazard of water erosion: Slight
Depth to bedrock: More than 60 inches

Most areas are used as woodland or as habitat for wildlife. A few areas are used as pasture or cropland.

This soil is generally not suited to row crops or small grain. It is moderately well suited to truck crops, such as watermelons and cantaloupes. The main management concerns are droughtiness, a low nutrient-holding capacity, the slope, and the hazard of soil blowing.

This soil is moderately well suited to the production of loblolly pine and longleaf pine. Other species that grow well are blackjack oak and post oak. The main management concerns are the equipment limitation and seedling mortality. The sandy surface layer restricts the use of wheeled equipment, especially when the soil is very dry. Using tracked or wide-tired vehicles helps to overcome the equipment limitation. The seedling

mortality rate, which is caused by droughtiness, can be reduced by planting in furrows.

This soil is moderately well suited to grasses, such as improved bermudagrass and bahiagrass. The main management concerns are the droughtiness and the low nutrient-holding capacity. Frequent applications of fertilizer and manure are needed. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during dry periods help to keep the pasture in good condition.

This soil is well suited to most engineering uses related to homesite development. The limitations on sites for septic tank absorption fields and for dwellings with or without basements are slight. Droughtiness is a hazard affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. It can be reduced by using well adapted plants and applying supplemental irrigation water during the growing season.

Ud—Udorthents, loamy. This map unit is in areas where soil has been deposited, disturbed, or removed by machinery to a depth of more than 2 feet. Most areas are rectangular. The areas are typically 5 to 25 acres in size but range from 3 to 50 acres. Slopes are typically 2 to 10 percent.

Included in mapping are granite quarries; small areas, in the bottom of pits, of soils that have a sandy texture; and small areas of nonsoil material, such as granite boulders and cobbles, in the bottom and walls of pits. Also included are small areas of undisturbed Alpin, Ailey, Badin, Candor, Georgeville, Pacolet, and Vaucluse soils. Included areas make up less than 20 percent of the total acreage.

The Udorthents are a mixture of sandy, loamy, and clayey material. Characteristics are so variable that onsite investigation is needed to determine the soil properties that affect a particular use.

Most areas do not support vegetation, but a few areas are used as woodland.

These soils are generally not suited to row crops or small grain.

These soils are poorly suited to the production of loblolly pine. Virginia pine grows well. If the soils are used as woodland, reshaping may be needed. The main management concerns are the hazard of erosion, the equipment limitation, and seedling mortality. Using harvesting methods that minimize disturbance of the soils, establishing skid trails, log landings, and temporary logging roads so that they do not lead to drainageways, moving logs on the contour, and plowing fire lanes on the contour can reduce the hazard of erosion and the equipment limitation. The seedling mortality rate, which is caused by droughtiness, can be reduced by planting in furrows.

These soils are poorly suited to pasture, but grasses, such as improved bermudagrass and bahiagrass, can be grown. If the soils are used as pasture, reshaping may be needed.

These soils are poorly suited to most engineering uses related to homesite development. Onsite investigation is needed to determine the suitability for any proposed use.

VaB—Vaucluse loamy sand, 2 to 6 percent slopes. This very deep soil is on gently sloping ridgetops and side slopes of the Sand Hills and Coastal Plain. It is well drained. Most areas are irregularly shaped. The areas are typically 10 to 50 acres in size but range from 5 to 150 acres. Slope lengths are typically 100 to 300 feet but range from 50 to 400 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 2 inches, grayish loamy sand

Subsurface layer:
2 to 6 inches, yellowish loamy sand

Subsoil:
6 to 16 inches, yellowish sandy clay loam
16 to 50 inches, reddish sandy clay loam that has yellowish mottles and is dense, compact, and brittle in part of the mass

Substratum:
50 to 60 inches, yellowish sandy loam

Included with this soil in mapping are small areas of Candor, Emporia, and Pelion soils. Also included are small areas of soils that have slopes of more than 6 percent. Included soils make up about 15 percent of the map unit.

Important properties of the Vaucluse soil—

Permeability: Moderate in the upper part of the subsoil, moderately slow or slow in the lower part
Available water capacity: Very low
Depth to a seasonal high water table: More than 6 feet
Surface runoff: Medium
Hazard of water erosion: Moderate
Depth to bedrock: More than 60 inches

Most areas are used as woodland or cropland or as habitat for wildlife. A few areas are used for pasture.

This soil is poorly suited to row crops and small grain. The main management concerns are a restricted rooting depth and the hazard of erosion. Conservation tillage, contour farming, contour stripcropping, terraces,

grassed waterways, and cover crops help to control runoff and erosion and conserve moisture.

This soil is moderately well suited to the production of loblolly pine. Other species that grow well are longleaf pine and shortleaf pine. The main management concerns are seedling mortality and the windthrow hazard. The seedling mortality rate, which is caused by droughtiness, can be reduced by planting in furrows. Trees are subject to windthrow because of the restricted rooting depth.

This soil is moderately well suited to grasses, such as improved bermudagrass and bahiagrass. The main limitation is the restricted rooting depth. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during dry periods help to keep the pasture in good condition.

This soil is moderately well suited to most engineering uses related to homesite development. The restricted permeability is a management concern on sites for septic tank absorption fields. It can be overcome by using specially designed or modified conventional systems and by increasing the size of the absorption field. The limitations on sites used for dwellings with or without basements are slight. Droughtiness is a hazard affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. It can be reduced by using well adapted plants and applying supplemental irrigation water during the growing season.

VaC—Vaucluse loamy sand, 6 to 10 percent slopes. This very deep soil is on strongly sloping ridgetops and side slopes of the Sand Hills and Coastal Plain. It is well drained. Most areas are irregularly shaped. The areas are typically 10 to 50 acres in size but range from 5 to 150 acres. Slope lengths are typically 100 to 250 feet but range from 50 to 350 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 2 inches, grayish loamy sand

Subsurface layer:
2 to 6 inches, yellowish loamy sand

Subsoil:
6 to 16 inches, yellowish sandy clay loam
16 to 50 inches, reddish sandy clay loam that has yellowish mottles and is dense, compact, and brittle in part of the mass

Substratum:
50 to 60 inches, yellowish sandy loam

Included with this soil in mapping are small areas of Candor, Emporia, and Pelion soils. These soils make up about 15 percent of the map unit.

Important properties of the Vaucluse soil—

Permeability: Moderate in the upper part of the subsoil, moderately slow or slow in the lower part
Available water capacity: Very low
Depth to a seasonal high water table: More than 6 feet
Surface runoff: Medium
Hazard of water erosion: Severe
Depth to bedrock: More than 60 inches

Most areas are used as woodland or as habitat for wildlife. A few areas are used as cropland or pasture.

This soil is poorly suited to row crops and small grain. The main management concerns are the hazard of erosion and a restricted rooting depth. Conservation tillage, contour farming, contour stripcropping, terraces, grassed waterways, and cover crops help to control runoff and erosion and conserve moisture.

This soil is moderately well suited to the production of loblolly pine. Other species that grow well are longleaf pine and shortleaf pine. The main management concerns are seedling mortality and the windthrow hazard. The seedling mortality rate, which is caused by droughtiness, can be reduced by planting in furrows. Trees are subject to windthrow because of the restricted rooting depth.

This soil is poorly suited to pasture, but grasses, such as improved bermudagrass and bahiagrass, can be grown. The main management concerns are the hazard of erosion and the restricted rooting depth. A seedbed should be prepared on the contour or across the slope where practical. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during dry periods help to keep the pasture in good condition.

This soil is moderately well suited to most engineering uses related to homesite development. The restricted permeability is a management concern on sites for septic tank absorption fields. It can be overcome by using specially designed or modified conventional systems and by increasing the size of the absorption field. The slope is a limitation on sites for dwellings with or without basements. It can be overcome by cutting and filling and by modifying the design of the building. Droughtiness is a hazard affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. It can be reduced by using well adapted plants and applying supplemental irrigation water during the growing season.

VaD—Vaucluse loamy sand, 10 to 15 percent slopes. This very deep soil is on narrow, moderately steep ridgetops and narrow side slopes of the Sand Hills and Coastal Plain. It is well drained. Most areas are irregularly shaped. The areas are typically 10 to 50

acres in size but range from 5 to 150 acres. Slope lengths are typically 100 to 200 feet but range from 50 to 250 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 2 inches, grayish loamy sand

Subsurface layer:
2 to 6 inches, yellowish loamy sand

Subsoil:
6 to 16 inches, yellowish sandy clay loam
16 to 50 inches, reddish sandy clay loam that has yellowish mottles and is dense, compact, and brittle in part of the mass

Substratum:
50 to 60 inches, yellowish sandy loam

Included with this soil in mapping are small areas of Candor, Emporia, and Pelion soils. Also included are small areas of soils that have slopes of more than 15 percent and small areas of soils that are very gravelly sandy clay loam in the lower part of the subsoil. Included soils make up about 15 percent of the map unit.

Important properties of the Vaucluse soil—

Permeability: Moderate in the upper part of the subsoil, moderately slow or slow in the lower part
Available water capacity: Low
Depth to a seasonal high water table: More than 6 feet
Surface runoff: Rapid
Hazard of water erosion: Severe
Depth to bedrock: More than 60 inches

Most areas are used as woodland or as habitat for wildlife. A few areas are used for pasture.

This soil is poorly suited to row crops and small grain. The main management concerns are the hazard of erosion, a restricted rooting depth, and the slope. Conservation tillage, contour farming, contour stripcropping, terraces, grassed waterways, and cover crops help to control runoff and erosion and conserve moisture.

This soil is moderately well suited to the production of loblolly pine. Other species that grow well are longleaf pine and shortleaf pine. The main management concerns are seedling mortality and the windthrow hazard. The seedling mortality rate, which is caused by droughtiness, can be reduced by planting in furrows. Trees are subject to windthrow because of the restricted rooting depth.

This soil is poorly suited to pasture, but grasses, such as improved bermudagrass and bahiagrass, can be grown. The main management concerns are the hazard of erosion, the slope, and the restricted rooting depth. A seedbed should be prepared on the contour or across the slope where practical. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during dry periods help to keep the pasture in good condition.

This soil is moderately well suited to most engineering uses related to homesite development. The restricted permeability is a management concern on sites for septic tank absorption fields. It can be overcome by using specially designed or modified conventional systems and by increasing the size of the absorption field. The slope is a limitation on sites for dwellings with or without basements. It can be overcome by cutting and filling and by modifying the design of the building. Droughtiness is a hazard affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. It can be reduced by using well adapted plants and applying supplemental irrigation water during the growing season.

VgB—Vaucluse gravelly loamy sand, 2 to 6 percent slopes. This very deep soil is on gently sloping ridgetops and narrow side slopes of the Sand Hills and Coastal Plain. It is well drained. Most areas are irregularly shaped. The areas are typically 10 to 50 acres in size but range from 5 to 150 acres. Slope lengths are typically 100 to 300 feet but range from 50 to 400 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 2 inches, grayish gravelly loamy sand

Subsurface layer:
2 to 6 inches, yellowish gravelly loamy sand

Subsoil:
6 to 16 inches, yellowish sandy clay loam
16 to 50 inches, reddish sandy clay loam that has yellowish mottles and is dense, compact, and brittle in part of the mass

Substratum:
50 to 60 inches, yellowish sandy loam

Included with this soil in mapping are small areas of Candor, Emporia, and Pelion soils. Also included are small areas of soils that have slopes of more than 6 percent or less than 2 percent. Included soils make up about 15 percent of the map unit.

Important properties of the Vaucluse soil—

Permeability: Moderate in the upper part of the subsoil, moderately slow or slow in the lower part
Available water capacity: Very low

Depth to a seasonal high water table: More than 6 feet
Surface runoff: Medium
Hazard of water erosion: Moderate
Depth to bedrock: More than 60 inches

Most areas are used as woodland or as habitat for wildlife. A few areas are used as cropland or pasture.

This soil is poorly suited to row crops and small grain. The main management concerns are a restricted rooting depth and the hazard of erosion. Gravel in the surface layer damages tillage equipment and interferes with planting. Conservation tillage, contour farming, contour stripcropping, terraces, grassed waterways, and cover crops help to control runoff and erosion and conserve moisture.

This soil is moderately well suited to the production of loblolly pine. Other species that grow well are longleaf pine and shortleaf pine. The main management concerns are seedling mortality and the windthrow hazard. The seedling mortality rate, which is caused by droughtiness, can be reduced by planting in furrows. Trees are subject to windthrow because of the restricted rooting depth.

This soil is moderately well suited to grasses, such as improved bermudagrass and bahiagrass. The main limitation is the restricted rooting depth. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during dry periods help to keep the pasture in good condition.

This soil is moderately well suited to most engineering uses related to homesite development. The restricted permeability is a management concern on sites for septic tank absorption fields. It can be overcome by using specially designed or modified conventional systems and by increasing the size of the absorption field. The limitations on sites for dwellings with or without basements are slight. Small stones and the droughtiness are limitations affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. The gravel should generally be removed in disturbed areas that are used for landscaping, particularly in areas used for lawns. Using well adapted plants and applying supplemental irrigation water during the growing season help to overcome the droughtiness.

VgC—Vaucluse gravelly loamy sand, 6 to 10 percent slopes. This very deep soil is on narrow, strongly sloping ridgetops and short side slopes of the Sand Hills and Coastal Plain. It is well drained. Most areas are irregularly shaped. The areas are typically 10 to 50 acres in size but range from 5 to 150 acres. Slope lengths are typically 100 to 200 feet but range from 50 to 250 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 2 inches, grayish gravelly loamy sand

Subsurface layer:
2 to 6 inches, yellowish gravelly loamy sand

Subsoil:
6 to 16 inches, yellowish sandy clay loam
16 to 50 inches, reddish sandy clay loam that has yellowish mottles and is dense, compact, and brittle in part of the mass

Substratum:
50 to 60 inches, yellowish sandy loam

Included with this soil in mapping are small areas of Ailey, Candor, Emporia, and Pelion soils. Also included are small areas of soils that have slopes of more than 10 percent or less than 6 percent. Included soils make up about 15 percent of the map unit.

Important properties of the Vaucluse soil—

Permeability: Moderate in the upper part of the subsoil, moderately slow or slow in the lower part
Available water capacity: Very low
Depth to a seasonal high water table: More than 6 feet
Surface runoff: Rapid
Hazard of water erosion: Severe
Depth to bedrock: More than 60 inches

Most areas are used as woodland. A few areas are used as cropland or pasture.

This soil is poorly suited to row crops and small grain. The main management concerns are the hazard of erosion and a restricted rooting depth. Gravel in the surface layer damages tillage equipment and interferes with planting. Conservation tillage, contour farming, contour stripcropping, terraces, grassed waterways, and cover crops help to control runoff and erosion and conserve moisture.

This soil is moderately well suited to the production of loblolly pine. Other species that grow well are longleaf pine and shortleaf pine. The main management concerns are seedling mortality and the windthrow hazard. The seedling mortality rate, which is caused by droughtiness, can be reduced by planting in furrows. Trees are subject to windthrow because of the restricted rooting depth.

This soil is poorly suited to pasture, but grasses, such as improved bermudagrass and bahiagrass, can be grown. The main management concerns are the hazard of erosion and the restricted rooting depth. A seedbed should be prepared on the contour or across the slope where practical. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during dry periods help to keep the pasture in good condition.

This soil is moderately well suited to most engineering uses related to homesite development. The restricted permeability is a management concern on sites for septic tank absorption fields. This limitation can be overcome by using specially designed or modified conventional systems and by increasing the size of the absorption field. The slope is a limitation on sites for dwellings with or without basements. It can be overcome by cutting and filling and by modifying the design of the building. Small stones and the droughtiness are limitations affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. The gravel should generally be removed in disturbed areas that are used for landscaping, particularly in areas used for lawns. Using well adapted plants and applying supplemental irrigation water during the growing season help to overcome the droughtiness.

VgD—Vaucluse gravelly loamy sand, 10 to 15 percent slopes. This very deep soil is on narrow, moderately steep ridgetops and short side slopes of the Sand Hills and Coastal Plain. It is well drained. Most areas are irregularly shaped. The areas are typically 10 to 50 acres in size but range from 5 to 150 acres. Slope lengths are typically 100 to 200 feet but range from 50 to 250 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 2 inches, grayish gravelly loamy sand

Subsurface layer:
2 to 6 inches, yellowish gravelly loamy sand

Subsoil:
6 to 16 inches, yellowish sandy clay loam
16 to 50 inches, reddish sandy clay loam that has yellowish mottles and is dense, compact, and brittle in part of the mass

Substratum:
50 to 60 inches, yellowish sandy loam

Included with this soil in mapping are small areas of Ailey, Candor, Emporia, and Pelion soils. Also included are small areas of soils that have slopes of more than 6 percent or less than 2 percent and small areas of soils that are very gravelly sandy clay loam in the lower part of the subsoil. Included soils make up about 15 percent of the map unit.

Important properties of the Vaucluse soil—

Permeability: Moderate in the upper part of the subsoil, moderately slow or slow in the lower part
Available water capacity: Very low
Depth to a seasonal high water table: More than 6 feet
Surface runoff: Rapid
Hazard of water erosion: Severe
Depth to bedrock: More than 60 inches

Most areas are used as woodland or pasture. A few areas are used as cropland.

This soil is poorly suited to row crops and small grain. The main management concerns are the hazard of erosion and a restricted rooting depth. Gravel in the surface layer damages tillage equipment and interferes with planting. Conservation tillage, contour farming, contour stripcropping, terraces, grassed waterways, and cover crops help to control runoff and erosion and conserve moisture.

This soil is moderately well suited to the production of loblolly pine. Other species that grow well are longleaf pine and shortleaf pine. The main management concerns are seedling mortality and the windthrow hazard. The seedling mortality rate, which is caused by droughtiness, can be reduced by planting in furrows. Trees are subject to windthrow because of the restricted rooting depth.

This soil is poorly suited to pasture, but grasses, such as improved bermudagrass and bahiagrass, can be grown. The main management concerns are the hazard of erosion, the slope, and the restricted rooting depth. A seedbed should be prepared on the contour or across the slope where practical. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during dry periods help to keep the pasture in good condition.

This soil is moderately well suited to most engineering uses related to homesite development. The restricted permeability is a management concern on sites for septic tank absorption fields. It can be overcome by using specially designed or modified conventional systems and by increasing the size of the absorption field. The slope is a limitation on sites for dwellings with or without basements. It can be overcome by cutting and filling and by modifying the design of the building. Small stones and the droughtiness are limitations affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. The gravel should generally be removed in disturbed areas that are used for landscaping, particularly in areas used for lawns. Using well adapted plants and applying supplemental irrigation water during the growing season help to overcome the droughtiness.

Wa—Wahee silt loam. This very deep soil is on nearly level terraces adjacent to flood plains on the Coastal Plain. It is somewhat poorly drained. Most areas are irregularly shaped. The areas are typically 10 to 30 acres in size but range from 5 to 100 acres. Slope lengths are typically 100 to 300 feet but range from 50 to 500 feet. Slopes range from 0 to 2 percent.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 5 inches, brownish silt loam

Subsoil:
5 to 25 inches, brownish clay that has grayish and reddish mottles
25 to 38 inches, grayish clay that has brownish and reddish mottles
38 to 65 inches, grayish clay loam that has yellowish mottles

Included with this soil in mapping are small areas of Chewacla, Coxville, Hornsville, Ogeechee, and Tetotum soils. These soils make up about 15 percent of the map unit.

Important properties of the Wahee soil—

Permeability: Slow
Available water capacity: High
Depth to a seasonal high water table: 0.5 foot to 1.5 feet
Surface runoff: Slow
Hazard of water erosion: Slight
Depth to bedrock: More than 60 inches

Most areas are used as woodland. A few areas are used as cropland or pasture.

This soil is well suited to row crops and small grain. Wetness is the main limitation. Because of the slow permeability, shallow surface drains and open ditches commonly are used to lower the water table. Returning crop residue to the soil helps to maintain good tilth and the content of organic matter.

This soil is moderately well suited to the production of loblolly pine. Other species that grow well are sweetgum and water oak. The main management concerns are the equipment limitation, seedling mortality, and the windthrow hazard. Removing excess water, using wider tires on equipment, and bedding, planting, and harvesting trees during dry periods reduce the equipment limitation. The seedling mortality rate can be reduced by planting suitable species at the proper times and by planting on raised beds. Trees are subject to windthrow because of the restricted rooting depth.

This soil is well suited to grasses, such as bahiagrass and fescue. The main management concern is wetness. Drainage can be improved by maintaining open ditches and surface drains. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is poorly suited to most engineering uses related to homesite development. It is generally not suited to use as a site for dwellings with or without basements because the wetness and the flooding are difficult and expensive to overcome. The wetness and the restricted permeability are management concerns on sites for septic tank absorption fields. They can be overcome by using specially designed or modified conventional systems and by increasing the size of the absorption field. The wetness is a limitation affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. Installing a drainage system, shaping the land to increase the runoff rate, and using plants that can tolerate a seasonal high water table help to overcome the wetness.

WkA—Wickham sandy loam, 0 to 2 percent slopes. This very deep soil is on broad, nearly level stream terraces on the Piedmont and Coastal Plain. It is well drained but is subject to rare flooding. Most areas are irregularly shaped. The areas are typically 10 to 50 acres in size but range from 5 to 150 acres. Slope lengths are typically 100 to 350 feet but range from 50 to 500 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 6 inches, brownish sandy loam

Subsoil:
6 to 26 inches, reddish clay loam
26 to 40 inches, reddish sandy clay loam
40 to 48 inches, reddish sandy loam

Substratum:
48 to 80 inches, brownish loamy sand

Included with this soil in mapping are small areas of Chastain, Chewacla, Hornsville, Riverview, Tetotum, and Wahee soils. Also included are small areas of soils that have a surface layer of gravelly sandy loam and small areas of soils that have slopes of more than 2 percent. Included soils make up about 15 percent of the map unit.

Important properties of the Wickham soil—

Permeability: Moderate
Available water capacity: Moderate
Depth to a seasonal high water table: More than 6 feet
Surface runoff: Slow
Hazard of water erosion: Slight
Depth to bedrock: More than 60 inches
Flooding: Rare, during periods of abnormally high rainfall

Most areas are used as woodland or cropland. A few areas are used for pasture.

This soil is well suited to row crops and small grain. There are no major management concerns. Returning crop residue to the soil helps to maintain good tilth and the content of organic matter.

This soil is well suited to the production of loblolly pine. Other species that grow well are yellow-poplar and sweetgum. Few limitations affect woodland use and management. Seedlings survive and grow well in areas of this soil.

This soil is well suited to grasses, such as fescue and bahiagrass. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is poorly suited to most engineering uses related to homesite development. It is generally not suited to use as a site for dwellings with or without basements because overcoming the flooding is difficult and expensive. The flooding and the restricted permeability are management concerns on sites for septic tank absorption fields. The limitations affecting the establishment of lawn grasses, plants, and shrubs used in landscaping are slight.

WkB—Wickham sandy loam, 2 to 6 percent slopes. This very deep soil is on broad, gently sloping stream terraces on the Piedmont and Coastal Plain. It is well drained but is subject to rare flooding. Most areas are irregularly shaped. The areas are typically 10 to 30 acres in size but range from 5 to 100 acres. Slope lengths are typically 100 to 300 feet but range from 50 to 400 feet.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 6 inches, brownish sandy loam

Subsoil:
6 to 26 inches, reddish clay loam
26 to 40 inches, reddish sandy clay loam
40 to 48 inches, reddish sandy loam

Substratum:
48 to 80 inches, brownish loamy sand

Included with this soil in mapping are small areas of Chastain, Chewacla, Hornsville, Riverview, Tetotum, and Wahee soils. Also included are small areas of soils that have a surface layer of gravelly sandy loam and small areas of soils that have slopes of more than 6 percent. Included soils make up about 15 percent of the map unit.

Important properties of the Wickham soil—

Permeability: Moderate
Available water capacity: Moderate
Depth to a seasonal high water table: More than 6 feet
Surface runoff: Medium
Hazard of water erosion: Moderate
Depth to bedrock: More than 60 inches
Flooding: Rare, during periods of abnormally high rainfall

Most areas are used as woodland or cropland. A few areas are used for pasture.

This soil is well suited to row crops and small grain. The main limitation is the hazard of erosion. Conservation tillage, contour farming, contour stripcropping, terraces, grassed waterways, and cover crops help to control runoff and erosion.

This soil is well suited to the production of loblolly pine. Other species that grow well are yellow-poplar and sweetgum. Few limitations affect woodland use and management. Seedlings survive and grow well in areas of this soil.

This soil is moderately well suited to grasses, such as fescue and bahiagrass. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is poorly suited to most engineering uses related to homesite development. It is generally not suited to use as a site for dwellings with or without basements because overcoming the flooding is difficult and expensive. The flooding and the restricted permeability are management concerns on sites for septic tank absorption fields. The limitations affecting the establishment of lawn grasses, plants, and shrubs used in landscaping are slight.

Wo—Woodington sandy loam. This very deep soil is on broad, nearly level flats and in slight depressions on the Coastal Plain. It is poorly drained. Most areas are irregularly shaped. The areas are typically 10 to 150 acres in size but range from 5 to 300 acres. Slope lengths are typically 100 to 300 feet but range from 50 to 500 feet. Slopes are 0 to 2 percent.

Typically, the layers of this soil are as follows—

Surface layer:
0 to 9 inches, grayish sandy loam

Subsoil:
9 to 26 inches, grayish sandy loam
26 to 45 inches, grayish sandy loam that has yellowish and reddish mottles
45 to 60 inches, grayish sandy loam that has brownish mottles
60 to 67 inches, grayish sandy loam that has yellowish mottles

Included with this soil in mapping are small areas of Coxville, Goldsboro, Johnston, and Smithboro soils. Also included are small areas of soils that have less clay below a depth of 40 inches than the Woodington soil and small areas of soils that have a black surface

layer more than 10 inches thick. Included soils make up about 15 percent of the map unit.

Important properties of the Woodington soil—

Permeability: Moderately rapid
Available water capacity: Moderate
Seasonal high water table: At the surface to 1 foot below the surface
Surface runoff: Slow
Hazard of water erosion: Slight
Depth to bedrock: More than 60 inches

Most areas are used as cropland. A few areas are used as woodland or pasture.

This soil is well suited to row crops and small grain. Wetness is the main limitation. A system of tile drains and open ditches helps to remove excess water. Returning crop residue to the soil helps to maintain good tilth and the content of organic matter.

This soil is well suited to the production of loblolly pine. Other species that grow well are sweetgum and white oak. The main management concerns are the equipment limitation, seedling mortality, the windthrow hazard, and plant competition. Removing excess water, using wider tires on equipment, and bedding, planting, and harvesting trees during dry periods reduce the equipment limitation. The seedling mortality rate can be reduced by planting suitable species at the proper times and by planting on raised beds. Trees are subject to windthrow because of the restricted rooting depth. Competing vegetation can be controlled by proper site preparation, such as burning, spraying, cutting, and girdling.

This soil is moderately well suited to grasses, such as bahiagrass. The main management concern is wetness. Drainage can be improved by maintaining open ditches and surface drains. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during wet periods help to keep the pasture in good condition.

This soil is poorly suited to most engineering uses related to homesite development. It is generally not suited to use as a site for septic tank absorption fields or for dwellings with basements because overcoming the wetness is difficult and expensive. On sites for dwellings without basements, the wetness can be overcome by adding suitable fill material, shaping the area, and installing a drainage system. The wetness is also a management concern affecting the establishment of lawn grasses, plants, and shrubs used in landscaping. Installing a drainage system, shaping the land to increase the runoff rate, and using plants that can tolerate a seasonal high water table help to overcome the wetness.

Prime Farmland

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

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

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

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

Prime farmland soils usually receive an adequate and dependable supply of moisture from precipitation or irrigation. The temperature and growing season are favorable. The acidity or alkalinity level of the soils is acceptable. The soils have few or no rocks and are permeable to water and air. They are not excessively erodible or saturated with water for long periods and are not frequently flooded during the growing season. The slope ranges mainly from 0 to 6 percent.

The map units listed at the end of this section are considered prime farmland in Chesterfield County. This list does not constitute a recommendation for a particular land use. The location of each map unit is shown on the detailed soil maps at the back of this publication. The extent of each unit is given in table 4. The soil qualities that affect use and management are described in the section "Detailed Soil Map Units."

Some soils that have a high water table and all soils that are frequently flooded during the growing season qualify as prime farmland only in areas where these limitations have been overcome by drainage measures or flood control. If applicable, the need for these measures is indicated in parentheses after the map unit name in the following list. Onsite evaluation is necessary to determine if the limitations have been overcome by corrective measures.

The soils identified as prime farmland in Chesterfield County are:

AmB	Alamance sandy loam, 1 to 6 percent slopes
CcB	Cecil sandy loam, 2 to 6 percent slopes
CrA	Claycreek silt loam, 0 to 2 percent slopes
CrB	Claycreek silt loam, 2 to 6 percent slopes
EmA	Emporia loamy sand, 0 to 2 percent slopes
EmB	Emporia loamy sand, 2 to 6 percent slopes
GeB	Georgeville loam, 2 to 6 percent slopes
GoA	Goldsboro sandy loam, 0 to 2 percent slopes
HnA	Hornsville sandy loam, 0 to 2 percent slopes
HnB	Hornsville sandy loam, 2 to 6 percent slopes
MaB	Mayodan silt loam, 2 to 6 percent slopes
NoA	Noboco loamy sand, 0 to 2 percent slopes
RnB	Rion sandy loam, 2 to 6 percent slopes
Rv	Riverview silt loam, frequently flooded (where protected from flooding or not frequently flooded during the growing season)
TeA	Tetotum sandy loam, 0 to 2 percent slopes
TeB	Tetotum sandy loam, 2 to 6 percent slopes
WkA	Wickham sandy loam, 0 to 2 percent slopes
WkB	Wickham sandy loam, 2 to 6 percent slopes

Use and Management of the Soils

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

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

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

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

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

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

Crops and Pasture

Gene E. Hardee, conservation agronomist, Soil Conservation Service, helped prepare this section.

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

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

In 1982, about 138,500 acres in Chesterfield County was used as pasture, hayland, or cropland, according to the Chesterfield County Soil and Water Conservation District. Of this total, about 65,000 acres was used for field crops, mainly soybeans, corn, wheat, and rye, and about 850 acres was used for orchards, mainly peach and pecan orchards. Since 1986, approximately 22,800 acres has been removed from crop production through participation in the Conservation Reserve Program, leaving more than 42,000 acres devoted to crop production.

The suitability of the soils in Chesterfield County for increased food production is good. In 1982, according to the County Resources Inventory, more than 135,000 acres of potentially good cropland was used for timber or pasture. The production of food can be increased by converting this land to cropland and by extending the latest crop production technology to all cropland in the county. This soil survey can greatly facilitate the application of such technology.

In general, the soils that are well suited to crops and pasture also are suited to urban development. According to the 1982 County Resources Inventory, about 6,600 acres in Chesterfield County is urban or built-up land. Urban or built-up land has increased at the rate of about 100 acres per year.

Erosion is a major concern on about 50 percent of the land in Chesterfield County. It is a hazard on 60 percent of the pasture and cropland. Water erosion commonly is a hazard on soils that have slopes of more than 2 percent and on very long slopes of 1 or 2 percent. Wind erosion also is a concern on clean-tilled,

Figure 11.—Soybeans planted on the contour in an area of Alley sand, moderately wet, 2 to 6 percent slopes.

sandy soils, but it generally results in damage to young plants rather than in actual soil loss.

Loss of the surface layer through erosion reduces productivity and pollutes streams. Productivity is reduced as the surface layer is lost and part of the subsoil is incorporated into the plow layer. Loss of the surface layer is especially damaging to soils that have a clayey subsoil, such as Cecil, Emporia, Georgeville, and Mayodan soils, and to soils that have a layer in or below the subsoil that limits the depth of the root zone. Vaucluse soils, for example, have a dense, somewhat brittle layer in the subsoil. Erosion also reduces the productivity of deep, sandy soils, such as Alpin, Lucy, and Troup soils, mainly because of the loss of nutrients and fine soil particles. Erosion on farmland results in the sedimentation of streams. Control of erosion minimizes this pollution and improves the quality of water for municipal and recreational uses and for fish and wildlife.

Some sloping fields have clayey areas left after the original friable surface layer has eroded away. Seedbed preparation and tillage are difficult in these areas. These clayey areas are common on the most sloping parts of intensively cropped areas of Badin, Cecil, Emporia, Georgeville, Mayodan, and Pacolet soils.

Water erosion is best controlled by combinations of structural measures that remove excess water from fields and cropping and tillage systems that provide a protective plant cover and help to control runoff. Terraces and diversions, for example, reduce the length of slopes. Grassed waterways remove excess water from fields.

Contour farming reduces the amount and velocity of runoff (fig. 11). A cropping sequence that includes sod crops and a tillage method that leaves a protective amount of crop residue on the surface help to control runoff and increase the rate of water infiltration. On livestock farms, which require pasture and hay, including grasses and legumes in the cropping sequence helps to control erosion in sloping areas and provides nitrogen for the following crop.

Terraces and diversions are effective erosion-control measures on very deep, well drained soils that have uniform slopes, such as Cecil, Emporia, Noboco, and

Wickham soils. These measures tend to concentrate water, however, and thus they are generally not suitable on the less stable soils that have a sandy surface layer, such as Ailey, Alaga, Alpin, Candor, Kenansville, Lucy, and Troup soils. On these soils, effective erosion-control systems generally include contour farming, contour stripcropping, and conservation tillage, which reduce the amount and velocity of runoff and do not allow the runoff to concentrate.

Information about the design of erosion-control measures on each kind of soil in Chesterfield County is available in the local office of the Soil Conservation Service.

Damage to young plants caused by soil blowing is a major management concern on Ailey, Alaga, Alpin, Bonneau, Candor, Kenansville, Lucy, Noboco, Pelion, Troup, and Vaucluse soils. The risk of damage is especially high in extensive fields that are not protected by plant cover. Conservation tillage, strips of permanent vegetation, and strips of close-growing crops help to protect sandy soils from the effects of soil blowing.

Wetness is a major management concern on about 20 percent of the soils in Chesterfield County. Adequate drainage of cropland or hayland is feasible on only about 56 percent of these soils. Approximately 50 percent of the soils that are inadequately drained are wetlands. Drainage commonly is feasible on Coxville, Goldsboro, Smithboro, Tetotum, Wahee, Pelion, and Woodington soils and in some areas of Chewacla soils. Because of inadequate outlets and the hazard of frequent flooding, drainage is generally not feasible on Bibb, Chastain, Chewacla, and Johnston soils. Riverview soils typically need protection from flooding.

A low available water capacity is a limitation in areas of Ailey, Alaga, Alpin, Candor, Lucy, and Troup soils. This limitation can be minimized by crop residue management, proper crop selection, and irrigation. These soils are well suited to pasture grasses, such as bahiagrass and bermudagrass, and to drought-tolerant crops, such as grain sorghum. Because nutrients are rapidly leached from these soils, frequent applications of fertilizer and lime are needed for good plant growth.

Soil fertility is naturally low in the soils in Chesterfield County. Regular applications of lime and fertilizer are needed. Most of the soils are naturally moderately acid to very strongly acid. Commonly, they require regular applications of ground limestone to maintain or raise the pH level sufficiently for good crop growth. The supply of available phosphorus and potash is naturally low in most of these soils. On deep, sandy soils, split applications of fertilizer are needed because of leaching. On all soils, additions of lime and fertilizer should be based on the results of soil tests, on the needs of the crop, and on the expected level of yields. The Cooperative Extension Service can help in determining the amounts of fertilizer and lime to apply.

Soil tilth is an important factor affecting the germination of seeds and the infiltration of water. The surface layer in most of the soils in Chesterfield County is sand or loamy sand. Consequently, this layer is granular and porous and has weak structure. These conditions are generally ideal for good seed germination and water infiltration. The surface layer of these soils, however, generally has a very low content of organic matter and retains only a small amount of moisture.

Fall tillage is generally not recommended because most of the cropland is sloping and is subject to water erosion or soil blowing. For some crops, fall tillage is needed to control insects and disease. In such cases, a winter cover crop should be planted after the soils are tilled.

The field crops that are suited to the soils and climate in Chesterfield County include many that are not commonly grown. Soybeans, corn, and cotton are the principal row crops. Watermelons, tobacco, peanuts, and grain sorghum are grown on a small acreage. Wheat, barley, oats, and pearl millet are the most common close-growing crops. Oats, barley, pearl millet, sudangrass, and several close-growing legumes, such as alfalfa, arrowleaf clover, and crimson clover, can be grown for forage or seed. Bicolor lespedeza and sericea lespedeza are perennials grown for seed, forage, and wildlife use. The principal perennial grasses grown for forage are bahiagrass, coastal bermudagrass, and tall fescue.

The specialty crops grown in the county include vegetables, small fruits, peaches, and pecans. A small acreage is used for cantaloupes, field peas, lima beans, okra, squash, sweet corn, tomatoes, collards, turnips, and strawberries. Large areas can be used for these and other specialty crops, such as grapes.

Deep soils that have good natural drainage and a moderate or high available water capacity and that warm early in the spring are especially well suited to many vegetables. Crops generally can be planted and harvested early in areas of Cecil, Emporia, Noboco, Lucy, and Wickham soils.

The latest information and suggestions for growing crops can be obtained from the local office of the Cooperative Extension Service or of the Soil Conservation Service.

Yields per Acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 5. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic

factors. The land capability classification also is shown in the table.

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

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

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

Crops other than those shown in table 5 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Soil Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, 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 Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class I soils have few limitations that restrict their use.

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

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

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

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

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

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

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

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e, w, s,* or *c,* to the class numeral, for example, IIe. The letter *e* shows that the main 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.

The acreage of soils in each capability class and subclass is shown in table 6. The capability classification of each map unit is given in the yields table.

Woodland Management and Productivity

Norman Runge, forester, Soil Conservation Service, helped prepare this section.

Originally, most of Chesterfield County was forested. Currently, 341,962 acres, or 67 percent of the total acreage, is forested. The county has good stands of commercial trees. Pine species are mainly on the hills,

and hardwood species are dominant on most of the bottom land along rivers and creeks.

Southern pine and upland hardwood forest types make up about 61 percent of the forest land in the county. The dominant pine species are longleaf pine, slash pine, loblolly pine, and shortleaf pine. The main upland hardwood species are oak and hickory. The rest of the forest land is made up of bottom-land hardwood forest types, primarily oak, gum, and cypress.

The commercial value of forest products in Chesterfield County is substantial, but it is significantly below the potential. Much of the existing commercial forest can be improved by weeding out undesirable species. Continued protection from grazing, prevention of fire, and control of diseases and insects can also improve the stands. The level of forest management has improved significantly in recent years. Uncontrolled burning, which was once common in the area, has been replaced by prescribed burning or other measures that protect the stands from fire. Other management measures that are currently being applied or considered include the selection of genetically improved seedlings for planting, natural regeneration, and fertilization.

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

This soil survey can be used by woodland managers planning ways to increase the productivity of forest land. Some soils respond better to applications of fertilizer than others. Some are more susceptible to landslides and erosion after roads are built and timber is harvested. Some soils require special reforestation efforts. In the section "Detailed Soil Map Units," the description of each map unit in the survey area suitable for timber includes information about productivity, limitations in harvesting timber, and management concerns in producing timber. Table 7 summarizes this forestry information and rates the soils for a number of factors to be considered in management. *Slight, moderate,* and *severe* are used to indicate the degree of the major soil limitations to be considered in forest management.

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

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

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

Ratings of *windthrow hazard* indicate the likelihood

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

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

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

The *site index* is determined by taking height measurements and determining the age of selected trees within stands of a given species. This index is the average height, in feet, that the trees attain in a specified number of years. This index applies to fully stocked, even-aged, unmanaged stands. The estimates of the productivity of the soils in this survey are based on published data *(4, 5, 6, 7, 8, 9, 12)*.

The *volume* is the yield likely to be produced by the most important trees, expressed in cubic feet per acre per year calculated at the age of culmination of mean annual increment.

Trees to plant are those that are used for reforestation or, under suitable conditions, natural regeneration. They are suited to the soils and can produce a commercial wood crop (fig. 12). The desired product, topographic position (such as a low, wet area), and personal preference are three factors among many that can influence the choice of trees for use in reforestation.

Recreation

The soils of the survey area are rated in table 8 according to limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation are also important. Soils subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In table 8, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or by a combination of these measures.

The information in table 8 can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 11 and interpretations for dwellings without basements and for local roads and streets in table 10.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have 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

Figure 12.—Loblolly pine in an area of Alley sand, moderately wet, 2 to 6 percent slopes.

remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing campsites.

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

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

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

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

Wildlife Habitat

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

In table 9, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

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

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

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

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

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flooding. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are bluestem, goldenrod, beggarweed, common lespedeza, wildbean, pokeberry, elderberry, and partridge pea.

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, poplar, cherry, sweetgum, apple, hawthorn, dogwood, hickory, blackberry, and blueberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are shrub lespedeza, autumn-olive, and crabapple.

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

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

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

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

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

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

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

Engineering

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

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

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

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

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 or 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

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

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

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

Building Site Development

Table 10 shows the degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and

observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to bedrock, a cemented pan, or a very firm dense layer; stone content; soil texture; and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and depth to the water table.

Dwellings and *small commercial buildings* are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, shrinking and swelling, and organic layers can cause the movement of footings. Depth to a high water table, depth to bedrock or to a cemented pan, large stones, 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 bedrock or to a cemented pan, depth to a high water table, flooding, large stones, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, frost action potential, and depth to a high water table affect the traffic-supporting capacity.

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

Sanitary Facilities

Table 11 shows the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

Table 11 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, depth to a high water table, depth to bedrock or to a cemented pan, and flooding affect absorption of the effluent. Large stones and bedrock or a cemented pan interfere with installation.

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

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

Table 11 gives ratings for the natural soil that makes

up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, depth to a high water table, depth to bedrock or to a cemented pan, flooding, large stones, and content of organic matter.

Excessive seepage resulting from rapid permeability in the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor.

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

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

The ratings in table 11 are based on soil properties, site features, and observed performance of the soils. Permeability, depth to bedrock or to a cemented pan, depth to a high water table, slope, and flooding affect both types of landfill. Texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium affect trench landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

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

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

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as 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 12 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good, fair,* or *poor* as a source of roadfill and topsoil. They are rated as a *probable* or *improbable* source of sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

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

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

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

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

a high shrink-swell potential, many stones, or slopes of more than 25 percent. They are wet and have a water table at a depth of less than 1 foot. They may have layers of suitable material, but the material is less than 3 feet thick.

Sand and *gravel* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In table 12, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

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

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is up to 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source. Coarse fragments of soft bedrock, such as shale and siltstone, are not considered to be sand and gravel.

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

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

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

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

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

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

Water Management

Table 13 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas and for embankments, dikes, and levees. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

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

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

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

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

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features

include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock, to a cemented pan, or to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; subsidence of organic layers; and the potential for frost action. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock or to a cemented pan, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, or sulfur. Availability of drainage outlets is not considered in the ratings.

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to the water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The construction of a system is affected by large stones and depth to bedrock or to a cemented pan. The performance of a system is affected by the depth of the root zone, the amount of salts or sodium, and soil reaction.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to 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 soil blowing or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

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

Soil Properties

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

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics. These results are reported in table 18.

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

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

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

Classification of the soils is determined according to the Unified soil classification system *(2)* and the system adopted by the American Association of State Highway and Transportation Officials *(1)*. Both systems are described in the "PCA Soil Primer" *(10)*.

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

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

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest. The AASHTO classification for soils tested, with group index numbers in parentheses, is given in table 18.

Rock fragments larger than 3 inches in diameter are

indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

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

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

The estimates of grain-size distribution, liquid limit, and plasticity index are 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 15 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

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

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

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at ⅓-bar moisture tension. Weight is determined after drying the soil at 105 degrees C. In this table, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

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

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

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

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

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

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

percent. *Very high*, more than 9 percent, is sometimes used.

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

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

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

1. Coarse sands, sands, fine sands, and very fine sands. These soils are generally not suitable for crops. They are extremely erodible, and vegetation is difficult to establish.
2. Loamy coarse sands, loamy sands, loamy fine sands, loamy very fine sands, and sapric soil material. These soils are very highly erodible. Crops can be grown if intensive measures to control soil blowing are used.
3. Coarse sandy loams, sandy loams, fine sandy loams, and very fine sandy loams. These soils are highly erodible. Crops can be grown if intensive measures to control soil blowing are used.

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

4. Clays, silty clays, noncalcareous clay loams, and silty clay loams that are more than 35 percent clay. These soils are moderately erodible. Crops can be grown if measures to control soil blowing are used.
5. Noncalcareous loams and silt loams that are less than 20 percent clay and sandy clay loams, sandy clays, and hemic soil material. These soils are slightly erodible. Crops can be grown if measures to control soil blowing are used.
6. Noncalcareous loams and silt loams that are more than 20 percent clay and noncalcareous clay loams that are less than 35 percent clay. These soils are very slightly erodible. Crops can be grown if ordinary measures to control soil blowing are used.
7. Silts, noncalcareous silty clay loams that are less than 35 percent clay, and fibric soil material. These soils are very slightly erodible. Crops can be grown if ordinary measures to control soil blowing are used.
8. Soils that are not subject to soil blowing because of coarse fragments on the surface or because of surface wetness.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In table 15, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter 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 16 gives estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

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

The four hydrologic soil groups are:

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

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

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

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

If a soil is assigned to two hydrologic groups in

table 16, the first letter is for drained areas and the second is for undrained areas.

Flooding, the temporary inundation of an area, is caused by overflowing streams, by runoff from adjacent slopes, or by inflow from high tides. Shallow water standing or flowing for short periods after rainfall or snowmelt is not considered flooding. Standing water in swamps and marshes or in a closed depression is considered ponding.

Table 16 gives the frequency and duration of flooding and the time of year when flooding is most likely.

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

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

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

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. The estimates are based mainly on the evidence of a saturated zone, namely grayish colors or mottles in the soil. Indicated in table 16 are the depth to the seasonal high water table; the kind of water table—that is, perched or apparent; and the months of the year that the water table commonly is high. A water table that is seasonally high for less than 1 month is not indicated in table 16.

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

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

Depth to bedrock is given if bedrock is within a depth of 5 feet. The depth is based on many soil borings and on observations during soil mapping. The rock is either soft or hard. If the rock is soft or fractured, excavations can be made with trenching machines, backhoes, or small rippers. If the rock is hard or massive, blasting or special equipment generally is needed for excavation.

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 Properties of Selected Soils

By Bill R. Smith, professor, Department of Agronomy and Soils, South Carolina Agricultural Experiment Station, Clemson University.

Physical, chemical, and mineralogical properties of several soils in the survey area are given in table 17. The data are for soils sampled at carefully selected sites. The pedons are typical of the series in the survey area and are described in the section "Soil Series and Their Morphology." Soil samples were analyzed by the

Soil Characterization Laboratory, South Carolina Agricultural Experiment Station.

The methods used in obtaining the data are indicated in the list that follows. The codes in parentheses refer to published methods *(14)*.

Particle-size distribution—pipette (3A1).
Exchangeable bases—ammonium acetate, pH 7.0 (5B1a); calcium (6N2e); magnesium (6O2d); sodium (6P2b); potassium (6Q2b).
Extractable acidity—barium chloride-triethanolamine (6H1a).
Cation-exchange capacity—sum of cations (5A3).
Cation-exchange capacity—ammonium acetate, pH 7.0 (5A1b).
Exchangeable aluminum—potassium chloride (6G1e).
Effective cation-exchange capacity—exchangeable bases plus exchangeable aluminum.
Base saturation—sum of cations (5C3).
Aluminum saturation—bases plus aluminum.
pH—1:1 water dilution (8C1a).
Clay mineralogy—x-ray diffraction (7A2a) and differential scanning calorimetry (7A3).

Exchangeable bases are rather low in most of the soils tested and tend to decrease to very low amounts with increasing depth. A few of the soils are in cultivated areas and have received applications of lime and fertilizer. Most of the soils are in forested areas, and nutrient cycling by native vegetation results in increasing amounts of exchangeable bases in the surface layer and decreasing amounts of exchangeable bases with increasing depth. Relatively low levels of nutrients are expected in soils in a warm, humid climate such as that in Chesterfield County, even if lime and fertilizer have been applied. These conditions favor the development of leached, acid soils that have low inherent fertility.

Amounts of exchangeable aluminum that may be toxic to some plants are in all horizons of these soils that have pH values of less than 5.5. Aluminum saturation levels that are more than 30 percent of the effective cation-exchange capacity (ECEC) are toxic to some crops. Aluminum saturation levels generally are fairly high in mineral soils if pH values are 5.0 or less. In many of these soils, aluminum saturation levels are about 50 percent or more in or just below the argillic horizon. Alamance, Claycreek, Coxville, Pelion, and Vaucluse soils have particularly high aluminum saturation levels throughout. Levels of 50 to more than 60 percent are toxic to many crops and result in a severely restricted rooting depth. If these soils are cultivated, applications of lime that increase the pH value to 6.0 quickly reduce the amount of exchangeable aluminum in the surface layer to an extremely low level. The subsurface layer is less affected by applications of lime; therefore, the amount of exchangeable aluminum is reduced much more slowly and to a lesser extent than in the surface layer.

The highly weathered nature of most of the soils is generally reflected in the clay mineralogy. There are two exceptions, however. Claycreek soils formed in Triassic siltstone that contains large amounts of montmorillonite and vermiculite in addition to kaolinite. Wickham soils formed on stream terraces in alluvium that contains substantial quantities of weatherable minerals in the sand and coarse silt fractions. Thus the clay mineralogy of the Claycreek and Wickham soils is largely inherited from the parent material. The clay fraction of the rest of the soils tested is dominated by kaolinite and has smaller amounts of hydroxy-aluminum interlayered with vermiculite and gibbsite, which are indicative of intense weathering. Several of the soils have kandic horizons.

Engineering Index Test Data

Table 18 shows laboratory test data for several pedons sampled at carefully selected sites in the survey area. The pedons are typical of the series and are described in the section "Soil Series and Their Morphology." The soil samples were tested by the South Carolina Department of Highways and Public Transportation.

The testing methods generally are those of the American Association of State Highway and Transportation Officials (AASHTO) or the American Society for Testing and Materials (ASTM).

The tests and methods are AASHTO classification—M 145 (AASHTO), D 3282 (ASTM); Unified classification—D 2487 (ASTM); Mechanical analysis—T 88 (AASHTO), D 422 (ASTM), D 2217 (ASTM); Liquid limit—T 89 (AASHTO), D 4318 (ASTM); and Plasticity index—T 90 (AASHTO), D 4318 (ASTM).

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories *(13)*. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 19 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Eleven soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Entisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Aquent (*Aqu*, meaning water, plus *ent*, from Entisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Fluvaquents (*Fluv*, meaning flood plain, plus *aquent*, the suborder of the Entisols that has an aquic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Fluvaquents.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineral content, temperature regime, depth of the root zone, consistence, moisture equivalent, slope, and permanent cracks. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine, mixed, acid, thermic Typic Fluvaquents.

SERIES. The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. The texture of the surface layer or of the substratum can differ within a series.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. The descriptions are arranged in alphabetic order.

Characteristics of the soil and the material in which it formed are identified for each series. The soil is compared with similar soils and with nearby soils of other series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the "Soil Survey Manual" *(15)*. Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" *(13)*. Unless otherwise stated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section "Detailed Soil Map Units."

Ailey Series

The Ailey series consists of very deep, well drained, slowly permeable soils that formed in thick deposits of sandy and loamy marine sediments. These soils are on

broad ridges and side slopes in the Sand Hills and on the Coastal Plain. Slopes range from 0 to 15 percent. The soils are loamy, siliceous, thermic Arenic Kanhapludults.

Ailey soils are geographically associated with Alpin, Candor, Emporia, Noboco, Pelion, and Vaucluse soils. Alpin soils are Quartzipsamments. Candor soils are sandy. Emporia, Noboco, Pelion, and Vaucluse soils are not in an arenic subgroup.

Typical pedon of Ailey sand, moderately wet, 2 to 6 percent slopes, 1.6 miles north on South Carolina Highway 102 from the junction of South Carolina Highway 102 and U.S. Highway 1 in Patrick; 6 miles west on Wire Road; 50 feet north:

A—0 to 3 inches; brown (10YR 5/3) sand; weak fine granular structure; very friable; common fine and medium roots; strongly acid; clear wavy boundary.

E—3 to 28 inches; light yellowish brown (10YR 6/4) sand; single grained; loose; common fine and medium roots and few coarse roots; about 1 percent fragments of ironstone; strongly acid; clear wavy boundary.

BE—28 to 35 inches; brownish yellow (10YR 6/8) sandy loam; weak fine subangular blocky structure; friable; few fine and medium roots; very strongly acid; gradual wavy boundary.

Bt—35 to 43 inches; brownish yellow (10YR 6/8) sandy clay loam; common medium distinct strong brown (7.5YR 5/8) mottles; weak medium subangular blocky structure; friable; few fine roots; few coarse pores; few distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

Btx—43 to 53 inches; mottled brownish yellow (10YR 6/8), light brownish gray (10YR 6/2), and red (2.5YR 4/8) sandy clay loam; weak medium subangular blocky structure; very friable in the gray part and very firm, brittle, and compact in the yellow and red parts; few faint clay films on faces of peds; common clean sand grains; about 2 percent fragments of ironstone; few fine flakes of mica; strongly acid; gradual wavy boundary.

2C—53 to 62 inches; reddish yellow (7.5YR 6/8) sandy loam; massive; firm; few distinct white (10YR 8/1) balls of kaolin; few fine flakes of mica; strongly acid; clear wavy boundary.

2Cd—62 to 72 inches; mottled light brownish gray (10YR 6/2), red (2.5YR 4/8), and brownish yellow (10YR 6/8) clay loam; massive; very firm; few fine flakes of mica; very strongly acid.

The thickness of the solum ranges from 42 to more than 60 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed. The depth to layers that are dense, compact, and brittle in part of the mass ranges from 30 to 55 inches. The content of ironstone, gravel, or ironstone and gravel ranges from 0 to 15 percent in the A and E horizons and from 0 to 5 percent in the B and C horizons.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 1 to 3. It is sand or loamy sand.

The E horizon has hue of 10YR, value of 5 or 6, and chroma of 3 to 6. It is sand or loamy sand.

The Bt horizon has hue of 5YR to 10YR, value of 5 or 6, and chroma of 4 to 8. It is sandy loam or sandy clay loam.

The Btx horizon has hue of 5YR to 10YR, value of 5 or 6, and chroma of 4 to 8, or it is mottled in shades of red, yellow, brown, and gray and has no dominant matrix color. It is sandy loam or sandy clay loam.

The C or 2C horizon has hue of 2.5YR to 10YR, value of 4 to 6, and chroma of 4 to 8 and has mottles in shades of gray, brown, or red, or it is mottled throughout in shades of yellow, brown, red, and gray and has no dominant matrix color. It is coarse sandy loam, sandy loam, sandy clay loam, or clay loam.

Alaga Series

The Alaga series consists of very deep, somewhat excessively drained, rapidly permeable soils that formed in sandy fluvial sediments. These soils are on broad flats and stream terraces adjacent to large flood plains on the Coastal Plain. Slopes range from 0 to 4 percent. The soils are thermic, coated Typic Quartzipsamments.

Alaga soils are geographically associated with Chastain, Chewacla, Riverview, Tetotum, and Wickham soils. Chastain, Chewacla, and Riverview soils have a cambic horizon. They are on flood plains. Tetotum and Wickham soils have a loamy argillic horizon.

Typical pedon of Alaga sand, 0 to 4 percent slopes, 6.2 miles south on U.S. Highway 52 from the intersection of South Carolina Highway 9 in Cheraw, 1.8 miles east on an unpaved road; 0.5 mile south on an unpaved road; 0.3 mile north on a logging trail; 20 feet east of the trail:

A—0 to 7 inches; brown (10YR 4/3) sand; weak fine granular structure; very friable; many fine roots; very strongly acid; clear wavy boundary.

C1—7 to 28 inches; brown (7.5YR 4/4) loamy sand; single grained; loose; common fine roots; some sand grains coated with clay; few flakes of mica; strongly acid; gradual wavy boundary.

C2—28 to 45 inches; strong brown (7.5YR 4/6) loamy sand; single grained; loose; common fine roots; some sand grains coated with clay; few flakes of mica; strongly acid; clear wavy boundary.

C3—45 to 52 inches; strong brown (7.5YR 5/8) loamy

sand; single grained; loose; few fine and medium roots; few flakes of mica; few thinly coated sand grains; strongly acid; clear wavy boundary.

C4—52 to 80 inches; mottled yellow (10YR 7/6) and brownish yellow (10YR 6/6) loamy sand; single grained; loose; strongly acid.

The thickness of the sandy horizons is more than 80 inches. Reaction ranges from very strongly acid to moderately acid throughout the profile, except in areas where the surface layer has been limed.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 2 or 3. It is sand or loamy sand.

The upper part of the C horizon has hue of 7.5YR, value of 4 or 5, and chroma of 4 to 6. The lower part has hue of 7.5YR or 10YR, value of 5 to 7, and chroma of 6 to 8. The C horizon is sand or loamy sand.

Alamance Series

The Alamance series consists of very deep, well drained, moderately permeable soils that formed in material weathered from Carolina slate or other fine grained rock. These soils are on side slopes and ridgetops in the Piedmont. Slopes range from 1 to 6 percent. The soils are fine-silty, siliceous, thermic Typic Hapludults.

Alamance soils are geographically associated with Ailey, Badin, Georgeville, and Goldston soils. Ailey soils formed in Coastal Plain sediments. They are in an arenic subgroup. Badin and Georgeville soils are clayey. Goldston soils have a paralithic contact at a depth of 10 to 20 inches.

Typical pedon of Alamance sandy loam, 1 to 6 percent slopes, south of Chesterfield; 3.1 miles south on South Carolina Highway 102 from the intersection of South Carolina Highway 9 and South Carolina Highway 102 in Chesterfield; 0.3 mile west on a field road; 0.3 mile north:

Ap—0 to 6 inches; brown (10YR 5/3) sandy loam; weak fine granular structure; very friable; common fine roots; about 3 percent rounded quartz gravel and channers of slate; strongly acid; abrupt wavy boundary.

Bt1—6 to 24 inches; brownish yellow (10YR 6/8) silty clay loam; strong medium subangular blocky structure; very friable; many fine roots; few fine pores; many distinct clay films on faces of peds; few worm casts; few weathered channers of slate; very strongly acid; gradual wavy boundary.

Bt2—24 to 36 inches; brownish yellow (10YR 6/6) silt loam; common medium distinct reddish yellow (7.5YR 6/8), many medium distinct white (10YR 8/2), and common medium prominent red (2.5YR 5/8) mottles; strong medium subangular blocky structure; very friable; few fine roots; few fine pores; many distinct clay films on faces of peds; few weathered channers of slate; few worm casts; very strongly acid; gradual wavy boundary.

BC—36 to 44 inches; brownish yellow (10YR 6/8) silt loam and yellowish brown (7.5YR 5/6) and white (10YR 8/1), weathered saprolite; weak coarse subangular blocky structure; friable; few fine roots; few faint clay films on faces of peds; about 1 percent irregularly shaped quartz gravel; very strongly acid; gradual wavy boundary.

C—44 to 65 inches; strong brown (7.5YR 5/8) and white (10YR 8/1), highly weathered saprolite and brownish yellow (10YR 6/8) silt loam; massive; very friable; about 80 percent soft saprolite that crushes to silt loam; about 5 percent hard channers of slate; very strongly acid.

The thickness of the solum ranges from 30 to 60 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed. The content of rock fragments ranges from 0 to 15 percent in the A and E horizons and from 0 to 10 percent in the Bt horizon.

The A horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 or 3. It is sandy loam, loam, or silt loam.

The Bt horizon has hue of 7.5YR to 2.5Y, value of 5 or 6, and chroma of 6 to 8. It is silt loam or silty clay loam.

The C horizon is mottled in shades of brown, gray, and yellow. It is very fine sandy loam, loam, or silt loam.

Alpin Series

The Alpin series consists of very deep, excessively drained, rapidly permeable or moderately rapidly permeable soils that formed in thick beds of sandy eolian or marine sediments. These soils are on broad ridgetops and side slopes in the Sand Hills and on the Coastal Plain. Slopes range from 0 to 15 percent. The soils are thermic, coated Typic Quartzipsamments.

Alpin soils are geographically associated with Candor, Johnston, Ailey, Lucy, and Troup soils. Ailey, Candor, and Lucy soils have an argillic horizon within a depth of 40 inches. Johnston soils are Humaquepts. They are on flood plains. Troup soils have an argillic horizon at a depth of 40 to 80 inches.

Typical pedon of Alpin sand, 0 to 6 percent slopes, south of Chesterfield; 10 miles south on South Carolina Highway 145 from the intersection of South Carolina Highway 9 in Chesterfield; 4 miles north on Forest

Service Route 1; 200 feet west on Forest Service Route 1A; 200 feet north of the road:

A—0 to 10 inches; brown (10YR 5/3) sand; weak fine granular structure; very friable; many fine and medium roots; very strongly acid; clear wavy boundary.

E1—10 to 27 inches; brownish yellow (10YR 6/6) sand; single grained; loose; common fine and medium roots and few coarse roots; few clean sand grains; strongly acid; gradual wavy boundary.

E2—27 to 44 inches; strong brown (7.5YR 5/8) sand; single grained; loose; common fine and medium roots and few coarse roots; few clean sand grains; very strongly acid; gradual wavy boundary.

E3—44 to 49 inches; brownish yellow (10YR 6/6) sand; single grained; loose; few fine and medium roots; very strongly acid; gradual wavy boundary.

E and Bt—49 to 88 inches; very pale brown (10YR 7/3) sand; single grained; loose; few yellowish brown (10YR 5/6) lamellae of loamy sand about 0.4 inch thick and about 4 inches apart; sand grains in lamellae are coated; common streaks of white (10YR 8/1) uncoated sand between lamellae; few fine and medium roots; very strongly acid.

The thickness of the sandy horizons is more than 80 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed. Depth to the lamellae ranges from 40 to 78 inches. The cumulative thickness of the lamellae ranges from 3 to 6 inches.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 1 to 3. It is sand.

The E horizon has hue of 7.5YR or 10YR, value of 5 to 7, and chroma of 3 to 8. It is sand.

The E part of the E and Bt horizon has hue of 10YR, value of 7 or 8, and chroma of 1 to 6. It is sand. The Bt part of the E and Bt horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 4 to 8. It is loamy sand or sandy loam.

Badin Series

The Badin series consists of moderately deep, well drained, moderately permeable soils that formed in material weathered from Carolina slate or other fine grained rock. These soils are on ridgetops and side slopes in the Piedmont. Slopes range from 2 to 25 percent. The soils are clayey, mixed, thermic Typic Hapludults.

Badin soils are geographically associated with Alamance, Georgeville, Goldston, and Pacolet soils. Alamance, Georgeville, and Pacolet soils are more than 40 inches deep over bedrock. Alamance soils are fine-silty. Goldston soils do not have an argillic horizon. They have a paralithic contact at a depth of 10 to 20 inches.

Typical pedon of Badin silty clay loam, 6 to 10 percent slopes, eroded, 3.9 miles north on South Carolina Highway 107; from the junction of South Carolina Highway 107 and South Carolina Highway 9 in Pageland; 0.1 mile west on South Carolina Highway 579; 0.2 mile south on an unpaved road; 50 feet west, in a field:

Ap—0 to 6 inches; strong brown (7.5YR 5/6) silty clay loam; weak fine subangular blocky structure; friable; common fine roots; about 5 percent channers of slate and 1 percent medium quartz gravel; moderately acid; clear wavy boundary.

BE—6 to 9 inches; reddish yellow (7.5YR 6/6) silty clay loam; weak fine subangular blocky structure; friable; common fine roots; few fine pores; about 5 percent channers of slate; strongly acid; gradual wavy boundary.

Bt—9 to 23 inches; yellowish red (5YR 5/8) silty clay; moderate medium subangular blocky structure; friable; few fine roots; few distinct clay films on faces of peds; about 5 percent channers of slate; strongly acid; gradual wavy boundary.

BC—23 to 33 inches; yellowish red (5YR 5/6) channery silty clay loam and silt loam; weak fine subangular blocky structure, some of which is inherited from the bedrock; friable; fine roots; common distinct clay films on faces of peds and along fracture planes; about 20 percent partially weathered channers of slate; very strongly acid; gradual wavy boundary.

Cr—33 to 40 inches; multicolored, weathered, fractured slate that can be dug with difficulty with a spade; rock-controlled structure; very strongly acid; gradual wavy boundary.

R—40 inches; multicolored, hard, jointed slate bedrock.

The thickness of the solum and the depth to weathered bedrock range from 20 to 40 inches. The depth to hard bedrock ranges from 40 to 60 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed. The content of rock fragments ranges from 5 to 20 percent in the A and Bt horizons.

The A horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 2 to 6. It is silt loam or silty clay loam in the fine-earth fraction.

The Bt horizon has hue of 2.5YR to 7.5YR, value of 4 to 6, and chroma of 4 to 8. It is silty clay loam or silty clay in the fine-earth fraction.

The Cr horizon is multicolored, weathered, fractured

slate or fine grained rock that can be dug with difficulty with a spade.

The R horizon is multicolored, hard, jointed slate or fine grained rock.

Bibb Series

The Bibb series consists of very deep, poorly drained, moderately permeable soils that formed in loamy and sandy alluvium. These soils are on flood plains in the Coastal Plain. Slopes are less than 2 percent. The soils are coarse-loamy, siliceous, acid, thermic Typic Fluvaquents.

Bibb soils are geographically associated with Chastain, Chewacla, Johnston, Riverview, and Tetotum soils. Chewacla, Riverview, and Tetotum soils have dominant chroma of more than 2 in the upper part of the profile. Tetotum soils are Hapludults. They are on adjacent terraces. Chastain soils are clayey. Johnston soils have an umbric epipedon.

Typical pedon of Bibb sandy loam, frequently flooded, about 10 miles southwest of Chesterfield; 0.5 mile southwest of Highway 29 from South Carolina Secondary Highway 22; 1 mile west on an unpaved road; 0.2 mile southwest on an unpaved road; 56 feet south:

A—0 to 7 inches; dark grayish brown (10YR 4/2) sandy loam; weak fine granular structure; friable; many fine and medium roots and few coarse roots; few fine pores; very strongly acid; clear wavy boundary.

Cg1—7 to 35 inches; gray (10YR 5/1) loam; massive; friable; few fine and medium roots; few fine flakes of mica; very strongly acid; gradual wavy boundary.

Cg2—35 to 50 inches; gray (10YR 5/1) sandy loam; massive; friable; few fine roots; few fine flakes of mica; very strongly acid; gradual wavy boundary.

Cg3—50 to 60 inches; light brownish gray (10YR 6/2) sand; massive; very friable; few fine flakes of mica; very strongly acid.

Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 1 to 3. It is sandy loam or loam.

The Cg horizon has hue of 10YR, value of 4 to 6, and chroma of 1 or 2. It is dominantly sandy loam or loam but ranges to sand or loamy sand in the lower part.

Bonneau Series

The Bonneau series consists of very deep, well drained, moderately permeable soils that formed in loamy marine sediments. These soils are on nearly level or gently sloping, low ridges on the Coastal Plain. Slopes range from 0 to 4 percent. The soils are loamy, siliceous, thermic Arenic Paleudults.

Bonneau soils are geographically associated with Ailey, Emporia, Goldsboro, Noboco, Smithboro, and Woodington soils. Ailey soils are Hapludults. Noboco, Emporia, Goldsboro, Smithboro, and Woodington soils are not in an arenic subgroup.

Typical pedon of Bonneau sand, 0 to 4 percent slopes, west of Cheraw near the Cheraw Airport; about 0.3 mile north of South Carolina Highway 9 on South Carolina Highway 758; 0.1 mile east, in a farm field:

Ap—0 to 12 inches; brown (10YR 4/3) sand; weak fine granular structure; friable; many fine and medium roots; few clean sand grains; strongly acid; clear wavy boundary.

E—12 to 25 inches; light yellowish brown (10YR 6/4) sand; single grained; friable; few fine roots; moderately acid; clear wavy boundary.

Bt1—25 to 42 inches; brownish yellow (10YR 6/6) sandy loam; few medium distinct brownish yellow (10YR 6/8) mottles; weak fine subangular blocky structure; friable; few fine roots; moderately acid; gradual wavy boundary.

Bt2—42 to 49 inches; brownish yellow (10YR 6/8) sandy clay loam; common medium prominent red (2.5YR 4/8) and few fine prominent pale brown (10YR 6/3) mottles; moderate medium subangular blocky structure; friable; common distinct clay films on faces of peds; moderately acid; gradual wavy boundary.

Bt3—49 to 65 inches; mottled brownish yellow (10YR 6/8), red (2.5YR 4/8), and gray (10YR 6/1) sandy clay loam; weak medium subangular blocky structure; firm in the gray part and friable in the rest; few fine pores; few prominent clay films on faces of peds; common medium clean sand grains; strongly acid; gradual wavy boundary.

Bt4—65 to 72 inches; mottled brownish yellow (10YR 6/8), light brownish gray (10YR 6/2), gray (10YR 5/1), and red (2.5YR 4/8) sandy clay loam; moderate medium subangular blocky structure; yellow mottles are firm, gray mottles are friable and firm, and red mottles are firm and brittle; few distinct clay films on faces of peds; few medium and coarse clean sand grains; 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 the profile, except in areas where the surface layer has been limed.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 1 to 4. It is sand or loamy sand.

The E horizon has hue of 10YR, value of 4 to 6, and

chroma of 2 to 6. It is sand or loamy sand.

The upper part of the Bt horizon has hue of 7.5YR or 10YR, value of 5 to 7, and chroma of 3 to 8. It is sandy loam or sandy clay loam. The lower part of the Bt horizon has hue of 7.5YR or 10YR, value of 5 to 7, and chroma of 3 to 8, or it is mottled throughout in shades of red, brown, yellow, or gray and has no dominant matrix color. Mottles that have chroma of 2 or less are within a depth of 60 inches. The lower part of the Bt horizon is sandy clay loam or sandy clay.

Candor Series

The Candor series consists of very deep, somewhat excessively drained soils that formed in sandy and loamy marine sediments. Permeability is rapid in the upper part of the profile and moderate or moderately slow in the lower part. These soils are on broad ridgetops and side slopes in the Sand Hills and on the Coastal Plain. Slopes range from 0 to 15 percent. The soils are sandy, siliceous, thermic Arenic Paleudults.

Candor soils are geographically associated with Ailey, Alpin, Johnston, Pelion, Troup, and Vaucluse soils. Ailey soils have a loamy argillic horizon at a depth of 20 to 40 inches. Alpin soils are Quartzipsamments. Johnston soils are Humaquepts. They are on flood plains. Pelion and Vaucluse soils are not in an arenic subgroup. Troup soils are in a grossarenic subgroup.

Typical pedon of Candor sand, 0 to 6 percent slopes, south of Ruby; 1.4 miles south on South Carolina Highway 265 from the intersection of South Carolina Highway 138 and South Carolina Highway 265; 0.1 mile south of an unpaved road; 15 feet northeast of the road:

A—0 to 6 inches; dark grayish brown (10YR 4/2) sand; weak fine granular structure; very friable; many fine roots; strongly acid; clear wavy boundary.

E—6 to 25 inches; very pale brown (10YR 7/4) sand; single grained; loose; few fine and medium roots; strongly acid; abrupt wavy boundary.

Bt—25 to 42 inches; yellowish brown (10YR 5/8) loamy sand; weak coarse subangular blocky structure; very friable; many fine to coarse roots; sand grains coated and bridged with clay; strongly acid; gradual wavy boundary.

E′—42 to 60 inches; yellow (10YR 7/6) sand; single grained; loose; few decayed roots; many clean sand grains; very strongly acid; clear wavy boundary.

B′t1—60 to 67 inches; brownish yellow (10YR 6/6) sandy loam; common medium distinct yellowish brown (10YR 5/8) mottles; weak medium subangular blocky structure; friable; sand grains coated and bridged with clay; few clean sand grains; brittle in about 5 percent of the mass; very strongly acid; clear wavy boundary.

B′t2—67 to 80 inches; mottled reddish yellow (7.5YR 6/8), yellowish brown (10YR 5/8), and gray (10YR 6/1) sandy clay loam; weak coarse subangular blocky structure; massive in part; brittle and compact in the massive part and friable and firm in the rest; few clean sand grains; few fine flakes of mica; strongly acid.

The thickness of the sandy horizons ranges from 40 to 80 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3. It is sand.

The E horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 3 to 6. It is sand.

The Bt horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 6 to 8. It is loamy sand.

The E′ horizon has hue of 7.5YR or 10YR, value of 5 to 8, and chroma of 3 to 8. It is sand.

The B′t horizon has hue of 5YR to 10YR, value of 5 or 6, and chroma of 6 to 8, or it is mottled throughout in shades of red, brown, yellow, or gray and has no dominant matrix color. It is sandy loam, sandy clay loam, or sandy clay.

Cecil Series

The Cecil series consists of very deep, well drained, moderately permeable soils that formed in material weathered from acid crystalline rock. These soils are on ridgetops and side slopes in the Piedmont. Slopes range from 2 to 10 percent. The soils are clayey, kaolinitic, thermic Typic Kanhapludults.

Cecil soils are geographically associated with Alamance, Badin, Chewacla, Georgeville, Pacolet, and Rion soils. Alamance soils are fine-silty. Badin and Georgeville soils have more than 30 percent silt in the Bt horizon. Chewacla soils are Dystrochrepts. They are on flood plains. Pacolet soils have a thinner Bt horizon than the Cecil soils. Rion soils are fine-loamy.

Typical pedon of Cecil sandy clay loam, 2 to 6 percent slopes, eroded, 3.6 miles south of Pageland on South Carolina Highway 151; 100 feet west of the road:

Ap—0 to 2 inches; yellowish red (5YR 5/8) sandy clay loam; weak fine subangular blocky structure; friable; few fine roots; few clean coarse sand grains; about 2 percent quartz gravel; strongly acid; clear wavy boundary.

Bt1—2 to 32 inches; red (2.5YR 4/8) clay; moderate medium subangular blocky structure; firm; few fine roots; common distinct clay films on faces of peds; about 2 percent quartz gravel; few fine flakes of mica; strongly acid; gradual wavy boundary.

Bt2—32 to 48 inches; red (2.5YR 4/8) clay loam; few medium prominent yellow (10YR 7/8) and few fine prominent brownish yellow (10YR 6/8) mottles; weak medium subangular blocky structure; friable; few distinct clay films on faces of peds; few fine flakes of mica; very strongly acid; gradual wavy boundary.

BC—48 to 60 inches; yellowish red (5YR 5/8) sandy clay loam and clay loam; few medium prominent brownish yellow (10YR 6/8) mottles; weak medium subangular blocky structure; friable; few clean coarse sand grains; few fine flakes of mica; strongly acid.

The thickness of the solum ranges from 40 to more than 60 inches. The depth to bedrock is more than 72 inches. The content of rock fragments ranges from 0 to 10 percent throughout the profile. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A horizon has hue of 2.5YR to 10YR, value of 3 to 5, and chroma of 2 to 8. It is sandy loam or sandy clay loam.

The Bt horizon has hue of 10R or 2.5YR, value of 4 or 5, and chroma of 6 to 8. It is clay loam or clay.

The C horizon, if it occurs, is multicolored, coarse grained, loamy saprolite weathered from crystalline rock.

Chastain Series

The Chastain series consists of very deep, poorly drained, slowly permeable soils that formed in loamy and clayey fluvial sediments washed from the Piedmont. These soils are on flood plains that drain the Piedmont and Coastal Plain. Slopes are dominantly less than 1 percent but range from 0 to 2 percent. The soils are fine, mixed, acid, thermic Typic Fluvaquents.

Chastain soils are geographically associated with Alaga, Bibb, Chewacla, Riverview, Tetotum, and Wickham soils. Alaga soils are sandy. They are on stream terraces. Bibb soils are coarse-loamy. Chewacla and Riverview soils have dominant chroma of more than 2 in the upper 20 inches. Tetotum and Wickham soils are Hapludults. They are on stream terraces.

Typical pedon of Chastain silt loam, in an area of Chewacla-Chastain complex, frequently flooded; 6.2 miles south on U.S. Highway 52 from the intersection with South Carolina Highway 9 in Cheraw; 1.8 miles east on an unpaved road; 1.5 miles south on an unpaved road; 50 feet south of the road, in a wooded area:

A—0 to 6 inches; yellowish brown (10YR 5/4) silt loam; few fine prominent yellowish red (5YR 5/8) and common medium distinct dark yellowish brown (10YR 4/6) mottles; weak medium subangular blocky structure; very friable; many fine and medium roots and few large roots; common fine pores; strongly acid; gradual wavy boundary.

Bg1—6 to 21 inches; gray (10YR 6/1) clay; common medium prominent reddish yellow (7.5YR 6/8) and brownish yellow (10YR 6/6) mottles; moderate medium subangular blocky structure; firm; common fine and medium roots; common fine and medium pores; few krotovinas; common distinct dark brown (7.5YR 4/2) silt flows; few concretions that have a black center encased by a brownish outer layer; very strongly acid; gradual wavy boundary.

Bg2—21 to 50 inches; gray (10YR 5/1) clay; common medium prominent yellowish brown (10YR 5/6) and strong brown (7.5YR 5/8) mottles; strong coarse subangular blocky structure; firm; very few fine and medium roots; common fine and medium pores; few krotovinas; few pockets and lenses of silt loam; few fine and medium flakes of mica; very strongly acid; gradual wavy boundary.

Bg3—50 to 65 inches; gray (10YR 6/1) silty clay loam; common medium prominent brownish yellow (10YR 6/8) and reddish yellow (7.5YR 6/8) and common medium faint dark gray (10YR 4/1) mottles; moderate medium angular blocky structure; firm; few fine roots; few pockets of silt loam; few fine and medium flakes of mica; very strongly acid.

The thickness of the solum ranges from 40 to more than 72 inches. Reaction is very strongly acid or strongly acid in the upper part of the profile and ranges from very strongly acid to moderately acid in the lower part.

The A horizon has hue of 10YR, value of 5 or 6, and chroma of 2 to 4. It is silt loam or silty clay loam.

The Bg horizon has hue of 10YR or 2.5Y, or it is neutral in hue. It has value of 4 to 7 and chroma of 0 to 2. In most pedons it has mottles in shades of yellow, brown, or gray. It is silty clay loam, clay loam, or clay.

Chewacla Series

The Chewacla series consists of very deep, somewhat poorly drained, moderately permeable soils that formed in loamy fluvial sediments washed from the Piedmont. These soils are on flood plains that drain the Piedmont and Coastal Plain. Slopes range from 0 to 2 percent. The soils are fine-loamy, mixed, thermic Fluvaquentic Dystrochrepts.

Chewacla soils are geographically associated with Alaga, Bibb, Chastain, Riverview, Tetotum, and Wickham soils. Alaga soils are sandy. They are on stream terraces. Bibb and Chastain soils have dominant

chroma of 2 or less below the A horizon. Riverview soils do not have low-chroma mottles within a depth of 24 inches. Tetotum and Wickham soils are Hapludults. They are on stream terraces.

Typical pedon of Chewacla clay loam, in an area of Chewacla-Chastain complex, frequently flooded; south of Cheraw; 6.2 miles south on U.S. Highway 52 from the intersection of South Carolina Highway 9; 1.8 miles east of an unpaved road; 1.5 miles south on an unpaved road; 0.1 mile northeast on a logging road; about 20 feet west of the road:

A—0 to 7 inches; yellowish brown (10YR 5/4) clay loam; moderate fine granular and moderate medium subangular blocky structure; friable; common fine roots and few medium roots; common fine pores; few worm casts; very strongly acid; clear wavy boundary.

Bw1—7 to 14 inches; brownish yellow (10YR 6/6) loam; common medium distinct reddish yellow (7.5YR 7/6) and common medium prominent gray (10YR 6/1) mottles; weak medium subangular blocky structure; friable; common fine roots; common fine pores; few flakes of mica; very strongly acid; gradual wavy boundary.

Bw2—14 to 22 inches; brownish yellow (10YR 6/6) loam; common medium distinct reddish yellow (7.5YR 7/6), common medium prominent gray (10YR 6/1), and few fine prominent yellowish red (5YR 5/8) mottles; moderate medium subangular blocky structure; friable; common fine roots; common fine pores; few flakes of mica; very strongly acid; gradual wavy boundary.

Bw3—22 to 38 inches; mottled light gray (10YR 7/1), yellowish brown (10YR 5/6), and red (10R 4/8) loam; moderate medium subangular blocky structure; friable; few fine roots; common fine pores; common flakes of mica; strongly acid; gradual wavy boundary.

Bw4—38 to 50 inches; coarsely mottled light gray (10YR 7/1) and strong brown (7.5YR 5/6) sandy loam and sandy clay loam; weak coarse subangular blocky structure; friable; few fine roots; common fine and medium pores; common flakes of mica; moderately acid; gradual wavy boundary.

Cg—50 to 65 inches; light gray (10YR 7/1), stratified loamy sand, sandy loam, and sandy clay loam; common medium prominent strong brown (7.5YR 5/6) mottles; massive; friable; common flakes of mica; common clean sand grains; strongly acid.

The thickness of the solum ranges from 40 to 70 inches. Few or common flakes of mica are throughout the soil. The content of rock fragments ranges from 0 to 5 percent in the A and B horizons. Reaction ranges from very strongly acid to moderately acid throughout the profile, except in areas where the surface layer has been limed. Few or common concretions are in some pedons.

The A horizon has hue of 5YR to 10YR, value of 3 to 5, and chroma of 1 to 4. It is loam, silt loam, or clay loam.

The Bw horizon has hue of 7.5YR to 2.5Y, value of 4 to 7, and chroma of 4 to 8, or it is mottled throughout in shades of red, brown, and gray and has no dominant matrix color. In most pedons it has mottles in shades of red, brown, gray, and yellow. Mottles that have chroma of 2 or less are within a depth of 24 inches. The Bw horizon is sandy loam, silt loam, loam, clay loam, sandy clay loam, or silty clay loam.

The C or Cg horizon has hue of 7.5YR to 2.5Y, value of 4 to 7, and chroma of 1 to 8. It is stratified sand, loamy sand, sandy loam, or sandy clay loam.

Claycreek Series

The Claycreek series consists of very deep, moderately well drained, moderately slowly permeable soils that formed in material weathered from Triassic rock. These soils are on ridges and side slopes in the Triassic Basin of the Piedmont. Slopes range from 0 to 6 percent. The soils are fine-silty, siliceous, thermic Ultic Hapludalfs.

Claycreek soils are geographically associated with Alamance, Badin, Chewacla, and Mayodan soils. Alamance and Badin soils formed in material weathered from slate. Mayodan soils are Hapludults. Chewacla soils do not have an argillic horizon. They are on flood plains.

Typical pedon of Claycreek silt loam, 0 to 2 percent slopes, 0.8 mile west of Mt. Croghan, South Carolina; 6.0 miles northwest of South Carolina Secondary Highway 30; 225 feet northeast on an unpaved road; 100 feet southeast of the road:

Ap—0 to 4 inches; light olive brown (2.5Y 5/4) silt loam; weak fine granular structure; very friable; many fine roots; about 5 percent gravel and channers; moderately acid; clear smooth boundary.

Bt1—4 to 15 inches; yellowish brown (10YR 5/6) silt loam; many medium distinct light olive brown (2.5Y 5/6) mottles; weak fine and medium subangular blocky structure; very friable; common fine roots; common fine and medium pores; common distinct brown (10YR 5/3) clay films on faces of peds; about 2 percent gravel and channers; very strongly acid; clear wavy boundary.

Bt2—15 to 22 inches; yellowish brown (10YR 5/6) silty

clay loam; common medium distinct pale brown (10YR 6/3) mottles; weak medium subangular blocky structure; very friable; common fine roots; common fine and medium pores; common distinct brown (10YR 5/3) clay films on faces of peds; about 2 percent gravel and channers; very strongly acid; gradual wavy boundary.

Bt3—22 to 33 inches; mottled reddish yellow (7.5YR 6/8) and light gray (10YR 7/1) silty clay loam; weak medium subangular blocky structure; friable; few fine roots; common fine and medium pores; common distinct brown (10YR 5/3) clay films on faces of peds; about 2 percent gravel and channers; strongly acid; gradual wavy boundary.

BC—33 to 39 inches; mottled reddish yellow (7.5YR 6/8) and light gray (10YR 6/1) silt loam; weak coarse subangular blocky structure; friable; few fine pores; few faint clay films on faces of peds; strongly acid; gradual wavy boundary.

C—39 to 63 inches; mottled brownish yellow (10YR 6/8), light gray (10YR 7/1), dark brown (7.5YR 4/4), and weak red (2.5YR 4/2) silty clay loam; massive; firm; few fine pores; strongly acid.

The thickness of the solum ranges from 30 to 60 inches. The depth to bedrock is more than 60 inches. The content of rock fragments ranges from 0 to 5 percent in the A, E, and Bt horizons and from 0 to 20 percent in the BC and C horizons. Reaction ranges from very strongly acid to moderately acid throughout the profile, except in areas where the surface layer has been limed.

The A horizon has hue of 7.5YR to 2.5Y, value of 3 to 6, and chroma of 1 to 6. It is fine sandy loam, loam, or silt loam.

The E horizon, if it occurs, has hue of 7.5YR to 2.5Y, value of 5 to 7, and chroma of 2 to 4. It is fine sandy loam, loam, or silt loam.

The upper part of the Bt horizon has hue of 7.5YR to 2.5Y, value of 5 to 7, and chroma of 3 to 8. It is silt loam, silty clay loam, or clay loam. The lower part of the Bt horizon has hue of 7.5YR to 2.5Y, value of 5 to 7, and chroma of 1 to 8, or it is mottled and has no dominant matrix color. It is silty clay loam, clay loam, or silty clay.

The BC horizon, if it occurs, has hue of 7.5YR to 2.5Y, value of 3 to 8, and chroma of 1 to 8, or it is mottled and has no dominant matrix color. It is silt loam, silty clay loam, sandy clay loam, or clay loam.

The C horizon has hue of 10R to 2.5Y, value of 3 to 8, and chroma of 1 to 8, or it is mottled and has no dominant matrix color. It is sandy loam, loam, silt loam, clay loam, or silty clay loam.

Coxville Series

The Coxville series consists of very deep, poorly drained, moderately slowly permeable soils that formed in loamy and clayey marine sediments. These soils are on broad flats and in oval depressions on the Coastal Plain. Slopes are less than 2 percent. The soils are clayey, kaolinitic, thermic Typic Paleaquults.

Coxville soils are geographically associated with Bonneau, Emporia, Goldsboro, Noboco, and Woodington soils. Bonneau, Emporia, Goldsboro, and Noboco soils are Udults. Woodington soils are coarse-loamy.

Typical pedon of Coxville sandy loam, 2.9 miles northwest on South Carolina Highway 9 from the intersection of South Carolina Secondary Highway 22 in Cheraw; 0.4 mile west on a field road; 0.3 mile northwest on a field road; 0.2 mile south on a field road; 800 feet east, in a wooded area:

A—0 to 6 inches; very dark gray (10YR 3/1) sandy loam; weak fine granular and weak medium subangular blocky structure; very friable; many fine and coarse roots; few fine pores; common fine worm casts; few clean sand grains; very strongly acid; clear irregular boundary.

Btg1—6 to 9 inches; grayish brown (10YR 5/2) clay loam that has dark gray (10YR 4/1) sandy loam along root channels and krotovinas; weak medium subangular blocky structure; friable; common fine and coarse roots; few fine pores; very strongly acid; clear wavy boundary.

Btg2—9 to 24 inches; gray (10YR 6/1) clay loam that has dark gray streaks along root channels; weak medium subangular blocky structure; friable; common fine and medium roots; few fine pores; few faint clay films on faces of peds; few distinct clay films along faces of peds; few clean sand grains; very strongly acid; gradual wavy boundary.

Btg3—24 to 31 inches; gray (10YR 6/1) clay; few medium prominent yellowish brown (10YR 5/8) mottles; moderate medium subangular blocky structure; very firm; common fine roots; common fine pores; few distinct clay films on faces of peds; few medium dark gray crayfish burrows; very strongly acid; gradual wavy boundary.

Btg4—31 to 54 inches; gray (10YR 5/1) clay; many coarse prominent light gray (5Y 7/2) and common medium prominent red (2.5YR 5/8) mottles; weak coarse prismatic structure parting to moderate medium angular blocky; very firm, slightly plastic; common fine and medium pores; many distinct clay films on faces of peds; few uncoated sand grains; few medium dark gray crayfish burrows; very

strongly acid; gradual wavy boundary.

Btg5—54 to 60 inches; light gray (5Y 7/1) clay; common medium prominent reddish yellow (7.5YR 6/8) mottles; weak coarse prismatic structure parting to weak coarse subangular blocky; very firm; many prominent gray (10YR 5/1) clay films on faces of peds; few medium dark gray crayfish burrows; very strongly acid; gradual wavy boundary.

Cg—60 to 70 inches; white (5Y 8/1) clay; massive; very firm; very strongly acid.

The thickness of the Bt horizon ranges from 40 to more than 60 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A horizon has hue of 10YR, value of 2 to 4, and chroma of 1 or 2. It is sandy loam or loam.

The Btg horizon has hue of 10YR to 5Y, value of 4 to 7, and chroma of 1 or 2. It has mottles in shades of red, yellow, and brown. It is clay loam, sandy clay, or clay.

The Cg horizon has hue of 10YR or 2.5Y, or it is neutral in hue. It has value of 4 to 8 and chroma of 0 to 2. It is sandy loam, sandy clay loam, clay loam, sandy clay, or clay, or it is stratified with these textures.

Emporia Series

The Emporia series consists of very deep, well drained, moderately slowly permeable or slowly permeable soils that formed in loamy marine sediments. These soils are on ridges and side slopes on the Coastal Plain. Slopes range from 0 to 10 percent. The soils are fine-loamy, siliceous, thermic Typic Hapludults.

Emporia soils are geographically associated with Ailey, Bonneau, Noboco, Pelion, and Vaucluse soils. Ailey and Bonneau soils are in an arenic subgroup. Noboco soils are Paleudults. Pelion soils have mottles with chroma of 2 or less in the upper 24 inches of the argillic horizon. Vaucluse soils do not have mottles with chroma of 2 or less within a depth of 50 inches.

Typical pedon of Emporia loamy sand, 2 to 6 percent slopes, north of Cheraw; 3.4 miles north on U.S. Highway 52 from the downtown intersection of U.S. Highway 1 in Cheraw; 0.2 mile northwest on South Carolina Secondary Highway 62; 2.0 miles west on South Carolina Secondary Highway 113 (unpaved); 250 feet north, in a field:

Ap—0 to 7 inches; grayish brown (10YR 5/2) loamy sand; weak fine granular structure; very friable; many fine roots; strongly acid; clear wavy boundary.

E—7 to 10 inches; very pale brown (10YR 7/4) loamy sand; weak fine granular structure; very friable; many fine roots; moderately acid; clear wavy boundary.

Bt1—10 to 18 inches; yellowish brown (10YR 5/6) sandy clay loam; weak medium subangular blocky structure; friable; few fine roots; common fine pores; few faint clay films on faces of peds and along root channels; very strongly acid; gradual wavy boundary.

Bt2—18 to 37 inches; brownish yellow (10YR 6/6) sandy clay loam; few fine prominent red (2.5YR 4/8) and common medium prominent yellowish red (5YR 5/8) mottles; weak medium subangular blocky structure; friable; few fine roots; common fine pores; few faint clay films on faces of peds and along root channels; very strongly acid; clear wavy boundary.

Bt3—37 to 48 inches; reddish yellow (10YR 6/8) sandy clay loam; common medium prominent strong brown (7.5YR 5/8) and gray (10YR 6/1) and many medium prominent yellowish red (5YR 5/8) mottles; weak coarse subangular blocky structure parting to moderate medium subangular blocky; friable; few fine roots; common fine pores; common faint clay films on faces of peds; few uncoated sand grains; brittle, dense, firm, and compact in about 10 percent of the mass; very strongly acid; gradual wavy boundary.

BC—48 to 56 inches; mottled light gray (10YR 7/1), brownish yellow (10YR 6/8), and red (2.5YR 4/8) sandy clay; weak coarse subangular blocky structure; firm in the gray part and friable in the yellow and red parts; few fine roots; few fine pores; few faint clay films on faces of peds; about 3 percent gravel; few uncoated sand grains; very strongly acid; gradual wavy boundary.

C—56 to 65 inches; mottled brownish yellow (10YR 6/8), gray (10YR 6/1), and red (2.5YR 5/8), stratified sandy clay loam and sandy loam; massive; friable; about 1 percent coarse gravel; many uncoated sand grains; weakly cemented in part of the mass; very strongly acid.

The thickness of the solum ranges from 40 to 72 inches. The depth to layers that are firm in some part ranges from 35 to 55 inches. The content of gravel ranges from 0 to 10 percent in individual horizons throughout the profile. Reaction ranges from very strongly acid to moderately acid throughout the profile, except in areas where the surface layer has been limed.

The A horizon has hue of 10YR, value of 4 to 6, and chroma of 2 to 4. It is loamy sand or sandy loam.

The E horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 3 or 4. It is loamy sand or sandy loam.

The upper part of the Bt horizon has hue of 5YR to 10YR, value of 5 or 6, and chroma of 4 to 8. It is sandy loam or sandy clay loam. The lower part of the Bt

horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 6 to 8. It commonly has low-chroma mottles at a depth of 36 to 40 inches. It is generally sandy clay loam or clay loam, but in some pedons it is sandy clay.

The C horizon is mottled in shades of yellow, brown, red, and gray. It is sandy loam, sandy clay loam, clay loam, or sandy clay, or it is stratified with loamy or clayey textures.

Georgeville Series

The Georgeville series consists of very deep, well drained, moderately permeable soils that formed in material weathered from Carolina slate or other fine grained rock. These soils are on ridgetops and side slopes of the Piedmont. Slopes range from 2 to 10 percent. The soils are clayey, kaolinitic, thermic Typic Hapludults.

Georgeville soils are geographically associated with Alamance, Badin, Chewacla, and Goldston soils. Alamance soils are fine-silty. Badin soils have a paralithic contact at a depth of 20 to 40 inches. Goldston soils have a paralithic contact at a depth of 10 to 20 inches. Chewacla soils have mottles with chroma of 2 or less in the upper part of the subsoil. They are on flood plains.

Typical pedon of Georgeville loam, 2 to 6 percent slopes, 3 miles northwest of Chesterfield on South Carolina Highway 34; 9 miles north on South Carolina Highway 58; 200 feet east of the road:

Ap—0 to 5 inches; strong brown (7.5YR 5/6) loam; weak fine granular structure; very friable; common fine roots; about 1 percent fine and medium gravel; about 1 percent channers of slate; slightly acid; abrupt wavy boundary.

Bt1—5 to 25 inches; red (2.5YR 4/6) silty clay; moderate fine and medium subangular blocky structure; friable; common fine roots; common fine and medium pores; many distinct clay films on faces of peds; few worm casts; strongly acid; gradual wavy boundary.

Bt2—25 to 42 inches; red (2.5YR 4/8) silty clay; moderate fine and medium subangular blocky structure; friable; common fine and medium pores; many distinct clay films on faces of peds; about 1 percent soft channers of slate that crush to silt loam; very strongly acid; gradual wavy boundary.

BC—42 to 60 inches; mottled red (2.5YR 4/6) and reddish yellow (7.5YR 6/8) clay loam; weak medium subangular blocky structure; friable; about 25 percent soft saprolite that crushes to silt loam; about 10 percent channers of slate; very strongly acid.

The thickness of the clayey part of the Bt horizon ranges from 24 to 48 inches. The depth to the bottom of the Bt horizon is more than 30 inches. The depth to bedrock is more than 60 inches. The content of quartz gravel ranges from 0 to 10 percent in the A horizon. The content of slate fragments ranges from 0 to 10 percent in individual horizons. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A horizon generally has hue of 5YR to 10YR, value of 4 or 5, and chroma of 4 to 8. It is sandy loam, loam, or silt loam. In eroded areas it has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 4 to 8. It is clay loam or silty clay loam.

The Bt horizon has hue of 5YR to 10R, value of 4 or 5, and chroma of 6 to 8. Hue of 5YR is restricted to the upper part of the Bt horizon. The Bt horizon commonly is silty clay or clay, but in some pedons it is silty clay loam in the upper part.

Some pedons have a C horizon. This horizon has hue of 2.5YR to 10YR, value of 4 to 6, and chroma of 3 to 8. It is sandy loam, loam, or silt loam and is as much as 90 percent soft saprolite.

Goldsboro Series

The Goldsboro series consists of very deep, moderately well drained, moderately permeable soils that formed in loamy marine sediments. These soils are on low, broad interstream divides on the Coastal Plain. Slopes range from 0 to 2 percent. The soils are fine-loamy, siliceous, thermic Aquic Paleudults.

Goldsboro soils are geographically associated with Ailey, Coxville, Emporia, Noboco, and Woodington soils. Ailey, Emporia, and Noboco soils do not have mottles with chroma of 2 or less indicating wetness within a depth of 30 inches. Coxville and Woodington soils are Paleaquults.

Typical pedon of Goldsboro sandy loam, 0 to 2 percent slopes, about 4 miles northeast of Cheraw on South Carolina Highway 9 from the intersection of U.S. Highway 52; 1.4 miles southwest on South Carolina Secondary Highway 51; 120 feet east of the road:

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) sandy loam; weak fine granular structure; very friable; few fine roots; strongly acid; clear wavy boundary.

Bt1—9 to 16 inches; brownish yellow (10YR 6/6) sandy clay loam; weak medium subangular blocky structure; friable; few fine roots; many fine pores; few faint clay films on faces of peds; few clean sand grains; very strongly acid; gradual wavy boundary.

Bt2—16 to 26 inches; brownish yellow (10YR 6/6) sandy clay loam; common medium faint yellowish

brown (10YR 5/8) mottles; weak medium subangular blocky structure; friable; few fine roots; many fine pores; few distinct clay films on faces of peds; few clean sand grains; very strongly acid; gradual wavy boundary.

Bt3—26 to 42 inches; yellowish brown (10YR 5/4) sandy clay loam; common medium distinct gray (10YR 6/1) mottles; moderate medium subangular blocky structure; friable; common distinct clay films on faces of peds; few clean sand grains; very strongly acid; gradual wavy boundary.

Bt4—42 to 67 inches; mottled yellowish brown (10YR 5/8), gray (10YR 6/1), reddish yellow (7.5YR 6/8), and red (2.5YR 4/8) sandy clay loam; moderate medium subangular blocky structure; friable; common fine pores; common distinct clay films on faces of peds; few clean sand grains; very strongly acid; gradual wavy boundary.

BC—67 to 75 inches; mottled yellowish brown (10YR 5/8), gray (10YR 6/1), reddish yellow (7.5YR 6/8), and red (2.5YR 4/8), stratified sandy loam, sandy clay loam, and sandy clay; weak medium subangular blocky structure; friable in the red and yellow parts and firm in the gray part; few clean sand grains; very strongly acid.

The thickness of the solum is more than 60 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed. Some pedons have as much as 2 percent gravel in the surface layer.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3. It is loamy sand or sandy loam.

The upper part of the Bt horizon has hue of 10YR, value of 4 to 6, and chroma of 3 to 8. The lower part has hue of 10YR, value of 5 or 6, and chroma of 1 to 8, or it is mottled throughout and has no dominant matrix color. Low-chroma mottles indicating wetness are at a depth of 18 to 30 inches. The Bt horizon is sandy clay loam.

Goldston Series

The Goldston series consists of shallow, well drained to excessively drained, moderately rapidly permeable soils that formed in material weathered from Carolina slate. These soils are on ridgetops and side slopes in the Piedmont. Slopes range from 2 to 40 percent. The soils are loamy-skeletal, siliceous, thermic, shallow Typic Dystrochrepts.

Goldston soils are geographically associated with Badin, Mayodan, Pageland, and Chewacla soils. These associated soils have bedrock at a depth of more than 20 inches. Chewacla soils are on flood plains.

Typical pedon of Goldston channery silt loam, 6 to 10 percent slopes, north of Ruby; 4.6 miles north of South Carolina Secondary Highway 47; from South Carolina Highway 9 in Ruby; 0.5 mile southeast on South Carolina Highway 48; 0.1 mile east on a logging trail; 10 feet north:

A—0 to 3 inches; olive brown (2.5Y 4/4) channery silt loam; weak medium granular structure; friable; common fine and medium roots; about 30 percent channers of slate 1 to 3 inches in length; very strongly acid; gradual wavy boundary.

Bw—3 to 12 inches; light olive brown (2.5Y 5/4) extremely channery silt loam; weak medium granular structure; friable; common fine and medium roots along rock faces and between cracks; common thin and thick silt flows on faces of rock fragments; about 60 percent multicolored channers of slate as much as 5 inches in length; strongly acid; gradual irregular boundary.

Cr—12 to 24 inches; greenish, weathered, fractured slate; few thick silt flows on faces of rock; can be dug with difficulty with a spade; very strongly acid; clear wavy boundary.

R—24 inches; multicolored, hard, jointed slate bedrock that is very difficult to dig with a spade.

The thickness of the solum and the depth to weathered, fractured slate range from 10 to 20 inches. The depth to hard, jointed bedrock ranges from 20 to 40 inches. The content of slate fragments ranges from 15 to 60 percent in the A horizon and from 35 to 60 percent in the Bw horizon. Reaction ranges from very strongly acid to moderately acid throughout the profile, except in areas where the surface layer has been limed.

The A horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 to 4. It is channery silt loam, channery loam, or very channery silt loam.

The Bw horizon has hue of 7.5YR to 2.5Y, value of 5 to 7, and chroma of 3 to 6. It is very channery very fine sandy loam or extremely channery silt loam.

The Cr horizon is multicolored, weathered slate.

Hornsville Series

The Hornsville series consists of very deep, moderately well drained, moderately slowly permeable soils that formed in loamy and clayey fluvial sediments. These soils are on stream terraces adjacent to flood plains in the Coastal Plain. Slopes range from 0 to 6 percent. The soils are clayey, kaolinitic, thermic Aquic Hapludults.

Hornsville soils are geographically associated with Tetotum, Chastain, Chewacla, Alaga, Riverview, Wahee, and Wickham soils. Tetotum and Wickham soils are fine-loamy. Wickham soils do not have chroma of 2

or less within a depth of 60 inches. Alaga soils are sandy throughout. Chewacla, Riverview, and Chastain soils do not have an argillic horizon. Wahee soils have dominant chroma of 2 or less within a depth of 30 inches.

Typical pedon of Hornsville sandy loam, 0 to 2 percent slopes, 0.4 mile north of the junction of U.S. Highway 52 and South Carolina Highway 20; 0.9 mile east on a farm road; 0.3 mile southeast on a farm road; 200 feet east:

Ap—0 to 7 inches; dark yellowish brown (10YR 4/4) sandy loam; weak fine granular structure; very friable; few fine roots; slightly acid; abrupt wavy boundary.

Bt1—7 to 18 inches; brownish yellow (10YR 6/6) clay; few fine prominent yellowish red (5YR 5/8) mottles; moderate medium subangular blocky structure; firm; few fine roots; common distinct clay films on faces of peds; strongly acid; gradual wavy boundary.

Bt2—18 to 36 inches; yellowish brown (10YR 5/4) sandy clay; many medium prominent yellow (10YR 7/8), common medium prominent yellowish red (5YR 5/8), and common medium distinct gray (10YR 6/1) mottles; moderate medium subangular blocky structure; firm; few fine roots; few fine pores; few distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

BC—36 to 45 inches; mottled brownish yellow (10YR 6/6), light gray (10YR 7/1), red (2.5YR 4/8), and reddish yellow (7.5YR 6/2) sandy clay loam and sandy loam; weak medium subangular blocky structure; friable; few fine flakes of mica; few distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

C—45 to 60 inches; mottled light gray (N 7/0) and reddish yellow (7.5YR 6/8) sandy loam; massive; friable; few fine flakes of mica; very strongly acid.

The thickness of the solum ranges from 40 to more than 60 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A horizon has hue of 10YR, value of 2 to 4, and chroma of 1 to 4. It is loamy sand or sandy loam.

The Bt horizon has hue of 7.5YR to 2.5Y, value of 5 or 6, and chroma of 4 to 8. It has mottles with chroma of 2 or less in the upper 24 inches. It is sandy clay or clay.

The BC horizon has hue of 10YR, value of 5 or 6, and chroma of 1 or 2, or it is mottled throughout in shades of red, yellow, brown, and gray and has no dominant matrix color. It is sandy clay loam or sandy loam.

The C horizon has hue of 10YR or 2.5Y, or it is neutral in hue. It has value of 4 to 7 and chroma of 0 to 2, or it is mottled throughout in shades of red, yellow, brown, and gray and has no dominant matrix color.

Johnston Series

The Johnston series consists of very deep, very poorly drained, moderately rapidly permeable or rapidly permeable soils that formed in loamy, stratified fluvial sediments. These soils are on flood plains along streams in the Sand Hills and on the Coastal Plain. Slopes range from 0 to 2 percent. The soils are coarse-loamy, siliceous, acid, thermic Cumulic Humaquepts.

Johnston soils are geographically associated with Ailey, Alpin, Bibb, Candor, Troup, and Woodington soils. Ailey, Candor, and Troup soils are Udults. They are on uplands. Alpin soils are Quartzipsamments. They are on uplands. Bibb soils do not have an umbric epipedon. Woodington soils are Paleaquults.

Typical pedon of Johnston sandy loam, frequently flooded, 0.5 mile south on South Carolina Highway 20 from the junction of South Carolina Highway 20 and U.S. Highway 1 south of Cheraw; 50 feet east, in a wooded area:

A1—0 to 25 inches; black (10YR 2/1) sandy loam; massive; friable; many fine and medium roots and few coarse roots; strongly acid; clear wavy boundary.

A2—25 to 38 inches; very dark gray (10YR 3/1) sandy loam that has streaks of light gray (10YR 7/1) sand; massive; friable; many fine and medium roots and few coarse roots; few decayed roots; very strongly acid; gradual wavy boundary.

Cg1—38 to 45 inches; gray (10YR 4/1) loamy sand that has streaks of gray (10YR 5/1) sand; massive; very friable; common fine and medium roots and few decayed roots; few fine flakes of mica; very strongly acid; gradual wavy boundary.

Cg2—45 to 60 inches; light brownish gray (10YR 6/2) sand; single grained; loose; few medium and coarse roots and common decayed roots; few fine flakes of mica; very strongly acid.

Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A horizon has hue of 10YR or 2.5Y, or it is neutral in hue. It has value of 2 or 3 and chroma of 0 to 2. It is mucky loam, loam, or sandy loam.

The Cg horizon has hue of 10YR or 2.5Y, or it is neutral in hue. It has value of 4 to 6 and chroma of 0 to 2. It is sand, loamy sand, sandy loam, or loam, or it is stratified with sandy clay loam to sand.

Kenansville Series

The Kenansville series consists of very deep, well drained, moderately rapidly permeable soils that formed in sandy and loamy marine sediments. These soils are on uplands on the Coastal Plain. Slopes range from 0 to 4 percent. The soils are loamy, siliceous, thermic Arenic Hapludults.

Kenansville soils are geographically associated with Ailey, Alpin, Candor, Pelion, and Vaucluse soils. Ailey soils are dense and compact in the B and C horizons. Alpin soils are Quartzipsamments. Candor soils are sandy. Pelion and Vaucluse soils are not in an arenic subgroup.

Typical pedon of Kenansville sand, 0 to 4 percent slopes, southeast of Patrick; 5 miles south on U.S. Highway 1 from Patrick; 1.5 miles south on South Carolina Secondary Highway 29; 0.7 mile northeast on South Carolina Highway 493; 0.2 mile north on a field road; 0.2 mile west on a trail; 25 feet north of the trail:

A—0 to 8 inches; brown (10YR 5/3) sand; weak fine granular structure; very friable; many fine roots; few clean sand grains; very strongly acid; gradual wavy boundary.

E1—8 to 20 inches; light yellowish brown (10YR 6/4) sand; weak fine granular structure; very friable; few fine roots; few clean sand grains; very strongly acid; gradual wavy boundary.

E2—20 to 30 inches; very pale brown (10YR 7/3) sand; weak fine granular structure; very friable; few fine roots; few clean sand grains; strongly acid; gradual wavy boundary.

Bt—30 to 41 inches; brownish yellow (10YR 6/8) sandy loam; weak fine subangular blocky structure; very friable; few fine roots; few fine pores; few clean sand grains; very strongly acid; gradual wavy boundary.

BC—41 to 52 inches; yellowish brown (10YR 5/6) loamy sand; common medium faint strong brown (7.5YR 5/6) mottles; common fine distinct white (10YR 8/1) balls of kaolin; weak fine granular structure; very friable; very strongly acid; gradual wavy boundary.

C—52 to 70 inches; brownish yellow (10YR 6/6) sand; few medium distinct strong brown (7.5YR 5/6) mottles; common fine distinct white (10YR 8/1) balls of kaolin; single grained; loose; few clean sand grains; very strongly acid.

The thickness of the solum ranges from 40 to 60 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3. It is sand or loamy sand.

The E horizon has hue of 10YR, value of 6 or 7, and chroma of 3 to 6. It is sand or loamy sand.

The Bt horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 4 to 8. It is sandy loam.

The C horizon has hue of 10YR, value of 6 to 8, and chroma of 4 to 6. It is sand.

Lucy Series

The Lucy series consists of very deep, well drained, moderately permeable soils that formed in sandy and loamy marine sediments. These soils are on broad ridgetops and side slopes on the Coastal Plain. Slopes range from 0 to 6 percent. The soils are loamy, siliceous, thermic Arenic Kandiudults.

Lucy soils are geographically associated with Ailey, Emporia, Noboco, Troup, and Vaucluse soils. Ailey soils are dense and compact in parts of the B and C horizons. Emporia, Vaucluse, and Noboco soils are not in an arenic subgroup. Troup soils are in a grossarenic subgroup.

Typical pedon of Lucy sand, 0 to 6 percent slopes, about 2 miles northeast of Chesterfield; 0.7 mile northeast on South Carolina Secondary Highway 23, 0.2 mile northwest on South Carolina Secondary Highway 60, 0.3 mile west on an unpaved road; 100 feet south of the road, in a field:

A—0 to 7 inches; brown (10YR 5/3) sand; single grained; loose; few fine roots; few clean coarse sand grains; slightly acid; clear wavy boundary.

E1—7 to 19 inches; yellowish brown (10YR 5/4) sand; single grained; loose; few fine roots; few clean coarse sand grains; strongly acid; gradual wavy boundary.

E2—19 to 23 inches; yellowish brown (10YR 5/6) loamy sand; single grained; loose; few fine roots; few clean coarse sand grains; moderately acid; gradual wavy boundary.

Bt1—23 to 30 inches; yellowish red (5YR 5/6) sandy loam; weak fine subangular blocky structure; very friable; few fine roots; few clean sand grains; strongly acid; gradual wavy boundary.

Bt2—30 to 49 inches; red (2.5YR 4/8) sandy clay loam; weak coarse subangular blocky structure; friable; few fine pores; about 1 percent quartz gravel; strongly acid; gradual wavy boundary.

Bt3—49 to 72 inches; red (2.5YR 4/8) sandy clay loam; weak medium subangular blocky structure; friable; few fine pores; about 1 percent quartz gravel; strongly acid.

The thickness of the solum is more than 60 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the

surface layer has been limed. The content of rounded quartz gravel ranges from 0 to 5 percent throughout the profile.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 3 or 4. It is sand or loamy sand.

The E horizon has hue of 7.5YR or 10YR, value of 5 to 7, and chroma of 3 to 8. It is sand or loamy sand.

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.

Mayodan Series

The Mayodan series consists of very deep, well drained, moderately permeable soils that formed in material weathered from Triassic materials of the Piedmont. These soils are on ridges and side slopes of the Triassic Basin in the Piedmont. Slopes range from 2 to 10 percent. The soils are clayey, mixed, thermic Typic Hapludults.

Mayodan soils are geographically associated with Alamance, Badin, Chewacla, and Claycreek soils. Alamance and Badin soils formed in material weathered from slate and other fine grained rock. Chewacla soils do not have an argillic horizon. They are on flood plains. Claycreek soils are Hapludalfs. They are in the lower positions on the landscape.

Typical pedon of Mayodan silt loam, 2 to 6 percent slopes, 2 miles west of Pageland on South Carolina Highway 9; 2.3 miles north on South Carolina Secondary Highway 107; 0.3 mile west of South Carolina Highway 107 on an unpaved road; 75 feet south of the road, in a wooded area:

A—0 to 7 inches; yellowish brown (10YR 5/4) silt loam; weak fine granular structure; very friable; common fine and medium roots; about 1 percent fine gravel; very strongly acid; clear wavy boundary.

Bt1—7 to 22 inches; yellowish red (5YR 5/6) silty clay; few fine prominent red (2.5YR 4/8) mottles; moderate fine and medium subangular blocky structure; friable; few fine and medium roots; common fine and medium pores; common distinct clay films on faces of peds; about 1 percent irregularly shaped gravel and channers; very strongly acid; gradual wavy boundary.

Bt2—22 to 33 inches; yellowish red (5YR 5/8) silty clay; common medium distinct red (2.5YR 4/8) mottles; strong medium and coarse subangular blocky structure; friable; few fine roots; common fine and medium pores; common distinct clay films on faces of peds and in pores; about 1 percent irregularly shaped gravel; few fine flakes of mica; very strongly acid; gradual wavy boundary.

BC—33 to 47 inches; strong brown (7.5YR 5/6) silty clay loam; common areas of yellow (10YR 7/8), light gray (10YR 7/2), and red (2.5YR 4/8) saprolite; weak medium subangular blocky structure; friable; common fine pores; many distinct clay films on faces of peds; about 1 percent irregularly shaped gravel; very strongly acid; gradual wavy boundary.

C—47 to 60 inches; mottled yellow (10YR 7/8), light gray (2.5Y 7/2), and yellowish red (5YR 5/6), weathered saprolite that crushes to loam; massive; firm; very strongly acid.

The thickness of the solum ranges from 30 to 50 inches. The depth to bedrock is more than 60 inches. The content of gravel ranges from 0 to 15 percent in the A horizon and from 0 to 5 percent in the Bt horizon. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 3 to 6. It is sandy loam or silt loam. Eroded areas are sandy clay loam, clay loam, or silty clay loam.

The Bt horizon has hue of 2.5YR to 7.5YR, value of 4 to 6, and chroma of 4 to 8. It is sandy clay loam, clay loam, silty clay loam, silty clay, or clay, but the sandy clay loam is restricted to the upper part.

The BC horizon has hue of 2.5YR to 7.5YR, value of 4 to 6, and chroma of 3 to 6. It is loam, silty clay loam, or silty clay.

The C horizon is multicolored, weathered, Triassic saprolite that crushes to loam, clay loam, or silty clay loam.

Noboco Series

The Noboco series consists of very deep, well drained, moderately permeable soils that formed in loamy marine sediments. These soils are on uplands on the Coastal Plain. Slopes range from 0 to 2 percent. The soils are fine-loamy, siliceous, thermic Typic Paleudults.

Noboco soils are geographically associated with Bonneau, Coxville, Emporia, Goldsboro, and Woodington soils. Bonneau soils are in an arenic subgroup. Emporia soils are Hapludults. Coxville and Woodington soils are Paleaquults. Goldsboro soils have low-chroma mottles within a depth of 30 inches.

Typical pedon of Noboco loamy sand, 0 to 2 percent slopes, about 1.9 miles south on South Carolina Highway 31 from the junction of U.S. Highway 1 and South Carolina Highway 31 in McBee; 500 feet east of light pole 6209:

Ap—0 to 9 inches; brown (10YR 5/3) loamy sand; weak fine granular structure; very friable; few fine and

medium roots; few clean sand grains; slightly acid; clear wavy boundary.

E—9 to 15 inches; light yellowish brown (10YR 6/4) loamy sand; weak fine granular structure; very friable; few fine roots; few clean sand grains; slightly acid; clear wavy boundary.

Bt1—15 to 22 inches; brownish yellow (10YR 6/8) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; common medium pores; common distinct clay films on faces of peds and along root channels; strongly acid; gradual wavy boundary.

Bt2—22 to 38 inches; brownish yellow (10YR 6/6) sandy clay loam; common medium distinct reddish yellow (7.5YR 6/6) and few medium prominent yellowish red (5YR 5/8) mottles; moderate medium subangular blocky structure; friable; common distinct clay films on faces of peds; strongly acid; gradual wavy boundary.

Bt3—38 to 42 inches; brownish yellow (10YR 6/6) sandy clay loam; common medium distinct strong brown (7.5YR 5/6), common medium prominent yellowish red (5YR 5/8), and few medium distinct pale brown (10YR 6/3) mottles; moderate medium subangular blocky structure; friable; common distinct clay films on faces of peds; about 1 percent nodules of plinthite; very strongly acid; clear wavy boundary.

Bt4—42 to 65 inches; brownish yellow (10YR 6/8) sandy clay loam; common medium distinct strong brown (7.5YR 5/8), common medium prominent red (2.5YR 4/8), and common medium prominent gray (10YR 6/2) mottles; weak medium subangular blocky structure; friable; common distinct clay films on faces of peds; about 1 percent nodules of plinthite; very strongly acid.

The thickness of the solum is more than 60 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed. Some pedons have as much as 5 percent plinthite in the lower part of the Bt horizon. Mottles that have chroma of 2 or less are at a depth of 30 to 48 inches.

The A horizon has hue of 10YR, value of 5 or 6, and chroma of 2 to 4. It is loamy sand.

The E horizon has hue of 10YR, value of 6 or 7, and chroma of 3 or 4. It is sand or loamy sand.

The upper part of the Bt horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 6 to 8. The lower part of the Bt horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 3 to 8 and is mottled. It is sandy clay loam or clay loam.

Ogeechee Series

The Ogeechee series consists of very deep, poorly drained, moderately permeable soils that formed in loamy marine sediments. These soils are on broad flats, in shallow drainageways, and in slight depressions on the Coastal Plain. Slopes are less than 1 percent. The soils are fine-loamy, siliceous, thermic Typic Ochraquults.

Ogeechee soils are geographically associated with Ailey, Bibb, Coxville, Emporia, Pelion, and Wahee soils. Ailey, Emporia, and Pelion soils are Hapludults. Bibb soils are coarse-loamy. They are on flood plains. Coxville and Wahee soils are clayey.

Typical pedon of Ogeechee sandy loam, 0.5 mile north of the junction of U.S. Highway 52 and South Carolina Highway 20 near Cash; 600 feet east on an unpaved road; 100 feet south:

Ap—0 to 8 inches; very dark gray (10YR 3/1) sandy loam; weak fine granular structure; very friable; few fine roots; moderately acid; clear wavy boundary.

Btg1—8 to 18 inches; gray (10YR 6/1) sandy clay loam; common fine prominent brownish yellow (10YR 6/8) and common fine prominent yellowish red (5YR 5/8) mottles; weak medium subangular blocky structure; friable; few fine roots and few decayed roots; few fine pores; few faint clay films on faces of peds; strongly acid; gradual wavy boundary.

Btg2—18 to 35 inches; gray (10YR 6/1) sandy clay loam; common medium prominent reddish yellow (7.5YR 6/8) mottles; weak medium subangular blocky structure; friable; few fine roots; few fine pores; few distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

Btg3—35 to 55 inches; gray (10YR 6/1) sandy clay loam; few pockets of dark gray (10YR 4/1) sandy loam; common medium prominent brownish yellow (10YR 6/8) mottles; weak medium subangular blocky structure; friable; few faint clay films on faces of peds; very strongly acid; gradual wavy boundary.

Cg—55 to 65 inches; gray (10YR 5/1), stratified sandy loam and sandy clay loam; massive; friable; very strongly acid.

The thickness of the solum ranges from 50 to 80 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A horizon has hue of 10YR, value of 2 to 4, and chroma of 1 or 2. It is loamy sand, sandy loam, or fine sandy loam.

The Btg horizon has hue of 10YR or 2.5Y, or it is neutral in hue. It has value of 4 to 7 and chroma of 0 to 2. In most pedons it has mottles in shades of yellow,

red, and brown. It is sandy clay loam or clay loam.

The Cg horizon has hue of 10YR or 2.5Y, or it is neutral in hue. It has value of 5 to 8 and chroma of 0 or 1. In most pedons it has mottles in shades of red, yellow, and brown, but in some pedons it is mottled throughout with these colors and has no dominant matrix color. The Cg horizon is sand, loamy sand, sandy loam, or sandy clay loam, or it is stratified with sandy, loamy, and clayey textures.

Pacolet Series

The Pacolet series consists of very deep, well drained, moderately permeable soils that formed in material weathered from acid crystalline rock. These soils are on ridgetops and side slopes of the Piedmont. Slopes range from 6 to 25 percent. The soils are clayey, kaolinitic, thermic Typic Kanhapludults.

Pacolet soils are geographically associated with Alamance, Badin, Cecil, Georgeville, and Rion soils. Alamance soils are fine-silty. Badin soils have a paralithic contact at a depth of 20 to 40 inches. Cecil and Georgeville soils have a Bt horizon that is more than 30 inches thick. Rion soils are fine-loamy.

Typical pedon of Pacolet clay loam, 6 to 10 percent slopes, eroded, 4.4 miles northwest of Jefferson on South Carolina Highway 39; 1,800 feet west on a farm road; 0.5 mile southwest; 50 feet south:

Ap—0 to 3 inches; yellowish red (5YR 5/8) clay loam; moderate medium granular structure; very friable; many fine roots; about 1 percent granite cobbles; strongly acid; clear wavy boundary.

Bt—3 to 22 inches; red (2.5YR 4/8) clay; moderate medium subangular blocky structure; friable; common fine and medium roots and few coarse roots; many distinct clay films on faces of peds; few fine flakes of mica; common fine flakes of greenish minerals; strongly acid; gradual wavy boundary.

BC—22 to 32 inches; mottled red (2.5YR 4/8) and yellowish red (5YR 5/6) loam; weak medium subangular blocky structure in the red part; massive in the yellowish red part; friable; few distinct clay films on faces of peds; many fine flakes of minerals; strongly acid; gradual wavy boundary.

C1—32 to 48 inches; yellowish red (5YR 5/8) loam; common medium distinct red (2.5YR 4/8) mottles; massive; friable; many fine flakes of minerals; very strongly acid; gradual wavy boundary.

C2—48 to 60 inches; yellowish red (5YR 5/8) loam; common medium distinct red (2.5YR 4/8) and common medium prominent yellow (10YR 7/8) mottles; massive; friable; many fine flakes of weathered minerals; strongly acid.

The Bt horizon is at least 12 inches thick, but it does not extend below a depth of 30 inches. The depth to bedrock is more than 60 inches. Reaction ranges from very strongly acid to moderately acid throughout the profile, except in areas where the surface layer has been limed.

The A horizon has hue of 5YR to 10YR, value of 3 to 5, and chroma of 4 to 8. It is clay loam or sandy clay loam.

The Bt horizon has hue of 10R or 2.5YR, value of 4 or 5, and chroma of 6 to 8. It is clay loam, sandy clay, or clay.

The C horizon has hue of 10R to 5YR, value of 4 or 5, and chroma of 4 to 8. It is sandy loam, fine sandy loam, or loam.

Pageland Series

The Pageland series consists of moderately deep, moderately well drained, moderately slowly permeable soils that formed in material weathered from Carolina slate or other fine grained rock. These soils are on interstream divides and at the head of drainageways in the Piedmont. Slopes range from 2 to 6 percent. The soils are fine-silty, siliceous, thermic Ultic Hapludalfs.

Pageland soils are geographically associated with Alamance, Badin, Chewacla, Georgeville, and Goldston soils. Alamance, Badin, and Georgeville soils are Hapludults. Goldston soils are loamy-skeletal. Chewacla soils do not have an argillic horizon. They are on flood plains.

Typical pedon of Pageland silt loam, 2 to 6 percent slopes, 5.7 miles west on South Carolina Highway 207 from the intersection of South Carolina Highway 207 and South Carolina Highway 9 in Pageland; 250 feet south on South Carolina Highway 577; 80 feet west:

Ap—0 to 7 inches; yellowish brown (10YR 5/4) silt loam; weak fine subangular blocky structure; friable; few fine roots and few decayed roots; few fine and medium clean sand grains; few worm casts; few coarse pores; slightly acid; clear wavy boundary.

Bt1—7 to 19 inches; olive yellow (2.5Y 6/6) silty clay loam; common medium prominent strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; friable; few fine roots; many fine pores; few distinct clay films on faces of peds; about 1 percent channers of slate; strongly acid; clear wavy boundary.

Bt2—19 to 26 inches; yellowish brown (10YR 5/6) silty clay loam; common medium distinct strong brown (7.5YR 5/6) and common fine prominent light brownish gray (2.5Y 6/2) mottles; moderate medium subangular blocky structure; friable; few fine roots; common fine pores; common distinct clay films on

faces of peds; about 2 percent channers of slate; very strongly acid; gradual wavy boundary.

Bt3—26 to 33 inches; mottled strong brown (7.5YR 5/8), brownish yellow (10YR 6/8), and gray (N 6/0) silty clay loam; weak medium subangular blocky structure; friable in the brown and yellow parts and firm in the gray part; few fine roots; many distinct clay films on faces of peds; about 5 percent channers of slate; moderately acid; gradual wavy boundary.

Cr—33 inches; multicolored, weathered, fractured slate; difficult to dig with a spade; few widely spaced seams of light olive gray (5Y 6/2) silty clay in cracks.

The thickness of the solum and the depth to weathered bedrock range from 20 to 40 inches. The content of channers of slate ranges from 0 to 15 percent in the A horizon and from 0 to 10 percent in the Bt horizon. Reaction ranges from extremely acid to strongly acid in the A horizon and in the upper part of the Bt horizon, except in areas where the surface layer has been limed. It ranges from very strongly acid to moderately acid in the lower part of the Bt horizon and in the BC horizon.

The A horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 to 4. It is fine sandy loam, loam, or silt loam.

The E horizon, if it occurs, has hue of 10YR to 5Y and value and chroma of 4 to 8. It is loam or silt loam.

The upper part of the Bt horizon has hue of 10YR to 5Y, value of 5 to 7, and chroma of 4 to 8. It is silt loam or silty clay loam.

The lower part of the Bt horizon has hue of 7.5YR to 5Y, value of 5 to 7, and chroma of 2 to 8, or it is mottled throughout and has no dominant matrix color. It is silt loam, silty clay loam, silty clay, or clay.

The BC horizon, if it occurs, has hue of 10YR to 5Y, value of 5 to 7, and chroma of 2 to 8, or it is mottled throughout and has no dominant matrix color. It is silt loam, silty clay loam, or silty clay.

The Cr horizon is weathered, fractured, Carolina slate or other fine grained rock.

Pelion Series

The Pelion series consists of very deep, moderately well drained, moderately slowly permeable and slowly permeable soils that formed in loamy marine sediments. These soils are on broad or narrow ridges, side slopes, and foot slopes on the Coastal Plain and in the Sand Hills. Slopes range from 0 to 15 percent. The soils are fine-loamy, siliceous, thermic Aquic Hapludults.

Pelion soils are geographically associated with Ailey, Alpin, Bibb, Candor, Johnston, and Vaucluse soils. Ailey and Candor soils are in an arenic subgroup. Alpin soils are Quartzipsamments. Bibb and Johnston soils do not have an argillic horizon. They are on flood plains. Vaucluse soils do not have gray mottles indicating wetness.

Typical pedon of Pelion loamy sand, 2 to 6 percent slopes, about 9 miles west of Cheraw; 5.2 miles southwest on South Carolina Secondary Highway 22 from the intersection of South Carolina Highway 9; 0.3 mile northwest on South Carolina Secondary Highway 20; 2.1 miles west on South Carolina Secondary Highway 144; 0.3 mile west on a logging road; 0.1 mile north on a logging road; about 40 feet west of the road, in a wooded area:

A—0 to 7 inches; brown (10YR 5/3) loamy sand; weak fine granular structure; very friable; many fine and medium roots; extremely acid; clear wavy boundary.

E—7 to 14 inches; very pale brown (10YR 7/3) loamy sand; weak fine granular structure; very friable; many fine and medium roots; extremely acid; abrupt wavy boundary.

Bt—14 to 19 inches; yellow (10YR 7/6) sandy clay loam; weak coarse subangular blocky structure; friable; common fine roots; few fine pores; sand grains coated and bridged with clay; extremely acid; gradual wavy boundary.

Btx1—19 to 25 inches; yellow (10YR 7/6) sandy clay loam; few medium prominent light gray (10YR 6/1) mottles; weak coarse subangular blocky structure; firm; common fine roots; few fine pores; few faint clay films on faces of peds; sand grains coated and bridged with clay; dense, compact, and brittle in about 25 percent of the mass; extremely acid; gradual wavy boundary.

Btx2—25 to 32 inches; brownish yellow (10YR 6/8) sandy clay loam; common medium prominent light gray (10YR 6/1) and common medium distinct reddish yellow (7.5YR 6/8) mottles; weak coarse subangular blocky structure; firm; few fine roots along faces of peds; few fine pores; few faint clay films on faces of peds; few clean coarse sand grains; common fine flakes of mica; dense, compact, and brittle in about 30 percent of the mass; extremely acid; gradual wavy boundary.

BC—32 to 45 inches; brownish yellow (10YR 6/8) sandy clay loam; many medium prominent light gray (10YR 7/2) mottles; weak coarse subangular blocky structure; firm; few fine roots along faces of peds; few balls of kaolin; few fine pores; few clean coarse sand grains; common fine flakes of mica; dense, compact, and brittle in about 20 percent of the mass; extremely acid; gradual wavy boundary.

C—45 to 66 inches; stratified yellow (10YR 7/8), light gray (10YR 7/2), reddish yellow (7.5YR 6/8), and red (2.5YR 4/8) sandy clay loam, clay loam, sandy loam, and sand; massive; firm, very friable in the sandy layers; common fine flakes of mica; extremely acid.

The thickness of the solum is more than 40 inches. Reaction ranges from extremely acid to strongly acid throughout the profile, except in areas where the surface layer has been limed. Some subhorizons of the Bt horizon are brittle in 10 to 60 percent of the mass. In most pedons few or common flakes of mica are in the B and C horizons.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 1 to 3. It is loamy sand or sandy loam.

The E horizon has hue of 10YR, value of 4 to 7, and chroma of 2 to 4. It is loamy sand or sandy loam.

The Bt horizon has hue of 7.5YR to 2.5Y, value of 5 to 8, and chroma of 6 to 8. It is sandy loam or sandy clay loam.

The Btx horizon has hue of 7.5YR to 2.5Y, value of 5 to 8, and chroma of 6 to 8. It is sandy clay loam, sandy clay, or clay. In most pedons it has mottles indicating wetness.

The C horizon has hue of 7.5YR to 2.5Y, value of 4 to 8, and chroma of 1 to 8. It has mottles in shades of red, yellow, gray, brown, and white, or it is mottled throughout with these colors and has no dominant matrix color. It is stratified with sandy, loamy, and clayey textures.

Poindexter Series

The Poindexter series consists of moderately deep, well drained, moderately permeable soils that formed in material weathered from basic rock. These soils are on narrow ridgetops and side slopes of the Piedmont. Slopes range from 15 to 35 percent. The soils are fine-loamy, mixed, thermic Typic Hapludalfs.

Poindexter soils are geographically associated with Badin, Cecil, Goldston, Pacolet, and Rion soils. Badin, Cecil, and Pacolet soils are clayey. They are Ultisols. Rion soils also are Ultisols. Goldston soils have weathered bedrock at a depth of 10 to 20 inches.

Typical pedon of Poindexter fine sandy loam, 15 to 35 percent slopes, from the junction of South Carolina Highway 151 and South Carolina Highway 9 in Pageland; 6.2 miles west on South Carolina Highway 9; 0.2 mile southwest on an unpaved road; 0.1 mile northwest; 50 feet north:

A—0 to 5 inches; light yellowish brown (10YR 6/4) fine sandy loam; weak fine granular structure; very friable; many fine and medium roots; few fine pores; about 1 percent quartz gravel; strongly acid; abrupt wavy boundary.

Bt—5 to 17 inches; strong brown (7.5YR 5/6) loam; common medium prominent red (2.5YR 4/8) and many medium prominent yellowish red (5YR 5/8) mottles; weak medium subangular blocky structure; friable; many fine and medium roots and few coarse roots; common distinct clay films on faces of peds and along root channels; few olive yellow (5Y 6/6) streaks; moderately acid; gradual wavy boundary.

C—17 to 24 inches; reddish yellow (7.5YR 6/6) silt loam; many medium and coarse prominent red (2.5YR 4/8) and few medium distinct greenish gray (5GY 6/1) mottles; massive; friable; few fine and medium roots; few faint clay films along root channels; moderately acid; gradual irregular boundary.

Cr1—24 to 41 inches; multicolored reddish yellow (7.5YR 6/8), red (2.5YR 4/8), and light yellowish brown (2.5Y 6/4), weathered basic rock that crushes to fine sandy loam; difficult to dig with a shovel; friable when dug out; relict rock-controlled structure; very few widely spaced fine roots; many fine flakes of mica; neutral; gradual wavy boundary.

Cr2—41 to 60 inches; multicolored light yellowish brown (2.5Y 6/4), black (10YR 2/1), and reddish yellow (7.5YR 7/8), weathered basic rock that crushes to fine sandy loam; difficult to dig with a shovel; friable when dug out; relict rock-controlled structure; neutral.

The thickness of the solum ranges from 14 to 36 inches. The depth to weathered bedrock ranges from 20 to 40 inches. The depth to hard bedrock is more than 40 inches. The content of gravel ranges from 0 to 15 percent in the A horizon. Reaction ranges from strongly acid to neutral throughout the profile, except in areas where the surface layer has been limed.

The A horizon has hue of 10YR, value of 4 to 6, and chroma of 2 to 4. It is sandy loam or fine sandy loam.

The E horizon, if it occurs, has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 3 to 6. It is sandy loam or fine sandy loam.

The Bt horizon has hue of 5YR to 2.5Y, value of 4 or 5, and chroma of 4 to 8. It is loam, silt loam, sandy clay loam, or clay loam.

The C horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 8 and commonly is mottled in shades of red, yellow, black, olive, gray, or white. It is sandy loam, fine sandy loam, or silt loam.

The Cr horizon is multicolored in shades of red, yellow, black, olive, gray, or white. It is weathered

bedrock that crushes to sandy loam, fine sandy loam, or loam.

Rion Series

The Rion series consists of very deep, well drained, moderately permeable soils that formed in material weathered from granite and granite gneiss. These soils are on ridgetops and side slopes in the Piedmont. Slopes range from 2 to 40 percent. The soils are fine-loamy, mixed, thermic Typic Hapludults.

Rion soils are geographically associated with Badin, Cecil, Chewacla, and Pacolet soils. Badin, Cecil, and Pacolet soils are clayey. Chewacla soils do not have an argillic horizon. They are on flood plains.

Typical pedon of Rion sandy loam, 15 to 40 percent slopes, very bouldery, 4.4 miles northwest of Jefferson on South Carolina Highway 39; 5 miles west on a logging road; 3 miles northwest; 25 feet south of a road:

A—0 to 3 inches; dark brown (10YR 4/3) sandy loam; weak fine granular structure; friable; common fine and medium roots; strongly acid; abrupt wavy boundary.

E—3 to 15 inches; brownish yellow (10YR 6/6) sandy loam; weak fine subangular blocky structure; friable; common fine and medium roots; few fine pores; strongly acid; gradual wavy boundary.

Bt1—15 to 22 inches; brownish yellow (10YR 6/8) sandy clay loam; weak medium subangular blocky structure; friable; few fine roots, few coarse roots, and few decayed roots; common distinct clay films on faces of peds; many black flakes of minerals; very strongly acid; gradual wavy boundary.

Bt2—22 to 35 inches; reddish yellow (7.5YR 6/8) sandy clay loam; common medium distinct very pale brown (10YR 7/3) and white (10YR 8/1) fragments of weathered granite; weak medium subangular blocky structure; few fine roots; common distinct clay films on faces of peds and on fragments of weathered granite; strongly acid; gradual wavy boundary.

C—35 to 65 inches; mottled reddish yellow (7.5YR 6/8) and white (10YR 8/1) sandy loam; massive; friable; strongly acid.

The thickness of the solum ranges from 20 to 40 inches. The depth to bedrock is more than 60 inches. The content of gravel ranges from 0 to 15 percent in the A and E horizons. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A horizon has hue of 10YR, value of 4 to 6, and chroma of 2 to 4. It is loamy sand or sandy loam.

The E horizon has hue of 10YR, value of 4 to 6, and chroma of 3 to 8. It is loamy sand or sandy loam.

The Bt horizon has hue of 2.5YR to 10YR, value of 5 or 6, and chroma of 4 to 8. It is sandy loam or sandy clay loam.

The C horizon is mottled in shades of brown, yellow, red, and white. The white colors are inherited from weathered bedrock. This horizon is loamy sand or sandy loam.

Riverview Series

The Riverview series consists of very deep, well drained, moderately permeable soils that formed in loamy fluvial sediments. These soils are on natural levees and broad ridges on flood plains that drain the Piedmont and Coastal Plain. Slopes range from 0 to 2 percent. The soils are fine-loamy, mixed, thermic Fluventic Dystrochrepts.

Riverview soils are geographically associated with Alaga, Bibb, Chastain, Chewacla, Tetotum, and Wickham soils. Alaga soils are Quartzipsamments. They are on terraces. Bibb and Chastain soils are Fluvaquents. They are in the lower positions on the landscape. Chewacla soils have low-chroma mottles in the upper 24 inches. They also are in the lower positions on the landscape. Tetotum and Wickham soils have an argillic horizon. They are on terraces.

Typical pedon of Riverview silt loam, frequently flooded, about 4 miles south on U.S. Highway 52 from the junction of U.S. Highway 52 and U.S. Highway 1 in Cheraw; 2 miles east from Cash Church; 2.5 miles southeast on an unpaved road; 75 feet north:

Ap—0 to 3 inches; dark yellowish brown (10YR 4/4) silt loam; weak fine granular structure; friable; many fine, medium, and coarse roots; very strongly acid; clear wavy boundary.

Bw1—3 to 16 inches; brown (7.5YR 5/4) loam; moderate medium subangular blocky structure; friable; few fine and coarse roots; common fine and medium pores; very strongly acid; gradual wavy boundary.

Bw2—16 to 28 inches; strong brown (7.5YR 5/6) loam; moderate medium subangular blocky structure; friable; few medium and coarse roots; few fine and medium pores; few fine flakes of mica; strongly acid; gradual wavy boundary.

Bw3—28 to 38 inches; strong brown (7.5YR 5/8) silty clay loam; common medium prominent yellowish red (5YR 5/6) mottles; moderate medium subangular blocky structure; friable; few coarse roots; few fine and medium pores; common fine flakes of mica; very strongly acid; gradual wavy boundary.

C—38 to 60 inches; strong brown (7.5YR 5/6) loam;

common prominent reddish brown (5YR 4/3) mottles; massive; friable; common fine flakes of mica; very strongly acid.

The thickness of the solum ranges from 24 to 60 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 or 4. It is sandy loam, loam, or silt loam.

The Bw horizon has hue of 5YR to 10YR, value of 4 or 5, and chroma of 3 to 8. It has mottles with chroma of 2 or less below a depth of 24 inches. It is silt loam, loam, sandy clay loam, or silty clay loam.

The C horizon has hue of 7.5YR or 10YR and value and chroma of 4 to 8. It is sand, loamy sand, or sandy loam and has strata of silt loam or silty clay loam.

Smithboro Series

The Smithboro series consists of very deep, somewhat poorly drained, slowly permeable soils that formed in clayey and loamy marine sediments. These soils are on low, broad interstream divides of the Coastal Plain. Slopes range from 0 to 2 percent. The soils are clayey, kaolinitic, thermic Aeric Paleaquults.

Smithboro soils are geographically associated with Coxville, Emporia, Goldsboro, Noboco, and Ogeechee soils. Emporia, Goldsboro, and Noboco soils are fine-loamy. They are Udults. Coxville and Ogeechee soils have dominant chroma of 2 or less below the surface layer.

Typical pedon of Smithboro loam, 2.4 miles northwest of Cheraw on U.S. Highway 52 from the downtown Cheraw intersection of U.S. Highway 1 and U.S. Highway 52; 1,000 feet southwest of U.S. Highway 52:

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) loam; weak fine granular structure; very friable; many fine roots; few krotovinas; very strongly acid; clear wavy boundary.

Bt—8 to 13 inches; mottled yellowish brown (10YR 5/6), light gray (10YR 7/1), brownish yellow (10YR 6/8), and red (10R 4/8) clay loam; weak medium subangular blocky structure; firm, sticky and plastic; common fine roots; common fine pores; common distinct clay films on faces of peds and on pore walls; few krotovinas; very strongly acid; gradual wavy boundary.

Btg1—13 to 27 inches; gray (10YR 5/1) clay loam; many medium prominent yellowish brown (10YR 5/8) and common medium prominent red (10R 5/8) mottles; weak coarse subangular blocky structure parting to moderate medium subangular blocky; firm, sticky and plastic; few fine roots; common fine pores; common distinct clay films on faces of peds and on pore walls; few krotovinas; very strongly acid; gradual wavy boundary.

Btg2—27 to 41 inches; light gray (10YR 6/1) clay; many medium prominent yellowish brown (10YR 5/8) and few medium prominent red (10R 5/8) mottles; weak coarse subangular blocky structure parting to weak medium subangular blocky; firm, sticky and plastic; few fine roots; few fine pores; common distinct clay films on faces of peds and on pore walls; few krotovinas; very strongly acid; gradual wavy boundary.

Btg3—41 to 53 inches; mottled gray (10YR 5/1), brownish yellow (10YR 6/8), and red (10R 4/8) clay loam; weak coarse subangular blocky structure; very firm, sticky and plastic; few fine roots; few fine pores; common distinct clay films on faces of peds; few krotovinas; strongly acid; gradual wavy boundary.

Btg4—53 to 65 inches; mottled light gray (10YR 6/1), brownish yellow (10YR 6/8), and red (2.5YR 4/8) clay; weak coarse prismatic structure parting to weak coarse subangular blocky; very firm, sticky and plastic; few fine roots; few fine pores; common distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

BCg—65 to 80 inches; mottled light gray (10YR 6/1), strong brown (7.5YR 5/8), and red (2.5YR 4/8) clay; weak coarse subangular blocky structure; very firm, sticky and plastic; very strongly acid.

The thickness of the solum is more than 60 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 1 or 2. It is fine sandy loam, sandy loam, or loam.

The Bt horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 to 6. It has mottles in shades of gray, red, yellow, and brown, or it is mottled throughout in these colors and has no dominant matrix color. It is clay loam or clay.

The Btg horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 or 2, or it is mottled in shades of gray, red, yellow, or brown and has no dominant matrix color. It is clay loam or clay.

Tetotum Series

The Tetotum series consists of very deep, moderately well drained, moderately permeable soils that formed in loamy fluvial sediments. These soils are

on broad terraces adjacent to flood plains in the Piedmont and on the Coastal Plain. Slopes range from 0 to 6 percent. The soils are fine-loamy, mixed, thermic Aquic Hapludults.

Tetotum soils are geographically associated with Alaga, Chastain, Chewacla, Hornsville, Riverview, Wahee, and Wickham soils. Alaga soils are sandy. Chastain, Chewacla, and Riverview soils do not have an argillic horizon. They are on flood plains. Hornsville and Wahee soils are clayey. Wickham soils do not have mottles with chroma of 2 or less within a depth of 60 inches.

Typical pedon of Tetotum sandy loam, 0 to 2 percent slopes, 0.4 mile south of the bridge crossing Thompson Creek along U.S. Highway 1 and U.S. Highway 52 near Cheraw; 2.2 miles south on U.S. Highway 52 from the U.S. Highway 1 intersection; 2.3 miles east on South Carolina Highway 761; 0.5 mile southeast on a logging road; 500 feet southwest along a drainage ditch; 250 feet north, in a field:

Ap—0 to 5 inches; grayish brown (10YR 5/2) sandy loam; weak fine granular structure; very friable; many fine roots; very strongly acid; clear wavy boundary.

BE—5 to 8 inches; pale yellow (2.5Y 7/4) loam; weak fine granular structure; very friable; many fine roots; very strongly acid; clear wavy boundary.

Bt1—8 to 17 inches; brownish yellow (10YR 6/8) clay loam; weak medium subangular blocky structure; friable; common fine roots; few fine pores; many distinct clay films on faces of peds; about 1 percent fine quartz gravel; few fine flakes of mica; very strongly acid; clear wavy boundary.

Bt2—17 to 23 inches; brownish yellow (10YR 6/6) clay loam; common medium prominent red (2.5YR 5/8) mottles; moderate medium subangular blocky structure; friable; common fine roots; few fine pores; many distinct clay films on faces of peds, along root channels, and on pore walls; about 1 percent fine quartz gravel; few fine flakes of mica; very strongly acid; gradual wavy boundary.

Bt3—23 to 34 inches; pale yellow (2.5Y 7/4) clay loam; common coarse prominent yellowish brown (10YR 5/8), common medium prominent yellowish red (5YR 4/8), and common medium prominent light gray (10YR 7/1) mottles; moderate medium subangular blocky structure; friable; common fine roots; few fine pores; many distinct clay films on faces of peds; about 1 percent fine quartz gravel; few fine flakes of mica; very strongly acid; gradual wavy boundary.

Btg—34 to 58 inches; light gray (10YR 7/1) clay loam with pockets of sandy clay; many medium distinct yellowish brown (10YR 5/6) and few medium prominent red (2.5YR 4/8) mottles; weak coarse subangular blocky structure; friable; common fine roots; few faint clay films on faces of peds; few black concretions; about 1 percent fine quartz gravel; few fine flakes of mica; very strongly acid; gradual wavy boundary.

Cg—58 to 65 inches; mottled light gray (10YR 7/1), strong brown (7.5YR 5/8), and brownish yellow (10YR 6/6) sandy clay loam; massive; friable; about 1 percent fine quartz gravel; few fine flakes of mica; very strongly acid.

The thickness of the solum ranges from 40 to more than 60 inches. The content of gravel ranges from 0 to 5 percent in the A and Bt horizons and from 0 to 15 percent in the C horizon. Flakes of mica are few or common in most pedons. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 2 to 4. It is sandy loam, fine sandy loam, loam, or silt loam.

The upper part of the Bt horizon has hue of 7.5YR to 2.5Y, value of 5 to 7, and chroma of 4 to 8. It has mottles that have chroma of 2 or less in the upper 24 inches. The lower part of the Bt horizon has hue of 7.5YR to 2.5Y, value of 4 to 7, and chroma of 3 to 8. The Bt horizon is loam, sandy clay loam, or clay loam.

The Btg horizon, if it occurs, has hue of 7.5YR to 2.5Y, value of 4 to 7, and chroma of 1 or 2, or it is mottled throughout and has no dominant matrix color. It is loam, sandy clay loam, or clay loam.

The C horizon, if it occurs, has hue of 7.5YR to 2.5Y, value of 4 to 7, and chroma of 3 to 8. It is sandy loam or sandy clay loam, or it is stratified with these textures.

The Cg horizon, if it occurs, has hue of 7.5YR to 2.5Y, value of 5 to 7, and chroma of 1 or 2. It is sandy loam or sandy clay loam, or it is stratified with these textures.

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 broad ridges and side slopes in the Sand Hills and on the Coastal Plain. Slopes range from 0 to 10 percent. The soils are loamy, siliceous, thermic Grossarenic Kandiudults.

Troup soils are geographically associated with Ailey, Alpin, Bibb, Candor, Johnston, Pelion, and Vaucluse soils. Ailey, Candor, Vaucluse, and Pelion soils have an argillic horizon at a depth of less than 40 inches. Alpin soils are Quartzipsamments. Bibb and Johnston soils do

not have an argillic horizon. They are on flood plains.

Typical pedon of Troup sand, 0 to 6 percent slopes, 3.7 miles west on South Carolina Secondary Highway 22 from South Carolina Highway 9 and U.S. Highway 52 in Cheraw; 1.2 miles southwest on South Carolina Secondary Highway 573; 0.1 mile south on an unpaved road; 0.1 mile west on an unpaved road; 25 feet south, on an unpaved road:

Ap—0 to 6 inches; grayish brown (10YR 5/2) sand; single grained; loose; common fine roots; few worm casts; slightly acid; clear wavy boundary.

E1—6 to 25 inches; light yellowish brown (10YR 6/4) sand; single grained; loose; common fine roots; very strongly acid; gradual wavy boundary.

E2—25 to 46 inches; brownish yellow (10YR 6/6) loamy sand; single grained; loose; common fine roots; few uncoated sand grains; few worm casts; very strongly acid; gradual wavy boundary.

E3—46 to 55 inches; yellow (10YR 7/6) sand; single grained; loose; few uncoated sand grains; very strongly acid; clear wavy boundary.

Bt—55 to 85 inches; red (5YR 5/8) sandy loam; weak medium subangular blocky structure; very friable; few fine pores; few faint clay films on faces of peds; few fine flakes of mica; very strongly acid.

The thickness of the solum is more than 80 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A horizon has hue of 10YR, value of 3 to 6, and chroma of 2 to 4. It is sand or loamy sand.

The E horizon has hue of 7.5YR or 10YR, value of 4 to 8, and chroma of 3 to 8. It is sand or loamy sand.

The Bt horizon has hue of 10R to 5YR, value of 4 to 6, and chroma of 4 to 8. It is sandy loam or sandy clay loam.

Vaucluse Series

The Vaucluse series consists of very deep, well drained, moderately slowly permeable or slowly permeable soils that formed in loamy marine sediments. These soils are on ridges and side slopes in the Sand Hills and on the Coastal Plain. Slopes range from 2 to 15 percent. The soils are fine-loamy, siliceous, thermic Typic Kanhapludults.

Vaucluse soils are geographically associated with Ailey, Candor, Emporia, Pelion, Troup, and Johnston soils. Ailey and Candor soils are in an arenic subgroup. Alpin soils do not have an argillic horizon. Emporia and Pelion soils have mottles with chroma of 2 or less within the upper 50 inches of the profile. Johnston soils are Humaquepts. They are on flood plains. Troup soils are in a grossarenic subgroup.

Typical pedon of Vaucluse loamy sand, 2 to 6 percent slopes, about 8 miles south of Chesterfield on South Carolina Highway 102 to the intersection of South Carolina Highway 102 and South Carolina Secondary Highway 22; 0.1 mile south on South Carolina Highway 102 from the intersection; right turn on a woods trail, 0.1 mile south; 100 feet west:

A—0 to 2 inches; dark gray (10YR 4/1) loamy sand; single grained; loose; many fine roots, few medium and large roots, and few decayed roots; common fine pores; about 1 percent ironstone gravel; extremely acid; clear wavy boundary.

E—2 to 6 inches; brownish yellow (10YR 6/6) loamy sand; single grained; loose; common fine roots, few medium and large roots, and few decayed roots; common fine pores; about 2 percent quartz gravel and ironstone gravel; very strongly acid; gradual wavy boundary.

Bt—6 to 16 inches; reddish yellow (5YR 6/8) sandy clay loam; few medium prominent brownish yellow (10YR 6/8) mottles; few medium prominent light gray (10YR 7/2) balls of kaolin; weak medium subangular blocky structure; friable; few fine and medium roots; few faint clay films on faces of peds; few brittle peds; very strongly acid; gradual smooth boundary.

Btx—16 to 25 inches; red (2.5YR 4/8) sandy clay loam; common medium prominent brownish yellow (10YR 6/8) mottles; few medium prominent light gray (10YR 7/2) balls of kaolin; weak medium subangular blocky structure; friable in part of the mass; few fine roots; few fine pores; few faint clay films on faces of peds; about 1 percent ironstone gravel; brittle, compact, and dense in about 40 percent of the mass; very strongly acid; gradual wavy boundary.

BC—25 to 50 inches; red (2.5YR 5/8) sandy clay loam; few medium distinct reddish yellow (5YR 6/8) mottles; weak coarse subangular blocky structure; very friable; few fine roots; few clean sand grains; few white balls of kaolin; very strongly acid; gradual wavy boundary.

C—50 to 60 inches; reddish yellow (5YR 6/8) sandy loam; few medium prominent yellow (10YR 7/6) mottles; massive; friable; few fine roots; few white balls of kaolin; few fine flakes of mica; very strongly acid.

The thickness of the solum is more than 40 inches. The depth to a horizon that is brittle ranges from 15 to 35 inches. Reaction ranges from extremely acid to strongly acid throughout the profile, except in areas where the surface layer has been limed. The content of

ironstone or gravel ranges from 0 to 35 percent in the A and E horizons and from 0 to 5 percent in the Bt and Btx horizons.

The A horizon has hue of 10YR, value of 4 to 6, and chroma of 1 to 4. It is sand or loamy sand in the fine-earth fraction.

The E horizon has hue of 10YR, value of 6 or 7, and chroma of 4 to 6. It is sand or loamy sand in the fine-earth fraction.

The Bt horizon has hue of 2.5YR to 10YR, value of 4 to 7, and chroma of 4 to 8. In some pedons it has few white balls of kaolin.

The Btx horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 4 to 8. It is sandy loam or sandy clay loam that is dense, brittle, and slightly cemented in 10 to 50 percent of the mass. In some pedons it has few white balls of kaolin.

The BC horizon has hue of 2.5YR or 5YR, value of 5 or 6, and chroma of 1 to 8. It is sandy loam or sandy clay loam. In some pedons it has white balls of kaolin and thin strata of gravel.

The C horizon has hue of 2.5YR to 10YR, value of 4 to 6, and chroma of 1 to 8. It commonly has mottles in shades of yellow, red, and gray, or it is mottled throughout with these colors and has no dominant matrix color. It is sandy loam, or it is stratified sandy loam and sandy clay loam.

Wahee Series

The Wahee series consists of very deep, somewhat poorly drained, slowly permeable soils that formed in clayey and loamy fluvial sediments. These soils are on broad terraces adjacent to flood plains in the Coastal Plain. Slopes range from 0 to 2 percent. The soils are clayey, mixed, thermic Aeric Ochraquults.

Wahee soils are geographically associated with Chewacla, Coxville, Hornsville, Ogeechee, Riverview, and Tetotum soils. Chewacla and Riverview soils do not have an argillic horizon. They are on flood plains. Coxville and Ogeechee soils are Aquults. Hornsville and Tetotum soils are Udults. Tetotum soils are fine-loamy.

Typical pedon of Wahee silt loam, about 1 mile south of the junction of U.S. Highway 52 and South Carolina Highway 20 near Cash; 1 mile east on an unpaved road to a railroad track; 0.2 mile northeast; 1 mile northwest:

A—0 to 5 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; very friable; many fine and medium roots; very strongly acid; clear smooth boundary.

Bt1—5 to 18 inches; yellowish brown (10YR 5/4) clay; common medium distinct yellowish brown (10YR 5/8) mottles; common medium distinct gray (10YR 6/1) mottles and coatings on peds; strong medium subangular blocky structure; firm; common fine roots; common fine pores; common distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt2—18 to 25 inches; yellowish brown (10YR 5/4) clay; common medium distinct yellowish brown (10YR 5/8) and common medium prominent red (2.5YR 4/8) mottles; common medium distinct gray (10YR 6/1) mottles and coatings on peds; moderate medium subangular blocky structure; firm; few fine roots; few fine pores; common distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

Btg1—25 to 38 inches; gray (10YR 5/1) clay; common medium prominent strong brown (7.5YR 5/8) and red (2.5YR 4/8) mottles; moderate medium subangular blocky structure; firm; few fine roots; few fine pores; few distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

Btg2—38 to 58 inches; gray (10YR 5/1) clay loam; many coarse prominent reddish yellow (7.5YR 6/8) mottles; strong medium subangular blocky structure; firm; few distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

BCg—58 to 65 inches; light brownish gray (2.5Y 6/2) clay loam; common medium prominent reddish yellow (7.5YR 6/8) mottles; moderate medium subangular blocky structure; firm; few fine flakes of mica; very strongly acid.

The thickness of the solum ranges from 40 to more than 60 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A horizon has hue of 10YR or 2.5Y, or it is neutral in hue. It has value of 2 to 5 and chroma of 0 to 3. It is sandy loam, loam, or silt loam.

The Bt horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 3 to 8. It has mottles in shades of gray, yellow, brown, or red. It is clay loam, silty clay, or clay.

The Btg horizon has hue of 10YR or 2.5Y, or it is neutral in hue. It has value of 4 to 7 and chroma of 0 to 2. It has mottles in shades of yellow, brown, or red. It is clay loam, sandy clay, silty clay, or clay.

The Cg horizon, if it occurs, has hue of 10YR to 5Y, or it is neutral in hue. It has value of 5 to 7 and chroma of 0 to 2. It is sandy loam, sandy clay loam, clay loam, or silty clay loam, or it is stratified with various textures.

Wickham Series

The Wickham series consists of very deep, well drained, moderately permeable soils that formed in loamy and sandy fluvial sediments. These soils are on

broad terraces along the major and smaller streams that drain the Piedmont and Coastal Plain. Slopes range from 0 to 6 percent. The soils are fine-loamy, mixed, thermic Typic Hapludults.

Wickham soils are geographically associated with Alaga, Chastain, Chewacla, Hornsville, Riverview, and Wahee soils. Alaga soils are Quartzipsamments. Hornsville, Tetotum, and Wahee soils have mottles with chroma of 2 or less within the upper 24 inches of the argillic horizon. Chastain, Chewacla, and Riverview soils do not have an argillic horizon. They are on flood plains.

Typical pedon of Wickham sandy loam, 0 to 2 percent slopes, 4.3 miles south on U.S. Highway 52 from the intersection of South Carolina Highway 9 in Cheraw; 0.7 mile east of South Carolina Secondary Highway 701 to an unpaved road; 0.4 mile east on the unpaved road; 1.9 miles southeast of the unpaved road; 0.2 mile northeast of a field road; 250 feet east, in a field:

Ap—0 to 6 inches; brown (7.5YR 4/4) sandy loam; weak fine granular structure; very friable; many fine roots; few fine pores; few uncoated sand grains; slightly acid; abrupt wavy boundary.

Bt1—6 to 26 inches; yellowish red (5YR 4/6) clay loam; moderate medium subangular blocky structure; friable; common fine roots; many fine pores and few medium and coarse pores; common distinct clay films on faces of peds and along pore walls and root channels; few fine black minerals; few fine flakes of mica; moderately acid; gradual wavy boundary.

Bt2—26 to 40 inches; yellowish red (5YR 4/6) sandy clay loam; weak medium subangular blocky structure; friable; few fine roots; many fine pores; few faint clay films on faces of peds and along pore walls and root channels; few uncoated sand grains; few fine black minerals; few fine flakes of mica; moderately acid; gradual wavy boundary.

BC—40 to 48 inches; yellowish red (5YR 5/8) sandy loam; weak coarse subangular blocky structure; friable; few fine roots; common fine pores; few faint clay films on faces of peds and along walls of pores and root channels; few uncoated sand grains; about 2 percent fine gravel; few fine black minerals; few flakes of mica; moderately acid; gradual wavy boundary.

C—48 to 80 inches; mottled strong brown (7.5YR 5/8) and pale brown (10YR 6/3) loamy sand; single grained; loose; about 2 percent fine gravel; few fine black minerals; few fine flakes of mica; moderately acid.

The thickness of the solum ranges from 40 to more than 60 inches. Reaction ranges from very strongly acid to moderately acid throughout the profile, except in areas where the surface layer has been limed. The content of gravel ranges from 0 to 10 percent in the A horizon, from 0 to 5 percent in the Bt horizon, and from 0 to 15 percent in the C horizon.

The A horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 2 to 6. It is loamy sand or sandy loam.

The Bt horizon has hue of 2.5YR to 7.5YR, value of 4 or 5, and chroma of 4 to 8. It is sandy clay loam or clay loam.

The C horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 3 to 8. It is sand or loamy sand, or it is stratified.

Woodington Series

The Woodington series consists of very deep, poorly drained, moderately rapidly permeable soils that formed in loamy marine sediments. These soils are on broad flats or in slight depressions on the Coastal Plain. Slopes range from 0 to 2 percent. The soils are coarse-loamy, siliceous, thermic Typic Paleaquults.

Woodington soils are geographically associated with Coxville, Emporia, Goldsboro, Noboco, and Ogeechee soils. Coxville soils are clayey. Emporia, Goldsboro, and Noboco soils are Udults. Ogeechee soils are fine-loamy.

Typical pedon of Woodington sandy loam, about 1.9 miles west of Cheraw; from the intersection of South Carolina Highway 9 and U.S. Highway 1; 0.6 mile north on a farm road; 100 feet west of the road:

A—0 to 9 inches; very dark gray (10YR 3/1) sandy loam; weak fine granular structure; friable; many fine and very fine roots; slightly acid; clear wavy boundary.

Btg1—9 to 26 inches; light brownish gray (10YR 6/2) sandy loam; few medium distinct brownish yellow (10YR 6/6) mottles; weak fine subangular blocky structure; friable; common fine roots; common medium pores; few clean coarse sand grains; few faint clay films along root channels; strongly acid; gradual wavy boundary.

Btg2—26 to 45 inches; mottled gray (10YR 6/1) and dark gray (10YR 4/1) sandy loam; many medium prominent brownish yellow (10YR 6/6) and yellowish red (5YR 5/6) mottles; weak medium subangular blocky structure; friable; few very fine roots; common fine pores; few clean sand grains; very strongly acid; gradual wavy boundary.

Btg3—45 to 60 inches; gray (10YR 6/1) sandy loam;

common medium prominent yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; few medium pores; few clean sand grains; very strongly acid; gradual wavy boundary.

Btg4—60 to 67 inches; light gray (10YR 6/1) sandy loam; common medium prominent reddish yellow (10YR 6/6) mottles; few gray (10YR 5/1) streaks; weak fine subangular blocky structure; friable; very strongly acid.

The thickness of the solum is more than 60 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A horizon has hue of 10YR, or it is neutral in hue. It has value of 2 to 5 and chroma of 0 to 2. It is loamy sand or sandy loam.

The E horizon, if it occurs, has hue of 10YR, or it is neutral in hue. It has value of 4 to 6 and chroma of 0 to 2. It is loamy sand or sandy loam.

The Btg horizon has hue of 10YR, or it is neutral in hue. It has value of 5 to 7 and chroma of 0 to 2. In some pedons it has few to many mottles with chroma of more than 2.

Formation of the Soils

This section describes the factors of soil formation and the processes of horizon differentiation.

Factors of Soil Formation

Soil forms through processes that act on accumulated or deposited geologic material. The five important factors of soil formation are parent material, climate, living organisms, relief, and time.

Climate and living organisms are the active forces of soil formation. Their effect on the parent material is modified by relief and by the length of time that the parent material has been in place. The relative importance of each factor differs from place to place. In some areas one factor dominates soil formation and determines most of the soil properties. In most areas, however, the interaction of all five factors determines the kind of soil that forms.

The soil-forming processes can be better understood if each of the five factors is considered separately. It should be remembered, however, that each of the five factors affects the other four and is affected by the others.

Parent Material

Parent material is the unconsolidated mass in which a soil forms. It largely determines the mineral and chemical composition of the soil. The soils in Chesterfield County formed in material weathered from rock and in sediment that was deposited by the ocean, by streams, or successively by both.

Residual material is formed in place through the weathering of the underlying rock *(11)*. Soils that formed in this material make up about 15 percent of the survey area. For the most part, the rocks are crystalline and metamorphic rocks, such as Carolina slate, gneiss, schist, and granite. Badin, Georgeville, Goldston, and Pageland soils are examples of soils that formed in material weathered from Carolina slate or other fine grained rock. Cecil, Pacolet, and Rion soils are examples of soils that formed in material weathered from acid crystalline rock. Claycreek and Mayodan soils are examples of soils that formed in material weathered from Triassic rocks. Poindexter soils are examples of soils that formed in material weathered from basic rocks.

About 73 percent of the soils in the county formed in marine sediments that were deposited when the ocean receded eastward. Most of the material in the Sand Hills and on the Coastal Plain was deposited during this period. This material typically consists of quartz sand and gravel of varying sizes interbedded with strata of kaolin clay. Ailey, Alpin, Candor, Coxville, Emporia, Noboco, Pelion, and Vaucluse soils are examples of soils that formed in marine sediments.

About 12 percent of the soils in the county formed in alluvial sediment on flood plains and river terraces. In some areas this alluvium has been moved by both streams and the ocean. The Great Pee Dee River has also deposited Piedmont material on the adjacent flood plains and river terraces. The soils in these areas are generally younger than the other soils in the county. Some soils on the flood plains are only a few hundred years old. Bibb, Chastain, Chewacla, Johnston, Riverview, Tetotum, and Wickham soils are examples of soils that formed in alluvial sediment.

Climate

Climate, particularly precipitation and temperature, affects the physical, chemical, and biological relationships in the soil. Water dissolves minerals, aids chemical and biological activity, and transports the dissolved mineral and organic material through the soil profile. High annual rainfall promotes the leaching of soluble bases and the translocation of the less soluble and colloidal material downward through the soil. A long frost-free season and heavy rainfall result in the downward movement of fine textured soil material and the loss of plant nutrients.

The amount of water that percolates through the soil depends on the amount of rainfall, the relative humidity, and the length of the frost-free period. Percolation, or the downward movement of water, also is affected by relief and by the permeability of the soil material. Weathering of the parent material is accelerated by moist conditions and warm temperatures. The growth and activity of living organisms also are increased by a warm, humid climate.

Living Organisms

The number and kinds of plants and animals that live in and on the soils are determined mainly by the climate and, to a lesser extent, by parent material, relief, and the age of the soil.

Bacteria, fungi, and other micro-organisms play an active role in soil formation. They hasten the weathering of minerals and the decomposition of organic material. The larger plants alter the soil microclimate, furnish organic matter, and transfer chemical elements from the subsoil to the surface layer.

Most of the fungi, bacteria, and other micro-organisms in the soils of Chesterfield County are in the upper few inches of the soil profile. Earthworms and other small invertebrates are active chiefly in the A horizon and the upper part of the B horizon, where they slowly but continuously mix the soil material. Bacteria and fungi decompose organic matter and release nutrients for plant use. Other animals play a secondary but important role in soil formation. By eating plants, they help to return plant material to the soil.

The native vegetation is mainly loblolly pine, longleaf pine, oak, and hickory in the uplands and sweetgum, blackgum, yellow-poplar, maple, tupelo, and water oak on the flood plains. Large trees affect soil formation by bringing nutrients from deep within the soil to the upper layers, by bringing soil material from varying depths to the surface when a tree is blown over, and by providing large openings to be filled by soil material as large roots decay.

Relief

Relief, or lay of the land, influences soil formation through its effect on moisture, temperature, and erosion. Its influence, however, is modified somewhat by the influence of the other soil-forming factors.

Slopes in the county range from 0 to 40 percent. Most soils on uplands that have slopes of less than 25 percent have a thick, well developed profile. Some soils that have slopes ranging from 2 to 40 percent have a thinner, less developed profile. The most extensive soils in the county are gently sloping to strongly sloping and have not been affected by relief. The soils on flood plains have slopes that range from 0 to 2 percent. These soils are young and show little evidence of profile development.

Time

The length of time required for a soil to form depends largely on the intensity of the other soil-forming factors. The soils in Chesterfield County range from young, or immature, soils that show very little evidence of profile development to soils that have well defined horizons.

The soils in the smoother parts of the uplands generally have developed to maturity. Noboco soils are examples. The soils on the steeper slopes, where geologic erosion has removed the soil material to some extent, tend to be thinner than is typical. Pacolet and Goldston soils are examples. The soils on the flood plains along streams are young because the material has not been in place long enough for distinct horizons to form. Chewacla soils are examples.

Processes of Horizon Differentiation

If a vertical cut is made in a soil, several distinct layers, or horizons, are evident. Many soil-forming processes have produced this differentiation of horizons. Examples are the accumulation of organic matter, the leaching of soluble salts, the reduction and translocation of iron, the formation of soil structure, physical weathering through such processes as freezing and thawing, and chemical weathering of primary minerals or rocks. Some of these processes take place continuously in all soils, but the number of active processes and the degree of their activity vary from one soil to another.

Most soils have four major horizons: A, E, B, and C horizons. These horizons can be subdivided to indicate variations within a horizon. An example is a Bt horizon, which is a subsoil layer that contains translocated clay from the A horizon.

The A horizon is the surface layer. It has the largest accumulation of organic matter of all the horizons. If the soil has been cleared and plowed, this layer is called the Ap horizon. Johnston and Rion soils are examples of soils that have a distinctive, dark A or Ap horizon.

The E horizon is the zone of maximum leaching, or eluviation, of clay and iron. It forms just below the surface layer and generally is the lightest colored horizon in the soil. Ailey and Noboco soils have a well expressed E horizon.

The B horizon underlies the A or E horizon. It commonly is called the subsoil. It is the horizon of maximum accumulation, or illuviation, of clay, iron, aluminum, and other compounds. Noboco and Emporia soils have a well expressed B horizon. Some soils, such as Vaucluse soils, have a layer in the Bt horizon that is dense and brittle in parts. This horizon has a very low content of organic matter. It tends to be cemented and is hard or very hard when dry and slightly brittle when moist. It generally is mottled and is moderately slowly permeable or slowly permeable.

The C horizon is generally below the B horizon. It includes sediments, saprolite, and consolidated bedrock that when moist can be dug with a spade. Badin and Georgeville soils formed in saprolite and consolidated

bedrock that can be dug with a spade. Johnston soils do not have a B horizon. In these soils the C horizon is directly below the A horizon.

Hard bedrock within the soil profile below the C horizon is called an R layer. The bedrock in this layer is sufficiently coherent when moist to make hand digging with a spade impractical, but it may be scraped with a spade. Goldston soils have an R layer.

Excessively drained soils, such as Alpin soils, generally are brownish, yellowish, or reddish and are free of gray mottles, or mottles that have chroma of 2 or less. They are porous and generally are sandy. Well drained soils, such as Noboco soils, have a yellowish, brownish, or reddish subsoil. These colors are the result of a thin coating of iron oxide on the sand, silt, and clay particles. A soil is considered well drained if it does not have gray mottles, or mottles that have chroma of 2 or less, within a depth of 30 inches. Moderately well drained soils, such as Goldsboro soils, generally are free of gray mottles to a depth of about 15 to 20 inches. Somewhat poorly drained soils, such as Chewacla soils, have gray mottles near the A horizon. Poorly drained soils generally are dominantly gray in the B horizon and commonly are mottled. Coxville soils are examples.

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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.

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.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	more than 12

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, K), expressed as a percentage of the total cation-exchange capacity.

Bedding planes. Fine stratifications, less than 5 millimeters thick, in unconsolidated alluvial, eolian, lacustrine, or marine sediments.

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.

Bottom land. The normal flood plain of a stream, subject to flooding.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Channery soil. A soil that is, by volume, more than 15 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches along the longest axis. A single piece is called a channer.

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 film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Coarse fragments. If round, mineral or rock particles 2 millimeters to 25 centimeters (10 inches) in diameter; if flat, mineral or rock particles (flagstone) 15 to 38 centimeters (6 to 15 inches) long.

Coarse textured soil. Sand or loamy sand.

Cobblestone (or cobble). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Colluvium. Soil material or rock fragments, or both, moved by creep, slide, or local wash and deposited at the base of steep slopes.

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 in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils are somewhat similar in all areas.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrated compounds or cemented soil grains. The composition of most concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are common compounds in concretions.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are:

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—When wet, adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Cemented.—Hard; little affected by moistening.

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

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.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Dense layer (in tables). A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

Depth to rock (in tables). Bedrock is too near the surface for the specified use.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:

Excessively drained.—Water is removed from the soil very rapidly. Excessively drained soils are commonly very coarse textured, rocky, or shallow. Some are steep. All are free of the mottling related to wetness.

Somewhat excessively drained.—Water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy and rapidly pervious. Some are shallow. Some are so steep that much of the water they receive is lost as runoff. All are free of the mottling related to wetness.

Well drained.—Water is removed from the soil readily, but not rapidly. It is available to plants throughout most of the growing season, and wetness does not inhibit growth of roots for significant periods during most growing seasons. Well drained soils are commonly medium textured. They are mainly free of mottling.

Moderately well drained.—Water is removed from the soil somewhat slowly during some periods. Moderately well drained soils are wet for only a

short time during the growing season, but periodically they are wet long enough that most mesophytic crops are affected. They commonly have a slowly pervious layer within or directly below the solum or periodically receive high rainfall, or both.

Somewhat poorly drained.—Water is removed slowly enough that the soil is wet for significant periods during the growing season. Wetness markedly restricts the growth of mesophytic crops unless artificial drainage is provided. Somewhat poorly drained soils commonly have a slowly pervious layer, a high water table, additional water from seepage, nearly continuous rainfall, or a combination of these.

Poorly drained.—Water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Free water is commonly at or near the surface for long enough during the growing season that most mesophytic crops cannot be grown unless the soil is artificially drained. The soil is not continuously saturated in layers directly below plow depth. Poor drainage results from a high water table, a slowly pervious layer within the profile, seepage, nearly continuous rainfall, or a combination of these.

Very poorly drained.—Water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. Unless the soil is artificially drained, most mesophytic crops cannot be grown. Very poorly drained soils are commonly level or depressed and are frequently ponded. Yet, where rainfall is high and nearly continuous, they can have moderate or high slope gradients.

Drainage, surface. Runoff, or surface flow of water, from an area.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Eolian soil material. Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, for example, fire, that exposes the surface.

Excess fines (in tables). Excess silt and clay in the soil. The soil is not a source of gravel or sand for construction purposes.

Fast intake (in tables). The rapid movement of water into the soil.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fibric soil material (peat). The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity.*

Fine textured soil. Sandy clay, silty clay, or clay.

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

Flagstone. A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist, 6 to 15 inches (15 to 38 centimeters) long.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Foot slope. The inclined surface at the base of a hill.

Forb. Any herbaceous plant not a grass or a sedge.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other

elements in the profile and in gray colors and mottles.

Graded stripcropping. Growing crops in strips that grade toward a protected waterway.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock up to 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that is 15 to 50 percent, by volume, rounded or angular rock fragments, not prominently flattened, up to 3 inches (7.6 centimeters) in diameter.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water (geology). Water filling all the unblocked pores of the material below the water table.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hardpan. A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric and the more decomposed sapric material.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. The major horizons are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, any plowed or disturbed surface layer.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an O, A, or E horizon. The B horizon is in part a layer of transition from the overlying horizon to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) granular, prismatic, or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying horizon. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Hard, consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon but can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff-producing characteristics. The chief consideration is the inherent capacity of soil bare of vegetation to permit infiltration. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff. Soils are assigned to four groups. In group A are soils having a high infiltration rate when thoroughly wet and having a low runoff potential. They are mainly deep, well drained, and sandy or gravelly. In group D, at the other extreme, are soils having a very slow infiltration rate and thus a high runoff potential. They have a claypan or clay layer at or near the surface, have a permanent high water table, or are shallow over nearly impervious bedrock or other material. A soil is assigned to two hydrologic groups if part of the acreage is artificially drained and part is undrained.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be

limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are:
Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.
Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.
Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.
Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.
Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.
Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.
Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.
Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.
Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

Large stones (in tables). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Leaching. The removal of soluble material from soil or other material by percolating water.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Low strength. The soil is not strong enough to support loads.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Metamorphic rock. Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement. Nearly all such rocks are crystalline.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance—*few, common,* and *many*; size—*fine, medium,* and *coarse*; and contrast—*faint, distinct,* and *prominent.* The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

Muck. Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value between 6.6 and 7.3. (See Reaction, soil.)

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition.

Parent material. The unconsolidated organic and mineral material in which soil forms.

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 affecting the specified use.

Permeability. The quality of the soil that enables water to move downward through the profile. Permeability is measured as the number of inches per hour that water moves through the saturated soil. Terms describing permeability are:

Very slow	less than 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management. For example, slope, stoniness, and thickness.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plinthite. The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents. It commonly appears as red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates on repeated wetting and drying, especially if it is exposed also to heat from the sun. In a moist soil, plinthite can be cut with a spade. It is a form of laterite.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poor filter (in tables). Because of rapid permeability, the soil may not adequately filter effluent from a waste disposal system.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Extremely acid	below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Relief. The elevations or inequalities of a land surface, considered collectively.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Rill. A steep-sided channel resulting from accelerated erosion. A rill is generally a few inches deep and not wide enough to be an obstacle to farm machinery.

Rippable. Bedrock or hardpan can be excavated using a single-tooth ripping attachment mounted on a tractor with a 200-300 drawbar horsepower rating.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rooting depth (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone. Sedimentary rock containing dominantly sand-sized particles.

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.

Saprolite (soil science). Unconsolidated residual material underlying the soil and grading to hard bedrock below.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Sequum. A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer or of the substratum. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Shrink-swell. The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

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.

Siltstone. Sedimentary rock made up of dominantly silt-sized particles.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75 feet.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Slow intake (in tables). The slow movement of water into the soil.

Small stones (in tables). Rock fragments less than 3 inches (7.6 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the substratum. The living roots and plant and animal activities are largely confined to the solum.

Stone line. A concentration of coarse fragments in a soil. Generally, it is indicative of an old weathered surface. In a cross section, the line may be one fragment or more thick. It generally overlies material that weathered in place and is overlain by recent sediment of variable thickness.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stripcropping. Growing crops in a systematic arrangement of strips or bands which provide vegetative barriers to soil blowing and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or

massive (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from soil blowing and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Breaking up a compact subsoil by pulling a special chisel through the soil.

Substratum. The part of the soil below the solum.

Subsurface layer. Technically, the E horizon. Generally refers to a leached horizon lighter in color and lower in organic matter content than the overlying surface layer.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from about 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Thin layer (in tables). Otherwise suitable soil material that is too thin for the specified use.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toe slope. The outermost inclined surface at the base of a hill; part of a foot slope.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Variegation. Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Tables

TABLE 1.--TEMPERATURE AND PRECIPITATION

(Recorded in the period 1951-86 at Cheraw, South Carolina)

Month	Temperature						Precipitation				
				2 years in 10 will have--				2 years in 10 will have--			
	Average daily maximum	Average daily minimum	Average	Maximum temperature higher than--	Minimum temperature lower than--	Average number of growing degree days*	Average	Less than--	More than--	Average number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January-----	53.1	29.2	41.2	78	10	35	4.12	2.55	5.53	7	0.8
February----	56.1	30.4	43.3	79	12	43	4.10	1.89	6.00	7	1.4
March-------	64.2	37.8	51.1	84	19	137	4.76	3.28	6.12	8	.7
April-------	74.9	47.1	61.0	90	30	345	3.47	1.48	5.16	5	.0
May---------	82.2	56.0	69.1	94	39	602	3.56	1.90	5.02	7	.0
June--------	87.9	63.6	75.8	102	50	781	4.95	3.22	6.53	7	.0
July--------	90.9	67.7	69.3	103	57	916	5.42	3.07	7.51	8	.0
August------	89.6	67.0	78.4	101	55	885	4.96	2.74	6.92	7	.0
September---	84.5	61.1	72.8	98	45	691	4.16	1.50	6.37	5	.0
October-----	74.8	47.9	61.4	90	30	367	3.17	.71	5.10	4	.0
November----	65.2	37.3	51.3	83	20	132	2.80	1.22	4.14	5	**
December----	55.8	30.5	43.2	76	15	45	3.32	1.60	4.81	6	.7
Yearly:											
Average---	73.3	48.0	60.7	---	---	---	---	---	---	---	---
Extreme---	---	---	---	108	0	---	---	---	---	---	---
Total-----	---	---	---	---	---	4,979	48.79	56.31	39.16	76	3.6

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50 degrees F).

** Trace.

TABLE 2.--FREEZE DATES IN SPRING AND FALL

(Recorded in the period 1951-86 at Cheraw, South Carolina)

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--	Mar. 24	Mar. 28	Apr. 15
2 years in 10 later than--	Mar. 17	Mar. 24	Apr. 10
5 years in 10 later than--	Mar. 2	Mar. 17	Apr. 1
First freezing temperature in fall:			
1 year in 10 earlier than--	Nov. 4	Oct. 27	Oct. 18
2 years in 10 earlier than--	Nov. 11	Nov. 1	Oct. 23
5 years in 10 earlier than--	Nov. 24	Nov. 11	Nov. 3

TABLE 3.--GROWING SEASON

(Recorded in the period 1951-86 at Cheraw, South Carolina)

Probability	Length of growing season if daily minimum temperature is--		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
9 years in 10	234	214	191
8 years in 10	245	222	198
5 years in 10	266	238	213
2 years in 10	287	253	238
1 year in 10	298	261	236

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
AaA	Ailey sand, moderately wet, 0 to 2 percent slopes	3,063	0.6
AaB	Ailey sand, moderately wet, 2 to 6 percent slopes	52,893	10.4
AeC	Ailey sand, 6 to 10 percent slopes	28,228	5.5
AeD	Ailey sand, 10 to 15 percent slopes	1,814	0.4
AgB	Alaga sand, 0 to 4 percent slopes	825	0.2
AmB	Alamance sandy loam, 1 to 6 percent slopes	1,163	0.2
ApB	Alpin sand, 0 to 6 percent slopes	52,028	10.2
ApC	Alpin sand, 6 to 10 percent slopes	27,256	5.4
ApD	Alpin sand, 10 to 15 percent slopes	4,781	0.9
BaB	Badin silt loam, 2 to 6 percent slopes	5,336	1.0
BaC	Badin silt loam, 6 to 10 percent slopes	8,184	1.7
BaD	Badin silt loam, 10 to 15 percent slopes	8,624	1.7
BaE	Badin silt loam, 15 to 25 percent slopes	15,644	3.1
BdB2	Badin silty clay loam, 2 to 6 percent slopes, eroded	7,706	1.5
BdC2	Badin silty clay loam, 6 to 10 percent slopes, eroded	5,235	1.0
Bf	Bibb sandy loam, frequently flooded	9,096	1.9
BoB	Bonneau sand, 0 to 4 percent slopes	1,584	0.3
CaB	Candor sand, 0 to 6 percent slopes	33,389	6.6
CaC	Candor sand, 6 to 10 percent slopes	16,138	3.2
CaD	Candor sand, 10 to 15 percent slopes	2,575	0.5
CcB	Cecil sandy loam, 2 to 6 percent slopes	689	0.1
CeB2	Cecil sandy clay loam, 2 to 6 percent slopes, eroded	1,026	0.2
CeC2	Cecil sandy clay loam, 6 to 10 percent slopes, eroded	596	0.1
Ch	Chewacla clay loam, frequently flooded	8,328	1.6
Cm	Chewacla-Chastain complex, frequently flooded	22,424	4.4
CrA	Claycreek silt loam, 0 to 2 percent slopes	415	0.1
CrB	Claycreek silt loam, 2 to 6 percent slopes	1,709	0.3
Cx	Coxville sandy loam	2,726	0.5
EmA	Emporia loamy sand, 0 to 2 percent slopes	2,541	0.5
EmB	Emporia loamy sand, 2 to 6 percent slopes	20,116	4.0
EmC	Emporia loamy sand, 6 to 10 percent slopes	3,597	0.7
GeB	Georgeville loam, 2 to 6 percent slopes	502	0.1
GeC	Georgeville loam, 6 to 10 percent slopes	298	0.1
GgB2	Georgeville silty clay loam, 2 to 6 percent slopes, eroded	4,571	0.9
GgC2	Georgeville silty clay loam, 6 to 10 percent slopes, eroded	1,384	0.3
GoA	Goldsboro sandy loam, 0 to 2 percent slopes	1,667	0.3
GtB	Goldston channery silt loam, 2 to 6 percent slopes	379	0.1
GtC	Goldston channery silt loam, 6 to 10 percent slopes	2,857	0.6
GtD	Goldston channery silt loam, 10 to 15 percent slopes	1,499	0.3
GtF	Goldston channery silt loam, 15 to 40 percent slopes	1,663	0.3
HnA	Hornsville sandy loam, 0 to 2 percent slopes	961	0.2
HnB	Hornsville sandy loam, 2 to 6 percent slopes	389	0.1
Jo	Johnston sandy loam, frequently flooded	31,614	6.2
KeB	Kenansville sand, 0 to 4 percent slopes	1,361	0.3
LuB	Lucy sand, 0 to 6 percent slopes	281	0.1
MaB	Mayodan silt loam, 2 to 6 percent slopes	1,800	0.3
MdC2	Mayodan silty clay loam, 6 to 10 percent slopes, eroded	317	0.1
NoA	Noboco loamy sand, 0 to 2 percent slopes	5,555	1.1
Og	Ogeechee sandy loam	4,720	0.9
PaC2	Pacolet clay loam, 6 to 10 percent slopes, eroded	1,674	0.3
PaD2	Pacolet clay loam, 10 to 15 percent slopes, eroded	1,515	0.3
PaE2	Pacolet clay loam, 15 to 25 percent slopes, eroded	1,042	0.2
PgB	Pageland silt loam, 2 to 6 percent slopes	2,131	0.4
PlA	Pelion loamy sand, 0 to 2 percent slopes	2,111	0.4
PlB	Pelion loamy sand, 2 to 6 percent slopes	19,698	3.9
PlC	Pelion loamy sand, 6 to 10 percent slopes	6,450	1.2
PlD	Pelion loamy sand, 10 to 15 percent slopes	609	0.1
PxF	Poindexter fine sandy loam, 15 to 35 percent slopes	1,417	0.3
Qz	Quartzipsamments, sloping	3,312	0.6
RnB	Rion sandy loam, 2 to 6 percent slopes	1,614	0.3
RoD	Rion sandy loam, 6 to 15 percent slopes, very bouldery	1,130	0.2
RoF	Rion sandy loam, 15 to 40 percent slopes, very bouldery	3,443	0.7
Rv	Riverview silt loam, frequently flooded	5,352	1.0
Sm	Smithboro loam	1,127	0.2

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	Acres	Percent
TeA	Tetotum sandy loam, 0 to 2 percent slopes	4,013	0.8
TeB	Tetotum sandy loam, 2 to 6 percent slopes	1,935	0.4
TrB	Troup sand, 0 to 6 percent slopes	3,662	0.7
TrC	Troup sand, 6 to 10 percent slopes	2,253	0.4
Ud	Udorthents, loamy	798	0.2
VaB	Vaucluse loamy sand, 2 to 6 percent slopes	2,896	0.6
VaC	Vaucluse loamy sand, 6 to 10 percent slopes	11,292	2.3
VaD	Vaucluse loamy sand, 10 to 15 percent slopes	2,326	0.5
VgB	Vaucluse gravelly loamy sand, 2 to 6 percent slopes	577	0.1
VgC	Vaucluse gravelly loamy sand, 6 to 10 percent slopes	2,410	0.5
VgD	Vaucluse gravelly loamy sand, 10 to 15 percent slopes	1,620	0.3
Wa	Wahee silt loam	965	0.2
WkA	Wickham sandy loam, 0 to 2 percent slopes	644	0.1
WkB	Wickham sandy loam, 2 to 6 percent slopes	1,531	0.3
Wo	Woodington sandy loam	2,655	0.5
	Water	4,251	0.9
	Total	508,000	100.0

TABLE 5.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE

(Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)

Soil name and map symbol	Land capability	Corn	Soybeans	Wheat	Tobacco	Improved bermuda-grass	Bahiagrass	Tall fescue
		Bu	Bu	Bu	Lbs	AUM*	AUM*	AUM*
AaA---------- Ailey	IIs	55	25	---	---	6.5	6.5	---
AaB---------- Ailey	IIIs	50	20	---	---	6.0	6.0	---
AeC---------- Ailey	IVs	45	18	---	---	5.0	5.0	---
AeD---------- Ailey	VIs	---	---	---	---	5.0	5.0	---
AgB---------- Alaga	IIIs	60	---	---	---	7.5	7.0	---
AmB---------- Alamance	IIe	85	30	---	---	---	---	6.0
ApB---------- Alpin	IVs	---	---	---	1,500	8.0	7.0	---
ApC---------- Alpin	VIs	---	---	---	---	8.0	7.0	---
ApD---------- Alpin	VIIs	---	---	---	---	7.5	6.5	---
BaB---------- Badin	IIIe	85	25	40	---	---	---	6.5
BaC, BaD-------- Badin	IVe	75	20	35	---	---	---	6.0
BaE---------- Badin	VIe	65	15	25	---	---	---	5.5
BdB2---------- Badin	IVe	70	20	30	---	---	---	5.5
BdC2---------- Badin	VIe	55	15	20	---	---	---	5.0
Bf---------- Bibb	Vw	---	---	---	---	---	---	8.0
BoB---------- Bonneau	IIs	85	30	---	2,600	8.5	8.0	---
CaB---------- Candor	IIIs	45	20	---	1,700	7.5	7.2	---
CaC, CaD-------- Candor	IVs	40	15	---	1,300	7.3	7.0	---
CcB---------- Cecil	IIe	95	35	---	2,100	---	---	---

See footnote at end of table.

TABLE 5.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn	Soybeans	Wheat	Tobacco	Improved bermuda-grass	Bahiagrass	Tall fescue
		Bu	Bu	Bu	Lbs	AUM*	AUM*	AUM*
CeB2---------- Cecil	IIIe	70	25	---	1,800	---	---	5.0
CeC2---------- Cecil	IVe	60	---	---	---	---	---	4.5
Ch---------- Chewacla	IVw	80	30	30	---	---	---	9.0
Cm---------- Chewacla-Chastain	VIw	---	---	---	---	---	---	---
CrA---------- Claycreek	IIw	90	35	50	---	6.5	---	7.0
CrB---------- Claycreek	IIe	85	30	45	---	6.5	---	6.0
Cx---------- Coxville	IIIw	110	40	50	---	10.0	9.0	---
EmA---------- Emporia	I	110	35	55	3,000	9.0	8.0	8.5
EmB---------- Emporia	IIe	100	30	50	2,900	8.0	7.0	8.5
EmC---------- Emporia	IIIe	90	25	45	2,700	7.5	6.5	8.0
GeB---------- Georgeville	IIe	95	---	---	2,200	---	---	6.0
GeC---------- Georgeville	IIIe	85	---	---	2,000	---	---	5.5
GgB2---------- Georgeville	IIIe	75	---	---	---	---	---	5.0
GgC2---------- Georgeville	IVe	60	---	---	---	---	---	4.5
GoA---------- Goldsboro	IIw	125	42	60	3,000	---	8.0	8.0
GtB, GtC, GtD--- Goldston	IVs	70	20	35	---	---	---	4.0
GtF---------- Goldston	VIIs	---	---	---	---	---	---	3.0
HnA---------- Hornsville	IIw	100	40	---	---	12.0	9.0	---
HnB---------- Hornsville	IIe	90	35	---	---	11.0	8.5	---
Jo---------- Johnston	VIIw	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn	Soybeans	Wheat	Tobacco	Improved bermuda-grass	Bahiagrass	Tall fescue
		Bu	Bu	Bu	Lbs	AUM*	AUM*	AUM*
KeB---------- Kenansville	IIIs	70	---	---	2,000	9.0	8.0	---
LuB---------- Lucy	IIs	80	33	---	2,600	8.0	8.5	---
MaB---------- Mayodan	IIe	95	---	---	2,100	---	---	7.0
MdC2---------- Mayodan	IVe	75	---	---	1,900	---	---	6.0
NoA---------- Noboco	I	115	45	60	3,000	9.0	8.0	---
Og---------- Ogeechee	IIIw	100	45	---	---	---	9.0	---
PaC2---------- Pacolet	IVe	50	---	---	1,600	---	---	5.0
PaD2---------- Pacolet	VIe	---	---	---	---	---	---	4.5
PaE2---------- Pacolet	VIIe	---	---	---	---	---	---	---
PgB---------- Pageland	IIIe	80	25	40	---	6.5	---	5.5
PlA---------- Pelion	IIw	70	30	---	---	8.0	8.0	---
PlB---------- Pelion	IIe	60	25	---	---	8.0	7.0	---
PlC---------- Pelion	IVe	50	20	---	---	7.0	7.0	---
PlD---------- Pelion	VIe	---	---	---	---	6.0	6.0	---
PxF---------- Poindexter	VIe	---	---	---	---	---	---	4.5
Qz---------- Quartzi-psamments	VIs	---	---	---	---	6.0	5.5	---
RnB---------- Rion	IIe	85	35	40	2,500	7.0	---	7.0
RoD---------- Rion	VIs	---	---	---	---	3.0	---	2.5
RoF---------- Rion	VIIs	---	---	---	---	---	---	---
Rv---------- Riverview	IVw	80	30	---	---	8.0	7.0	---

See footnote at end of table.

TABLE 5.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn	Soybeans	Wheat	Tobacco	Improved bermuda-grass	Bahiagrass	Tall fescue
		Bu	Bu	Bu	Lbs	AUM*	AUM*	AUM*
Sm---------- Smithboro	IIIw	90	40	---	---	---	9.0	10.0
TeA---------- Tetotum	IIw	125	40	45	---	---	8.5	8.5
TeB---------- Tetotum	IIe	115	35	35	---	---	8.0	8.0
TrB---------- Troup	IIIs	60	25	---	---	7.5	7.2	---
TrC---------- Troup	IVs	55	22	---	---	7.3	7.0	---
Ud---------- Udorthents	IVe	---	---	---	---	6.0	5.5	---
VaB---------- Vaucluse	IIIs	65	25	---	---	8.0	7.0	---
VaC---------- Vaucluse	IIIe	60	20	---	---	7.0	6.0	---
VaD---------- Vaucluse	IVe	55	15	---	---	7.0	6.0	---
VgB---------- Vaucluse	IIIs	60	25	---	---	7.5	6.5	---
VgC---------- Vaucluse	IIIe	55	20	---	---	6.5	5.5	---
VgD---------- Vaucluse	IVe	50	15	---	---	6.5	5.5	---
Wa---------- Wahee	IIw	110	45	---	---	---	8.0	10.0
WkA---------- Wickham	I	125	42	---	2,800	---	8.0	8.0
WkB---------- Wickham	IIe	115	38	---	2,600	---	7.5	7.5
Wo---------- Woodington	IIIw	100	35	---	---	---	8.0	---

* Animal unit month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

TABLE 6.--CAPABILITY CLASSES AND SUBCLASSES

(Miscellaneous areas are excluded. Absence of an entry indicates no acreage)

Class	Total acreage	Major management concerns (Subclass)		
		Erosion (e)	Wetness (w)	Soil problem (s)
		Acres	Acres	Acres
I	8,740	---	---	---
II	66,206	51,146	10,132	4,928
III	137,492	30,661	11,228	95,603
IV	159,316	39,679	13,680	105,957
V	9,096	---	9,096	---
VI	80,356	24,420	22,424	33,512
VII	42,543	1,042	31,614	9,887
VIII	---	---	---	---

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY

(Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that data were not available)

Soil name and map symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Potential productivity: Common trees	Site index	Volume*	Trees to plant
AaA, AaB, AeC, AeD---------- Ailey	Slight	Moderate	Moderate	Slight	Slight	Loblolly pine-------	70	114	Loblolly pine,
						Longleaf pine-------	60	57	longleaf pine.
AgB---------- Alaga	Slight	Moderate	Moderate	Slight	Slight	Loblolly pine-------	80	114	Loblolly pine,
						Longleaf pine-------	70	86	longleaf pine.
AmB---------- Alamance	Slight	Slight	Slight	Slight	Slight	Loblolly pine-------	77	100	Loblolly pine,
						Shortleaf pine------	66	100	eastern
						Southern red oak----	69	57	redcedar,
						White oak----------	71	57	yellow-poplar.
ApB, ApC, ApD--- Alpin	Slight	Moderate	Moderate	Slight	Slight	Loblolly pine-------	75	86	Loblolly pine.
						Longleaf pine-------	70	86	longleaf pine.
						Turkey oak----------	---	---	
						Post oak----------	---	---	
						Blackjack oak-------	---	---	
						Bluejack oak--------	---	---	
BaB, BaC, BaD--- Badin	Slight	Slight	Slight	Moderate	Slight	Loblolly pine-------	80	114	Loblolly pine,
						Shortleaf pine------	68	100	shortleaf
						Virginia pine-------	---	---	pine.
						Yellow-poplar-------	---	---	
						White oak----------	63	43	
						Scarlet oak---------	65	43	
						Chestnut oak--------	66	43	
BaE---------- Badin	Moderate	Moderate	Slight	Moderate	Slight	Loblolly pine-------	80	114	Loblolly pine,
						Shortleaf pine------	68	100	shortleaf
						Virginia pine-------	---	---	pine.
						Yellow-poplar-------	---	---	
						White oak----------	63	43	
						Scarlet oak---------	65	43	
						Chestnut oak--------	66	43	
BdB2, BdC2------ Badin	Moderate	Moderate	Moderate	Moderate	Slight	Loblolly pine-------	70	86	Loblolly pine,
						Shortleaf pine------	60	86	shortleaf
						White oak----------	60	43	pine.
						Scarlet oak---------	60	43	
						Chestnut oak--------	60	43	
						Virginia pine-------	---	---	
Bf---------- Bibb	Slight	Severe	Severe	Moderate	Severe	Loblolly pine-------	90	129	Loblolly pine,
						Sweetgum----------	90	100	sweetgum,
						Water oak----------	90	86	yellow-poplar,
						Blackgum----------	---	---	eastern
						Yellow-poplar-------	---	---	cottonwood.
						Atlantic white-cedar	---	---	
BoB---------- Bonneau	Slight	Moderate	Moderate	Slight	Slight	Loblolly pine-------	95	143	Loblolly pine,
						Longleaf pine-------	75	86	longleaf pine.
						White oak----------	---	---	
						Hickory----------	---	---	

See footnotes at end of table.

TABLE 7.--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	Volume*	Trees to plant
CaB, CaC, CaD--- Candor	Slight	Moderate	Moderate	Slight	Slight	Longleaf pine-------	70	86	Longleaf pine, loblolly pine.
						Loblolly pine-------	80	114	
						Turkey oak----------	---	---	
						Blackjack oak-------	---	---	
						Post oak----------	---	---	
CcB---------- Cecil	Slight	Slight	Slight	Slight	Slight	Loblolly pine-------	83	114	Loblolly pine, shortleaf pine.
						Shortleaf pine------	69	114	
						Virginia pine-------	71	114	
						White oak----------	79	57	
						Northern red oak----	81	57	
						Southern red oak----	79	57	
						Post oak----------	72	57	
						Scarlet oak---------	81	57	
						Sweetgum----------	76	72	
						Yellow-poplar-------	92	86	
CeB2, CeC2------ Cecil	Slight	Moderate	Moderate	Slight	Slight	Loblolly pine-------	72	100	Loblolly pine, shortleaf pine.
						Shortleaf pine------	63	100	
						Virginia pine-------	65	100	
						White oak----------	64	43	
						Northern red oak----	---	---	
Ch---------- Chewacla	Slight	Moderate	Slight	Moderate	Severe	Yellow-poplar-------	95	100	Yellow-poplar, loblolly pine, sweetgum, American sycamore.
						Loblolly pine-------	95	143	
						Sweetgum----------	97	129	
						Water oak----------	80	72	
						Eastern cottonwood--	---	---	
						Green ash----------	---	---	
						Southern red oak----	---	---	
						Blackgum----------	---	---	
						Red maple----------	---	---	
						Willow oak----------	---	---	
						American beech------	---	---	
						American sycamore---	---	---	
Cm**:									
Chewacla-------	Slight	Moderate	Slight	Moderate	Severe	Yellow-poplar-------	95	100	Yellow-poplar, loblolly pine, sweetgum, American sycamore.
						Loblolly pine-------	95	143	
						Sweetgum----------	97	129	
						Water oak----------	80	72	
						Eastern cottonwood--	---	---	
						Green ash----------	---	---	
						Southern red oak----	---	---	
						Blackgum----------	---	---	
						Red maple----------	---	---	
						Willow oak----------	---	---	
						American beech------	---	---	
						American sycamore---	---	---	
Chastain-------	Slight	Severe	Severe	Severe	Severe	Sweetgum----------	95	114	Sweetgum, loblolly pine, American sycamore.
						Baldcypress---------	---	---	
						Water tupelo--------	---	---	
						Water oak----------	---	---	

See footnotes at end of table.

TABLE 7.--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	Volume*	Trees to plant
CrA, CrB Claycreek	Slight	Slight	Slight	Slight	Moderate	Loblolly pine	85	114	Loblolly pine, sweetgum, yellow-poplar.
						Shortleaf pine	55	72	
						Sweetgum	---	---	
						Red maple	---	---	
						Blackgum	---	---	
						Water oak	---	---	
						Yellow-poplar	---	---	
Cx Coxville	Slight	Moderate	Moderate	Severe	Severe	Loblolly pine	91	129	Loblolly pine, sweetgum.
						Longleaf pine	77	100	
						Sweetgum	84	86	
						Yellow-poplar	86	86	
						Southern red oak	87	72	
						Water oak	75	72	
						Willow oak	88	86	
EmA, EmB, EmC Emporia	Slight	Slight	Moderate	Slight	Moderate	Loblolly pine	75	100	Loblolly pine, sweetgum.
						Southern red oak	70	57	
						Sweetgum	---	---	
GeB, GeC Georgeville	Slight	Slight	Slight	Slight	Slight	Loblolly pine	81	114	Loblolly pine, Virginia pine, eastern redcedar, black walnut, yellow-poplar.
						Longleaf pine	67	72	
						Shortleaf pine	63	100	
						White oak	69	57	
						Scarlet oak	70	57	
						Southern red oak	67	43	
GgB2, GgC2 Georgeville	Slight	Moderate	Moderate	Slight	Slight	Loblolly pine	70	86	Loblolly pine, Virginia pine.
						Longleaf pine	60	57	
GoA Goldsboro	Slight	Slight	Slight	Slight	Moderate	Loblolly pine	90	129	Loblolly pine.
						Longleaf pine	73	86	
						Sweetgum	---	---	
						Southern red oak	---	---	
						White oak	---	---	
						Water oak	---	---	
						Yellow-poplar	---	---	
GtB, GtC, GtD Goldston	Slight	Slight	Moderate	Severe	Slight	Loblolly pine	76	100	Loblolly pine.
						Shortleaf pine	68	100	
						Southern red oak	66	43	
						White oak	69	57	
						Post oak	---	---	
						Hickory	---	---	
						Virginia pine	---	---	
						Red maple	---	---	
GtF Goldston	Moderate	Moderate	Moderate	Severe	Slight	Loblolly pine	76	100	Loblolly pine.
						Shortleaf pine	68	100	
						Southern red oak	66	43	
						White oak	69	57	
						Post oak	---	---	
						Hickory	---	---	
						Virginia pine	---	---	
						Red maple	---	---	

See footnotes at end of table.

TABLE 7.--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	Volume*	Trees to plant
HnA, HnB Hornsville	Slight	Moderate	Moderate	Slight	Moderate	Loblolly pine	90	129	Loblolly pine, sweetgum, yellow-poplar.
						Sweetgum	90	100	
Jo Johnston	Slight	Severe	Severe	Severe	Severe	Yellow-poplar	94	100	Green ash, loblolly pine, sweetgum, baldcypress.
						Loblolly pine	106	172	
						Sweetgum	94	114	
						Water oak	103	100	
						Water tupelo	---	---	
						Swamp tupelo	---	---	
						Baldcypress	---	---	
KeB Kenansville	Slight	Moderate	Moderate	Slight	Slight	Loblolly pine	80	114	Loblolly pine, slash pine.
						Longleaf pine	65	72	
LuB Lucy	Slight	Moderate	Moderate	Slight	Slight	Loblolly pine	80	114	Longleaf pine, loblolly pine.
						Longleaf pine	70	86	
MaB Mayodan	Slight	Slight	Slight	Slight	Slight	Loblolly pine	87	129	Loblolly pine.
						Shortleaf pine	70	114	
						Virginia pine	60	86	
						White oak	54	43	
						Yellow-poplar	---	---	
						Sweetgum	---	---	
						Southern red oak	---	---	
						Black oak	---	---	
						Hickory	---	---	
MdC2 Mayodan	Slight	Moderate	Moderate	Slight	Slight	Loblolly pine	72	100	Loblolly pine, Virginia pine.
						Shortleaf pine	---	---	
						Yellow-poplar	---	---	
						Sweetgum	---	---	
						Southern red oak	---	---	
						Virginia pine	---	---	
NoA Noboco	Slight	Slight	Slight	Slight	Moderate	Loblolly pine	90	129	Loblolly pine, American sycamore, sweetgum.
						Longleaf pine	80	100	
						Southern red oak	---	---	
						Sweetgum	---	---	
Og Ogeechee	Slight	Severe	Moderate	Moderate	Severe	Loblolly pine	90	129	Loblolly pine, sweetgum.
						Pond pine	70	---	
PaC2, PaD2 Pacolet	Slight	Moderate	Moderate	Slight	Slight	Loblolly pine	70	86	Loblolly pine, shortleaf pine, yellow poplar, eastern white pine.
						Shortleaf pine	60	86	
						Yellow-poplar	80	72	
PaE2 Pacolet	Moderate	Moderate	Moderate	Slight	Slight	Loblolly pine	70	86	Loblolly pine, shortleaf pine, yellow-poplar, eastern white pine.
						Shortleaf pine	60	86	
						Yellow-poplar	80	72	

See footnotes at end of table.

TABLE 7.--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	Volume*	Trees to plant
PgB---------- Pageland	Slight	Slight	Slight	Slight	Moderate	Loblolly pine-------	67	86	Loblolly pine.
						Shortleaf pine------	62	86	
						Southern red oak----	---	---	
						White oak----------	---	---	
						Red maple----------	---	---	
						Blackgum----------	---	---	
						Yellow-poplar-------	---	---	
PlA, PlB, PlC, PlD---------- Pelion	Slight	Moderate	Slight	Moderate	Slight	Loblolly pine-------	80	114	Loblolly pine, longleaf pine.
						Longleaf pine-------	---	---	
PxF---------- Poindexter	Severe	Severe	Slight	Slight	Slight	Loblolly pine-------	70	86	Loblolly pine, shortleaf pine.
						Shortleaf pine------	60	86	
						Virginia pine-------	65	100	
						Southern red oak----	60	43	
Qz---------- Quartzipsamments	Slight	Moderate	Moderate	Slight	Slight	Loblolly pine-------	75	100	Loblolly pine, Virginia pine.
RnB---------- Rion	Slight	Slight	Slight	Slight	Slight	Loblolly pine-------	80	114	Loblolly pine, shortleaf pine, yellow-poplar.
						Post oak----------	65	43	
						Shortleaf pine------	70	114	
						Southern red oak----	80	57	
						Sweetgum----------	80	86	
						White oak----------	70	57	
						Yellow-poplar-------	90	86	
						Hickory----------	---	---	
						Northern red oak----	---	---	
RoD---------- Rion	Slight	Moderate	Moderate	Slight	Slight	Loblolly pine-------	77	100	Loblolly pine, shortleaf pine, yellow-poplar.
						Post oak----------	60	43	
						Shortleaf pine------	70	114	
						Sweetgum----------	80	86	
						White oak----------	65	43	
						Yellow-poplar-------	84	86	
						Hickory----------	---	---	
RoF---------- Rion	Moderate	Moderate	Moderate	Slight	Slight	Loblolly pine-------	77	100	Loblolly pine, shortleaf pine, yellow-poplar.
						Post oak----------	60	43	
						Shortleaf pine------	70	114	
						Sweetgum----------	80	86	
						White oak----------	65	43	
						Yellow-poplar-------	84	86	
						Hickory----------	---	---	
Rv---------- Riverview	Slight	Slight	Slight	Slight	Moderate	Loblolly pine-------	100	157	Loblolly pine, yellow-poplar, sweetgum, eastern cottonwood, American sycamore.
						Yellow-poplar-------	110	129	
						Sweetgum----------	100	143	
Sm---------- Smithboro	Slight	Moderate	Slight	Moderate	Severe	Loblolly pine-------	90	129	Loblolly pine, American sycamore, sweetgum.
						Sweetgum----------	90	100	

See footnotes at end of table.

TABLE 7.--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	Volume*	Trees to plant
TeA, TeB--------Tetotum	Slight	Slight	Slight	Slight	Moderate	Loblolly pine--------	88	129	Loblolly pine.
						Sweetgum----------	85	86	
						Southern red oak----	76	57	
						Yellow-poplar--------	---	---	
						White oak----------	---	---	
TrB, TrC--------Troup	Slight	Moderate	Moderate	Slight	Slight	Loblolly pine--------	80	114	Loblolly pine, longleaf pine.
						Longleaf pine--------	70	86	
						Blackjack oak--------	---	---	
						Post oak----------	---	---	
Ud----------Udorthents	Moderate	Moderate	Moderate	Slight	Slight	Loblolly pine--------	50	72	Loblolly pine, Virginia pine.
VaB, VaC, VaD---Vaucluse	Slight	Slight	Moderate	Moderate	Slight	Loblolly pine--------	76	100	Loblolly pine.
						Shortleaf pine-------	56	86	
						Longleaf pine--------	---	---	
VgB, VgC, VgD---Vaucluse	Slight	Slight	Moderate	Moderate	Slight	Loblolly pine--------	76	100	Loblolly pine.
						Shortleaf pine-------	56	86	
Wa----------Wahee	Slight	Moderate	Moderate	Moderate	Severe	Loblolly pine--------	86	129	Loblolly pine, sweetgum, American sycamore, water oak.
						Sweetgum----------	90	100	
						Blackgum----------	---	---	
						Water oak----------	---	---	
						Swamp chestnut oak--	---	---	
						Willow oak----------	---	---	
						Southern red oak----	---	---	
WkA, WkB--------Wickham	Slight	Slight	Slight	Slight	Slight	Loblolly pine--------	90	129	Loblolly pine.
						Yellow-poplar--------	89	86	
						White oak----------	84	72	
						Southern red oak----	82	57	
						Sweetgum----------	---	---	
						Red maple----------	---	---	
						Northern red oak----	---	---	
						Water oak----------	---	---	
						Hickory----------	---	---	
						Shortleaf pine------	---	---	
Wo----------Woodington	Slight	Severe	Severe	Slight	Severe	Loblolly pine--------	83	114	Loblolly pine, American sycamore, water tupelo, water oak, sweetgum.
						Sweetgum----------	---	---	
						White oak----------	---	---	
						Southern red oak----	---	---	
						Water tupelo--------	---	---	

* Volume is the yield in cubic feet per acre per year calculated at the age of culmination of mean annual increment for fully stocked natural stands.

** See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 8.--RECREATIONAL DEVELOPMENT

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "slight," "moderate," and "severe")

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
AaA, AaB Ailey	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty.
AeC Ailey	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Moderate: droughty.
AeD Ailey	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Moderate: slope, droughty.
AgB Alaga	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty, too sandy.
AmB Alamance	Slight	Slight	Moderate: slope, small stones.	Slight	Slight.
ApB Alpin	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
ApC, ApD Alpin	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Severe: droughty.
BaB Badin	Slight	Slight	Moderate: slope, depth to rock, small stones.	Slight	Moderate: depth to rock.
BaC, BaD Badin	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope, depth to rock.
BaE Badin	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
BdB2 Badin	Slight	Slight	Moderate: slope, depth to rock, small stones.	Slight	Moderate: depth to rock.
BdC2 Badin	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope, depth to rock.
Bf Bibb	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
BoB Bonneau	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty, too sandy.
CaB Candor	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
CaC, CaD Candor	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Severe: droughty.
CcB, CeB2 Cecil	Slight	Slight	Moderate: slope.	Slight	Slight.
CeC2 Cecil	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
Ch Chewacla	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
Cm*:					
Chewacla	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
Chastain	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
CrA Claycreek	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: small stones, wetness.	Moderate: wetness.	Moderate: wetness.
CrB Claycreek	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, small stones, wetness.	Moderate: wetness.	Moderate: wetness.
Cx Coxville	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
EmA Emporia	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: small stones, percs slowly.	Slight	Moderate: droughty.
EmB Emporia	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, small stones, percs slowly.	Slight	Moderate: droughty.
EmC Emporia	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight	Moderate: droughty, slope.
GeB Georgeville	Slight	Slight	Moderate: slope, small stones.	Severe: erodes easily.	Slight.
GeC Georgeville	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
GgB2 Georgeville	Slight	Slight	Moderate: slope.	Severe: erodes easily.	Slight.
GgC2 Georgeville	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
GoA Goldsboro	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Slight	Slight.
GtB Goldston	Severe: depth to rock.	Severe: depth to rock.	Severe: small stones, depth to rock.	Slight	Severe: depth to rock.
GtC, GtD Goldston	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, small stones, depth to rock.	Slight	Severe: depth to rock.
GtF Goldston	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope.	Severe: slope, depth to rock.
HnA Hornsville	Severe: flooding.	Moderate: percs slowly.	Moderate: percs slowly.	Slight	Slight.
HnB Hornsville	Severe: flooding.	Moderate: percs slowly.	Moderate: slope, percs slowly.	Slight	Slight.
Jo Johnston	Severe: flooding, ponding.	Severe: ponding.	Severe: ponding, flooding.	Severe: ponding.	Severe: ponding, flooding.
KeB Kenansville	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
LuB Lucy	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty, too sandy.
MaB Mayodan	Slight	Slight	Moderate: slope.	Slight	Slight.
MdC2 Mayodan	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
NoA Noboco	Slight	Slight	Slight	Slight	Slight.
Og Ogeechee	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
PaC2, PaD2 Pacolet	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
PaE2 Pacolet	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
PgB Pageland	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, small stones, wetness.	Moderate: wetness.	Moderate: wetness, depth to rock.
PlA, PlB Pelion	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, droughty.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
PlC, PlD Pelion	Severe: wetness.	Moderate: slope, wetness, percs slowly.	Severe: slope, wetness.	Moderate: wetness.	Moderate: wetness, droughty, slope.
PxF Poindexter	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Qz Quartzipsamments	Severe: too sandy.	Severe: too sandy.	Severe: small stones, too sandy.	Severe: too sandy.	Severe: droughty.
RnB Rion	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
RoD Rion	Moderate: slope, large stones, small stones.	Moderate: slope, small stones, large stones.	Severe: slope, large stones, small stones.	Moderate: large stones.	Severe: large stones.
RoF Rion	Severe: slope.	Severe: slope.	Severe: slope, large stones, small stones.	Severe: slope.	Severe: large stones, slope.
Rv Riverview	Severe: flooding.	Moderate: flooding.	Severe: flooding.	Moderate: flooding.	Severe: flooding.
Sm Smithboro	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
TeA Tetotum	Severe: flooding.	Moderate: wetness.	Moderate: small stones, wetness.	Moderate: wetness.	Moderate: wetness.
TeB Tetotum	Severe: flooding.	Moderate: wetness.	Moderate: slope, small stones, wetness.	Moderate: wetness.	Moderate: wetness.
TrB Troup	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty.
TrC Troup	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Moderate: droughty.
Ud Udorthents	Variable	Variable	Variable	Variable	Variable.
VaB Vaucluse	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope.	Slight	Moderate: droughty.
VaC, VaD Vaucluse	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight	Moderate: droughty, slope.
VgB Vaucluse	Severe: small stones.	Moderate: small stones, percs slowly.	Severe: small stones.	Slight	Moderate: small stones, droughty.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
VgC, VgD Vaucluse	Severe: small stones.	Moderate: slope, small stones.	Severe: slope.	Slight	Moderate: small stones, droughty, slope.
Wa Wahee	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
WkA Wickham	Severe: flooding.	Slight	Slight	Slight	Slight.
WkB Wickham	Severe: flooding.	Slight	Moderate: slope.	Slight	Slight.
Wo Woodington	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 9.--WILDLIFE HABITAT

(See text for definitions of "good," "fair," "poor," and "very poor")

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
AaA, AaB Ailey	Poor	Fair	Fair	Poor	Poor	Poor	Very poor.	Fair	Poor	Very poor.
AeC Ailey	Poor	Poor	Fair	Poor	Poor	Poor	Very poor.	Fair	Poor	Very poor.
AeD Ailey	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
AgB Alaga	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
AmB Alamance	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
ApB, ApC, ApD Alpin	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
BaB Badin	Fair	Good	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
BaC, BaD Badin	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
BaE Badin	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
BdB2 Badin	Fair	Good	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
BdC2 Badin	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Bf Bibb	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
BoB Bonneau	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
CaB, CaC, CaD Candor	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
CcB Cecil	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
CeB2 Cecil	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
CeC2 Cecil	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Ch Chewacla	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
Cm*:										
Chewacla	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.

See footnote at end of table.

TABLE 9.--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
Cm*:										
Chastain	Very poor.	Poor	Poor	Fair	Poor	Good	Good	Poor	Fair	Good.
CrA Claycreek	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
CrB Claycreek	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Cx Coxville	Good	Good	Good	Good	Good	Poor	Fair	Good	Good	Poor.
EmA, EmB Emporia	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
EmC Emporia	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
GeB, GeC Georgeville	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
GgB2 Georgeville	Fair	Fair	Fair	Good	Fair	Very poor.	Very poor.	Fair	Good	Very poor.
GgC2 Georgeville	Poor	Poor	Poor	Fair	Poor	Very poor.	Very poor.	Poor	Fair	Very poor.
GoA Goldsboro	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
GtB Goldston	Poor	Poor	Fair	Poor	Poor	Poor	Very poor.	Poor	Poor	Very poor.
GtC, GtD Goldston	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
GtF Goldston	Very poor.	Very poor.	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
HnA, HnB Hornsville	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Jo Johnston	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
KeB Kenansville	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
LuB Lucy	Poor	Fair	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
MaB, MdC2 Mayodan	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
NoA Noboco	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Og Ogeechee	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.

See footnote at end of table.

TABLE 9.--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
PaC2 Pacolet	Poor	Poor	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
PaD2 Pacolet	Very poor.	Poor	Very poor.	Poor	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.
PaE2 Pacolet	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
PgB Pageland	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
PlA Pelion	Fair	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
PlB Pelion	Fair	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
PlC, PlD Pelion	Fair	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
PxF Poindexter	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Qz Quartzipsamments	Poor	Fair	Fair	Poor	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
RnB Rion	Fair	Good	Fair	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
RoD Rion	Very poor.	Poor	Very poor.	Good	Good	Very poor.	Very poor.	Poor	Fair	Very poor.
RoF Rion	Very poor.	Poor	Very poor.	Good	Good	Very poor.	Very poor.	Poor	Fair	Very poor.
Rv Riverview	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Sm Smithboro	Fair	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
TeA Tetotum	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
TeB Tetotum	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
TrB, TrC Troup	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
Ud Udorthents	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
VaB, VaC Vaucluse	Fair	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
VaD Vaucluse	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.

See footnote at end of table.

TABLE 9.--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
VgB, VgC, VgD Vaucluse	Fair	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Wa Wahee	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
WkA Wickham	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
WkB Wickham	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Wo Woodington	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 10.--BUILDING SITE DEVELOPMENT

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "slight," "moderate," and "severe." 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
AaA---------- Ailey	Severe: cutbanks cave.	Slight---------	Moderate: wetness.	Slight---------	Slight---------	Moderate: droughty.
AaB---------- Ailey	Severe: cutbanks cave.	Slight---------	Moderate: wetness.	Moderate: slope.	Slight---------	Moderate: droughty.
AeC---------- Ailey	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Slight---------	Moderate: droughty.
AeD---------- Ailey	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope, droughty.
AgB---------- Alaga	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.	Moderate: droughty, too sandy.
AmB---------- Alamance	Slight---------	Slight---------	Slight---------	Slight---------	Severe: low strength.	Slight.
ApB---------- Alpin	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Slight---------	Severe: droughty.
ApC, ApD---------- Alpin	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Severe: droughty.
BaB---------- Badin	Moderate: depth to rock, too clayey.	Moderate: shrink-swell.	Moderate: depth to rock, shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Moderate: depth to rock.
BaC, BaD---------- Badin	Moderate: depth to rock, too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: depth to rock, slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope, depth to rock.
BaE---------- Badin	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
BdB2---------- Badin	Moderate: depth to rock, too clayey.	Moderate: shrink-swell.	Moderate: depth to rock, shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Moderate: depth to rock.
BdC2---------- Badin	Moderate: depth to rock, too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: depth to rock, slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope, depth to rock.
Bf---------- Bibb	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: wetness, flooding.
BoB---------- Bonneau	Severe: cutbanks cave.	Slight---------	Moderate: wetness.	Slight---------	Slight---------	Moderate: droughty, too sandy.

TABLE 10.--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
CaB---------- Candor	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Slight---------	Severe: droughty.
CaC, CaD---------- Candor	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Severe: droughty.
CcB, CeB2--------- Cecil	Moderate: too clayey.	Slight---------	Slight---------	Moderate: slope.	Moderate: low strength.	Slight.
CeC2---------- Cecil	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, low strength.	Moderate: slope.
Ch---------- Chewacla	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: wetness, flooding.
Cm*:						
Chewacla---------	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: wetness, flooding.
Chastain---------	Severe: wetness, cutbanks cave.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: wetness, flooding.
CrA---------- Claycreek	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Severe: low strength.	Moderate: wetness.
CrB---------- Claycreek	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Severe: low strength.	Moderate: wetness.
Cx---------- Coxville	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
EmA---------- Emporia	Moderate: too clayey, wetness.	Slight---------	Moderate: wetness, shrink-swell.	Slight---------	Moderate: low strength.	Moderate: droughty.
EmB---------- Emporia	Moderate: too clayey, wetness.	Slight---------	Moderate: wetness, shrink-swell.	Moderate: slope.	Moderate: low strength.	Moderate: droughty.
EmC---------- Emporia	Moderate: too clayey, wetness, slope.	Moderate: slope.	Moderate: wetness, slope, shrink-swell.	Severe: slope.	Moderate: low strength, slope.	Moderate: droughty, slope.
GeB---------- Georgeville	Moderate: too clayey.	Slight---------	Slight---------	Moderate: slope.	Moderate: low strength.	Slight.
GeC---------- Georgeville	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.	Moderate: slope.
GgB2---------- Georgeville	Moderate: too clayey.	Slight---------	Slight---------	Moderate: slope.	Moderate: low strength.	Slight.

See footnote at end of table.

TABLE 10.--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
GgC2---------- Georgeville	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.	Moderate: slope.
GoA---------- Goldsboro	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Slight.
GtB---------- Goldston	Severe: depth to rock.	Moderate: depth to rock, large stones.	Severe: depth to rock.	Moderate: slope, depth to rock, large stones.	Moderate: depth to rock, large stones.	Severe: depth to rock.
GtC, GtD---------- Goldston	Severe: depth to rock.	Moderate: slope, depth to rock, large stones.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, slope, large stones.	Severe: depth to rock.
GtF---------- Goldston	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
HnA, HnB---------- Hornsville	Moderate: too clayey, wetness.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: low strength, flooding.	Slight.
Jo---------- Johnston	Severe: cutbanks cave, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: ponding, flooding.	Severe: ponding, flooding.
KeB---------- Kenansville	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Slight---------	Severe: droughty.
LuB---------- Lucy	Moderate: cutbanks cave.	Slight---------	Slight---------	Slight---------	Slight---------	Moderate: droughty, too sandy.
MaB---------- Mayodan	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Slight.
MdC2---------- Mayodan	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.
NoA---------- Noboco	Moderate: wetness.	Slight---------	Moderate: wetness.	Slight---------	Slight---------	Slight.
Og---------- Ogeechee	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
PaC2, PaD2-------- Pacolet	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.	Moderate: slope.
PaE2---------- Pacolet	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
PgB---------- Pageland	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Severe: low strength.	Moderate: wetness, depth to rock.

See footnote at end of table.

TABLE 10.--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
PlA, PlB Pelion	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, droughty.
PlC, PlD Pelion	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, slope.	Moderate: wetness, slope.	Moderate: wetness, droughty, slope.
PxF Poindexter	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Qz Quartzipsamments	Severe: cutbanks cave.	Slight	Slight	Slight	Slight	Severe: droughty.
RnB Rion	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
RoD Rion	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Severe: large stones
RoF Rion	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: large stones, slope.
Rv Riverview	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.
Sm Smithboro	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
TeA, TeB Tetotum	Severe: cutbanks cave, wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Moderate: low strength, wetness.	Moderate: wetness.
TrB Troup	Severe: cutbanks cave.	Slight	Slight	Slight	Slight	Moderate: droughty.
TrC Troup	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
Ud Udorthents	Variable	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Variable.
VaB Vaucluse	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
VaC, VaD Vaucluse	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
VgB Vaucluse	Moderate: dense layer.	Slight	Slight	Moderate: slope.	Slight	Moderate: small stones, droughty.
VgC, VgD Vaucluse	Moderate: dense layer, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: small stones, droughty, slope.

See footnote at end of table.

TABLE 10.--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
Wa---------- Wahee	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness.	Severe: wetness.
WkA, WkB---------- Wickham	Slight---------	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.	Slight.
Wo---------- Woodington	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 11.--SANITARY FACILITIES

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "slight," "good," and other terms. 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
AaA, AaB Ailey	Severe: percs slowly.	Severe: seepage.	Slight	Severe: seepage.	Good.
AeC Ailey	Severe: percs slowly.	Severe: seepage, slope.	Slight	Severe: seepage.	Good.
AeD Ailey	Severe: percs slowly.	Severe: seepage, slope.	Moderate: slope.	Severe: seepage.	Fair: slope.
AgB Alaga	Moderate: flooding.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
AmB Alamance	Moderate: percs slowly.	Severe: seepage.	Severe: seepage.	Slight	Fair: too clayey.
ApB Alpin	Slight	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
ApC, ApD Alpin	Moderate: slope.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
BaB Badin	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock, too clayey.	Severe: depth to rock.	Poor: depth to rock, too clayey, hard to pack.
BaC, BaD Badin	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock, too clayey.	Severe: depth to rock.	Poor: depth to rock, too clayey, hard to pack.
BaE Badin	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope, too clayey.	Severe: depth to rock, slope.	Poor: depth to rock, too clayey, hard to pack.
BdB2 Badin	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock, too clayey.	Severe: depth to rock.	Poor: depth to rock, too clayey, hard to pack.
BdC2 Badin	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock, too clayey.	Severe: depth to rock.	Poor: depth to rock, too clayey, hard to pack.
Bf Bibb	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: seepage, flooding, wetness.	Poor: wetness, seepage.

TABLE 11.--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
BoB: Bonneau	Severe: wetness.	Severe: seepage.	Severe: wetness.	Severe: seepage.	Good.
CaB: Candor	Slight	Severe: seepage.	Severe: too sandy.	Severe: seepage.	Poor: seepage, too sandy.
CaC, CaD: Candor	Moderate: slope.	Severe: seepage, slope.	Severe: too sandy.	Severe: seepage.	Poor: seepage, too sandy.
CcB, CeB2: Cecil	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: too clayey, hard to pack.
CeC2: Cecil	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, slope, hard to pack.
Ch: Chewacla	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: hard to pack, wetness.
Cm*:					
Chewacla	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: hard to pack, wetness.
Chastain	Severe: flooding, wetness, percs slowly.	Severe: flooding, seepage.	Severe: flooding, wetness, seepage.	Severe: flooding, wetness.	Poor: wetness, too clayey, hard to pack.
CrA, CrB: Claycreek	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Fair: too clayey, wetness.
Cx: Coxville	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
EmA, EmB: Emporia	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Moderate: wetness, too clayey.	Slight	Fair: too clayey, wetness.
EmC: Emporia	Severe: wetness, percs slowly.	Severe: seepage, slope, wetness.	Moderate: wetness, slope, too clayey.	Moderate: slope.	Fair: slope, too clayey, wetness.
GeB: Georgeville	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: too clayey, hard to pack.
GeC: Georgeville	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, hard to pack, slope.

See footnote at end of table.

TABLE 11.--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
GgB2 Georgeville	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: too clayey, hard to pack.
GgC2 Georgeville	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, hard to pack, slope.
GoA Goldsboro	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: wetness.
GtB Goldston	Severe: depth to rock.	Severe: seepage, depth to rock.	Severe: depth to rock, seepage.	Severe: depth to rock.	Poor: depth to rock, small stones.
GtC, GtD Goldston	Severe: depth to rock.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage.	Severe: depth to rock.	Poor: depth to rock, small stones.
GtF Goldston	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
HnA, HnB Hornsville	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey, hard to pack, wetness.
Jo Johnston	Severe: flooding, ponding, poor filter.	Severe: seepage, flooding, ponding.	Severe: flooding, seepage, ponding.	Severe: flooding, seepage, ponding.	Poor: ponding.
KeB Kenansville	Slight	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
LuB Lucy	Slight	Severe: seepage.	Slight	Severe: seepage.	Fair: too clayey.
MaB Mayodan	Moderate: percs slowly.	Moderate: seepage, slope.	Severe: too clayey.	Slight	Poor: too clayey, hard to pack.
MdC2 Mayodan	Moderate: percs slowly, slope.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
NoA Noboco	Severe: wetness.	Severe: seepage, wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey, wetness.
Og Ogeechee	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
PaC2, PaD2 Pacolet	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: too clayey, slope.

See footnote at end of table.

TABLE 11.--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
PaE2 Pacolet	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
PgB Pageland	Severe: depth to rock, wetness, percs slowly.	Severe: depth to rock, wetness.	Severe: depth to rock, wetness.	Severe: depth to rock.	Poor: depth to rock.
PlA, PlB Pelion	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
PlC, PlD Pelion	Severe: wetness, percs slowly.	Severe: slope, wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
PxF Poindexter	Severe: slope, depth to rock.	Severe: seepage, slope, depth to rock.	Severe: depth to rock, seepage, slope.	Severe: seepage, slope, depth to rock.	Poor: slope, depth to rock.
Qz Quartzipsamments	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
RnB Rion	Slight	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: too clayey.
RoD Rion	Moderate: slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Fair: too clayey, slope.
RoF Rion	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.
Rv Riverview	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Fair: wetness.
Sm Smithboro	Severe: wetness, percs slowly.	Slight	Severe: wetness.	Severe: wetness.	Poor: wetness.
TeA, TeB Tetotum	Severe: wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: wetness.	Fair: too clayey, wetness.
TrB Troup	Slight	Severe: seepage.	Severe: too sandy.	Severe: seepage.	Poor: seepage, too sandy.
TrC Troup	Slight	Severe: seepage, slope.	Severe: too sandy.	Severe: seepage.	Poor: seepage, too sandy.
Ud Udorthents	Variable	Variable	Variable	Slight	Variable.

See footnote at end of table.

TABLE 11.--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
VaB---------- Vaucluse	Severe: percs slowly.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: too clayey.
VaC, VaD---------- Vaucluse	Severe: percs slowly.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Fair: too clayey, slope.
VgB---------- Vaucluse	Severe: percs slowly.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: too clayey.
VgC, VgD---------- Vaucluse	Severe: percs slowly.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Fair: too clayey, slope.
Wa---------- Wahee	Severe: wetness, percs slowly.	Slight----------	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
WkA---------- Wickham	Moderate: flooding, percs slowly.	Moderate: seepage.	Moderate: flooding, too clayey.	Moderate: flooding.	Fair: too clayey.
WkB---------- Wickham	Moderate: flooding, percs slowly.	Moderate: seepage, slope.	Moderate: flooding, too clayey.	Moderate: flooding.	Fair: too clayey.
Wo---------- Woodington	Severe: wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: wetness.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 12.--CONSTRUCTION MATERIALS

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "good," "fair," and other terms. 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
AaA, AaB, AeC, AeD: Ailey	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy.
AgB: Alaga	Good	Probable	Improbable: too sandy.	Poor: too sandy.
AmB: Alamance	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
ApB, ApC, ApD: Alpin	Good	Probable	Improbable: too sandy.	Poor: too sandy.
BaB, BaC, BaD: Badin	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones.
BaE: Badin	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, slope.
BdB2, BdC2: Badin	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones.
Bf: Bibb	Poor: wetness.	Probable	Improbable: too sandy.	Poor: wetness, small stones.
BoB: Bonneau	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy.
CaB, CaC, CaD: Candor	Good	Improbable: thin layer.	Improbable: too sandy.	Poor: too sandy.
CcB, CeB2, CeC2: Cecil	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Ch: Chewacla	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Cm*:				
Chewacla	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Chastain	Poor: wetness.	Probable	Improbable: excess fines.	Poor: too clayey, wetness.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
CrA, CrB: Claycreek	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones, thin layer.
Cx: Coxville	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
EmA, EmB: Emporia	Fair: shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy, small stones.
EmC: Emporia	Fair: shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy, slope.
GeB, GeC, GgB2, GgC2: Georgeville	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
GoA: Goldsboro	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
GtB, GtC, GtD: Goldston	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
GtF: Goldston	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
HnA, HnB: Hornsville	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Jo: Johnston	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
KeB: Kenansville	Good	Probable	Improbable: too sandy.	Poor: too sandy.
LuB: Lucy	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy.
MaB, MdC2: Mayodan	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
NoA: Noboco	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Og: Ogeechee	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
PaC2, PaD2: Pacolet	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
PaE2: Pacolet	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
PgB Pageland	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, too clayey, small stones.
P1A, P1B Pelion	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, thin layer.
P1C, P1D Pelion	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, thin layer, slope.
PxF Poindexter	Poor: slope, depth to rock.	Improbable: excess fines, thin layer.	Improbable: excess fines, thin layer.	Poor: slope.
Qz Quartzipsamments	Good	Probable	Improbable: too sandy.	Poor: too sandy, small stones.
RnB Rion	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
RoD Rion	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
RoF Rion	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Rv Riverview	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Sm Smithboro	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
TeA, TeB Tetotum	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, too clayey.
TrB, TrC Troup	Good	Probable	Improbable: too sandy.	Poor: too sandy.
Ud Udorthents	Fair: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Variable.
VaB, VaC, VaD Vaucluse	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: area reclaim, too sandy, small stones.
VgB, VgC, VgD Vaucluse	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Wa Wahee	Poor: wetness, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
WkA, WkB Wickham	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
Wo Woodington	Poor: wetness.	Probable	Improbable: too sandy.	Poor: wetness.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 13.--WATER MANAGEMENT

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "slight," "moderate," and "severe." The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
AaA Ailey	Moderate: seepage.	Slight	Deep to water	Droughty, percs slowly.	Too sandy, percs slowly.	Droughty, rooting depth.
AaB, AeC Ailey	Moderate: seepage, slope.	Slight	Deep to water	Droughty, percs slowly, slope.	Too sandy, percs slowly.	Droughty, rooting depth.
AeD Ailey	Severe: slope.	Slight	Deep to water	Droughty, percs slowly, slope.	Slope, too sandy, percs slowly.	Slope, droughty, rooting depth.
AgB Alaga	Severe: seepage.	Severe: seepage, piping.	Deep to water	Droughty, fast intake.	Too sandy, soil blowing.	Droughty.
AmB Alamance	Severe: seepage.	Severe: piping.	Deep to water	Slope, soil blowing.	Erodes easily, soil blowing.	Erodes easily.
ApB Alpin	Severe: seepage.	Severe: seepage.	Deep to water	Slope, droughty, fast intake.	Too sandy, soil blowing.	Droughty.
ApC, ApD Alpin	Severe: seepage, slope.	Severe: seepage.	Deep to water	Slope, droughty, fast intake.	Slope, too sandy, soil blowing.	Slope, droughty.
BaB Badin	Moderate: seepage, depth to rock, slope.	Severe: thin layer.	Deep to water	Depth to rock, slope.	Depth to rock	Depth to rock.
BaC, BaD, BaE Badin	Severe: slope.	Severe: thin layer.	Deep to water	Depth to rock, slope.	Slope, depth to rock.	Slope, depth to rock.
BdB2 Badin	Moderate: seepage, depth to rock, slope.	Severe: thin layer.	Deep to water	Depth to rock, slope.	Depth to rock	Depth to rock.
BdC2 Badin	Severe: slope.	Severe: thin layer.	Deep to water	Depth to rock, slope.	Slope, depth to rock.	Slope, depth to rock.
Bf Bibb	Severe: seepage.	Severe: seepage, wetness, piping.	Flooding	Wetness, flooding.	Erodes easily, wetness.	Erodes easily, wetness.
BoB Bonneau	Severe: seepage.	Severe: thin layer.	Deep to water	Droughty, fast intake.	Soil blowing	Droughty.
CaB Candor	Severe: seepage.	Severe: seepage, piping.	Deep to water	Slope, droughty, fast intake.	Too sandy, soil blowing.	Droughty.
CaC, CaD Candor	Severe: seepage, slope.	Severe: seepage, piping.	Deep to water	Slope, droughty, fast intake.	Slope, too sandy, soil blowing.	Slope, droughty.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
CcB---------- Cecil	Moderate: seepage, slope.	Severe: piping, hard to pack.	Deep to water	Slope----------	Soil blowing---	Favorable.
CeB2---------- Cecil	Moderate: seepage, slope.	Severe: piping, hard to pack.	Deep to water	Slope----------	Favorable------	Favorable.
CeC2---------- Cecil	Severe: slope.	Severe: piping, hard to pack.	Deep to water	Slope----------	Slope----------	Slope.
Ch---------- Chewacla	Moderate: seepage.	Severe: piping, hard to pack, wetness.	Flooding-------	Wetness, flooding.	Wetness--------	Wetness.
Cm*:						
Chewacla---------	Moderate: seepage.	Severe: piping, hard to pack, wetness.	Flooding-------	Wetness, flooding.	Wetness--------	Wetness.
Chastain---------	Severe: seepage.	Severe: hard to pack, wetness.	Percs slowly, flooding.	Wetness, percs slowly.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily percs slowly.
CrA---------- Claycreek	Slight---------	Severe: piping.	Favorable------	Wetness, erodes easily.	Erodes easily, wetness.	Erodes easily.
CrB---------- Claycreek	Moderate: slope.	Severe: piping.	Slope----------	Slope, wetness, erodes easily.	Erodes easily, wetness.	Erodes easily.
Cx---------- Coxville	Slight---------	Severe: wetness.	Favorable------	Wetness, soil blowing.	Wetness, soil blowing.	Wetness.
EmA---------- Emporia	Moderate: seepage.	Moderate: thin layer, piping.	Deep to water	Fast intake, soil blowing.	Soil blowing, percs slowly.	Droughty, percs slowly.
EmB---------- Emporia	Moderate: seepage, slope.	Moderate: thin layer, piping.	Deep to water	Fast intake, soil blowing, slope.	Soil blowing, percs slowly.	Droughty, percs slowly.
EmC---------- Emporia	Severe: slope.	Moderate: thin layer, piping.	Deep to water	Fast intake, soil blowing, slope.	Slope, soil blowing, percs slowly.	Slope, droughty, percs slowly.
GeB---------- Georgeville	Moderate: slope, seepage.	Severe: hard to pack.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
GeC---------- Georgeville	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily
GgB2---------- Georgeville	Moderate: slope, seepage.	Severe: hard to pack.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
GgC2 Georgeville	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
GoA Goldsboro	Moderate: seepage.	Moderate: piping, wetness.	Favorable	Wetness, soil blowing.	Wetness, soil blowing.	Favorable.
GtB Goldston	Severe: depth to rock.	Severe: piping, large stones.	Deep to water	Slope, large stones, droughty.	Large stones, depth to rock.	Large stones, droughty.
GtC, GtD, GtF Goldston	Severe: depth to rock, slope.	Severe: piping, large stones.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
HnA Hornsville	Moderate: seepage.	Severe: hard to pack.	Favorable	Wetness	Wetness, soil blowing.	Favorable.
HnB Hornsville	Moderate: seepage, slope.	Severe: hard to pack.	Slope	Slope, wetness.	Wetness, soil blowing.	Favorable.
Jo Johnston	Severe: seepage.	Severe: piping, ponding.	Ponding, flooding.	Ponding, droughty, flooding.	Ponding	Wetness, droughty.
KeB Kenansville	Severe: seepage.	Severe: seepage, piping.	Deep to water	Slope, droughty, fast intake.	Too sandy	Droughty.
LuB Lucy	Severe: seepage.	Severe: piping.	Deep to water	Droughty, fast intake, slope.	Too sandy, soil blowing.	Droughty.
MaB Mayodan	Moderate: seepage, slope.	Severe: hard to pack.	Deep to water	Slope, soil blowing.	Soil blowing	Favorable.
MdC2 Mayodan	Severe: slope.	Severe: hard to pack.	Deep to water	Slope	Slope	Slope.
NoA Noboco	Moderate: seepage.	Severe: piping.	Favorable	Wetness, fast intake.	Wetness	Rooting depth.
Og Ogeechee	Moderate: seepage.	Severe: wetness.	Favorable	Wetness	Wetness	Wetness.
PaC2, PaD2, PaE2 Pacolet	Severe: slope.	Severe: piping.	Deep to water	Slope	Slope	Slope.
PgB Pageland	Moderate: depth to rock, slope.	Severe: piping.	Depth to rock, slope.	Slope, wetness, depth to rock.	Depth to rock, erodes easily, wetness.	Erodes easily, depth to rock.
PlA Pelion	Moderate: seepage.	Severe: seepage, piping.	Percs slowly	Wetness, droughty, fast intake.	Wetness, soil blowing.	Wetness, droughty.
PlB Pelion	Moderate: seepage.	Severe: seepage, piping.	Percs slowly, slope.	Wetness, droughty, fast intake.	Wetness, soil blowing.	Wetness, droughty.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
PlC, PlD Pelion	Moderate: seepage.	Severe: seepage, piping.	Percs slowly, slope.	Wetness, droughty, fast intake.	Slope, wetness, soil blowing.	Wetness, slope, droughty.
PxF Poindexter	Severe: seepage, slope.	Severe: piping, thin layer.	Deep to water	Slope, depth to rock.	Slope, depth to rock.	Slope, depth to rock
Qz Quartzipsamments	Severe: seepage.	Severe: seepage, piping.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
RnB Rion	Severe: seepage.	Severe: piping.	Deep to water	Droughty, slope.	Soil blowing	Droughty.
RoD, RoF Rion	Severe: seepage, slope.	Severe: piping.	Deep to water	Slope, droughty.	Slope	Slope, droughty.
Rv Riverview	Severe: seepage.	Severe: piping.	Deep to water	Flooding	Favorable	Favorable.
Sm Smithboro	Slight	Severe: hard to pack, wetness.	Percs slowly	Wetness, percs slowly.	Wetness, percs slowly.	Wetness, percs slowly.
TeA Tetotum	Severe: seepage.	Severe: wetness.	Favorable	Wetness, soil blowing.	Wetness	Favorable.
TeB Tetotum	Severe: seepage.	Severe: wetness.	Slope	Wetness, soil blowing, slope.	Wetness	Favorable.
TrB, TrC Troup	Severe: seepage.	Severe: seepage, piping.	Deep to water	Droughty, fast intake, slope.	Too sandy, soil blowing.	Droughty.
Ud Udorthents	Variable	Slight	Deep to water	Variable	Variable	Variable.
VaB Vaucluse	Severe: seepage.	Severe: piping.	Deep to water	Slope, droughty, fast intake.	Soil blowing, percs slowly.	Droughty, rooting depth
VaC, VaD Vaucluse	Severe: seepage, slope.	Severe: piping.	Deep to water	Slope, droughty, fast intake.	Slope, soil blowing.	Slope, droughty, rooting depth
VgB Vaucluse	Severe: seepage.	Moderate: thin layer.	Deep to water	Slope, droughty, fast intake.	Percs slowly, soil blowing.	Droughty, rooting depth
VgC, VgD Vaucluse	Severe: seepage, slope.	Moderate: thin layer.	Deep to water	Slope, droughty, fast intake.	Slope, percs slowly, soil blowing.	Slope, droughty, rooting depth
Wa Wahee	Slight	Severe: wetness, hard to pack.	Percs slowly	Wetness	Wetness, percs slowly.	Wetness, percs slowly.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
WkA---------- Wickham	Moderate: seepage.	Severe: piping.	Deep to water	Favorable------	Soil blowing---	Favorable.
WkB---------- Wickham	Moderate: seepage, slope.	Severe: piping.	Deep to water	Slope----------	Soil blowing---	Favorable.
Wo---------- Woodington	Severe: seepage.	Severe: piping, wetness.	Favorable------	Wetness, soil blowing.	Wetness--------	Wetness.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 14.--ENGINEERING INDEX PROPERTIES

(The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated)

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
AaA, AaB--------- Ailey	0-28	Sand----------	SP-SM	A-2, A-3	0	85-100	75-95	50-75	5-12	---	NP
	28-43	Sandy loam, sandy clay loam.	SM, SC, SC-SM	A-2, A-4, A-6	0	90-100	75-100	60-90	30-40	20-40	3-16
	43-53	Sandy loam, sandy clay loam.	SM, SC, SC-SM	A-2, A-4, A-6	0	90-100	75-100	55-90	20-40	20-40	3-15
	53-72	Coarse sandy loam, sandy loam, sandy clay loam, clay loam.	SM, SC, SC-SM	A-2, A-4, A-6	0	85-100	75-100	50-85	15-40	<40	NP-14
AeC, AeD--------- Ailey	0-25	Sand----------	SP-SM	A-2, A-3	0	85-100	75-95	50-75	5-12	---	NP
	25-35	Sandy loam, sandy clay loam.	SM, SC, SC-SM	A-2, A-4, A-6	0	90-100	75-100	60-90	30-40	20-40	3-16
	35-53	Sandy loam, sandy clay loam, clay loam.	SM, SC, SC-SM	A-2, A-4, A-6	0	90-100	75-100	55-90	20-40	20-40	3-15
	53-63	Coarse sandy loam, sandy loam, sandy clay loam.	SM, SC, SC-SM	A-2, A-4, A-6	0	85-100	75-100	50-85	15-40	<40	NP-14
AgB---------- Alaga	0-7	Sand----------	SM, SP-SM	A-2, A-1-b, A-3	0	100	90-100	40-70	5-25	---	NP
	7-80	Loamy sand, loamy fine sand, fine sand.	SM, SW-SM, SP-SM	A-2	0	100	100	50-85	10-35	<25	NP-4
AmB---------- Alamance	0-6	Sandy loam-------	SM	A-2, A-4	0-2	90-100	85-100	60-70	30-40	<30	NP-7
	6-36	Clay loam, silty clay loam, silt loam.	CL, ML	A-4, A-6, A-7	0	95-100	90-100	90-100	80-100	30-45	7-20
	36-44	Loam, silt loam, very fine sandy loam.	CL, ML, CL-ML	A-4, A-6, A-7	0	95-100	92-100	80-100	70-98	25-41	5-15
	44-65	Silt loam--------	ML, CL, CL-ML	A-4	0-1	90-100	90-100	80-100	70-98	16-40	NP-12
ApB, ApC, ApD---- Alpin	0-10	Sand----------	SP-SM, SM	A-3, A-2-4	0	95-100	90-100	60-100	5-20	---	NP
	10-49	Fine sand, sand	SP-SM, SM	A-3, A-2-4	0	95-100	90-100	60-100	5-20	---	NP
	49-88	Fine sand, sand	SP-SM, SM	A-2-4, A-3	0	95-100	90-100	60-100	11-20	---	NP
BaB, BaC, BaD, BaE---------- Badin	0-6	Silt loam--------	ML, CL, CL-ML	A-4, A-6	0-5	85-100	75-95	65-90	60-85	25-40	5-15
	6-33	Silty clay, silty clay loam, channery silty clay loam, silt loam.	CL, CH	A-6, A-7	0-5	65-100	60-100	55-100	50-98	30-65	15-35
	33-40	Weathered bedrock	---	---	---	---	---	---	---	---	---
	40	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
BdB2, BdC2------- Badin	0-6	Silty clay loam	CL, ML	A-6, A-7	0-5	85-100	75-95	65-90	60-85	30-49	11-20
	6-33	Silty clay, silty clay loam, channery silty clay loam, silt loam.	CL, CH	A-6, A-7	0-5	65-100	60-100	55-100	50-98	30-65	15-35
	33-40	Weathered bedrock	---	---	---	---	---	---	---	---	---
	40	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Bf---------- Bibb	0-7	Sandy loam-------	SM, SC-SM, ML, CL-ML	A-2, A-4	0-5	95-100	90-100	60-90	30-60	<25	NP-7
	7-50	Sandy loam, loam, silt loam.	SM, SC-SM, ML, CL-ML	A-2, A-4	0-10	60-100	50-100	40-100	30-90	<30	NP-7
	50-60	Sand, fine sand, loamy sand.	SM, SP-SM	A-2, A-3, A-1-b	0-5	95-100	90-100	40-90	8-35	---	NP
BoB---------- Bonneau	0-25	Sand----------	SM, SP-SM	A-2, A-3	0	100	100	60-95	8-20	---	NP
	25-65	Sandy loam, sandy clay loam, fine sandy loam.	SC, SC-SM	A-2, A-6, A-4	0	100	100	60-100	30-50	21-40	4-21
	65-72	Sandy loam, sandy clay loam, sandy clay.	CL, SC, SC-SM, CL-ML	A-4, A-6, A-2	0	100	100	60-95	25-60	20-40	4-18
CaB, CaC, CaD---- Candor	0-25	Sand----------	SM, SP-SM	A-2, A-3, A-2-4	0-2	98-100	96-100	55-90	5-15	---	NP
	25-42	Loamy sand-------	SM, SP-SM	A-2, A-2-4	0-2	98-100	96-100	63-90	10-25	---	NP
	42-60	Sand----------	SM, SP-SM	A-2, A-3	0-7	90-100	90-100	55-90	5-15	---	NP
	60-67	Sandy loam, sandy clay loam.	SC, SC-SM, SM	A-2, A-4, A-6, A-7	0-7	90-100	90-100	55-90	25-49	<45	NP-25
	67-80	Sandy loam, sandy clay loam, sandy clay.	SC, CL, SM-SC	A-2, A-4 A-6, A-7	0-7	90-100	90-100	55-95	25-70	25-55	NP-32
CcB---------- Cecil	0-6	Sandy loam-------	SM, SC-SM	A-2, A-4	0-5	84-100	80-100	67-90	26-42	<30	NP-7
	6-48	Clay, clay loam	MH, ML	A-7, A-5	0-5	97-100	92-100	72-99	55-95	41-80	9-37
	48-60	Variable---------	---	---	---	---	---	---	---	---	---
CeB2, CeC2------- Cecil	0-2	Sandy clay loam	SM, SC, CL, ML	A-4, A-6	0-5	75-100	75-100	68-95	38-81	21-35	3-15
	2-48	Clay, clay loam	MH, ML	A-7, A-5	0-5	97-100	92-100	72-99	55-95	41-80	9-37
	48-60	Sandy clay loam, clay loam.	SM, SC, ML, CL	A-4, A-6	0-5	75-100	75-100	68-95	38-81	21-35	3-15
Ch---------- Chewacla	0-7	Clay loam--------	ML, CL, CL-ML	A-4, A-6, A-7	0	98-100	95-100	70-100	55-90	25-49	4-20
	7-50	Silt loam, sandy clay loam, clay loam, loam.	ML, CL, CL-ML	A-4, A-6, A-7, A-2	0	96-100	95-100	80-100	51-98	25-49	4-22
	50-65	Sandy clay loam, loam, sandy loam, loamy sand.	SM, SC-SM, ML, CL	A-4, A-7-6, A-6, A-2	0	96-100	95-100	60-100	36-70	10-45	NP-15

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
Cm*:											
Chewacla	0-7	Clay loam	ML, CL, CL-ML	A-4, A-6, A-7	0	98-100	95-100	70-100	55-90	25-49	4-20
	7-50	Silt loam, sandy clay loam, clay loam, loam.	ML, CL, CL-ML	A-4, A-6, A-7, A-2	0	96-100	95-100	80-100	51-98	75-49	4-22
	50-65	Sandy clay loam, loam, sandy loam, loamy sand.	SM, SC-SM, ML, CL	A-4, A-7-6, A-6, A-2	0	96-100	95-100	60-100	36-70	10-45	NP-15
Chastain	0-6	Silt loam	ML, CL, CL-ML	A-4, A-6, A-7	0	100	100	90-100	70-95	23-45	3-18
	6-65	Silty clay loam, clay loam, silty clay.	CL, CH, ML, MH	A-6, A-7	0	100	100	95-100	85-98	35-75	12-40
CrA, CrB Claycreek	0-4	Silt loam	ML, CL-ML, CL	A-4, A-6	0-1	90-100	88-100	80-95	70-90	16-40	NP-11
	4-22	Silty clay loam, clay loam, silt loam.	CL, ML	A-4, A-6, A-5, A-7	0-1	95-100	90-100	90-98	80-95	20-49	7-26
	22-33	Clay loam, silty clay loam, silty clay.	ML, CL	A-4, A-6	0-1	95-100	90-100	90-98	80-95	16-40	7-27
	33-39	Silt loam, silty clay loam, clay loam.	ML, CL, SC	A-4, A-5, A-6, A-7	0-1	95-100	90-100	90-98	80-95	16-49	7-26
	39-63	Loam, silt loam, silty clay loam.	ML, CL-ML, CL	A-4, A-6	0-1	90-100	85-100	80-98	70-95	16-40	NP-20
Cx Coxville	0-6	Sandy loam	SM, ML, CL-ML, CL	A-4, A-6, A-7	0	100	100	85-97	46-75	20-46	3-15
	6-60	Clay loam, sandy clay, clay.	CL, CH	A-6, A-7	0	100	100	85-98	50-85	30-55	12-35
	60-70	Sandy loam, sandy clay loam, clay loam, sandy clay, clay.	SM, SM-SC, SC, CL, CL-ML, CH	A-2, A-4, A-6, A-7	0	95-100	95-100	80-98	40-85	25-55	6-35
EmA, EmB, EmC Emporia	0-10	Loamy sand	SM, SC-SM	A-2, A-1, A-4	0-3	90-100	80-100	40-85	15-40	<18	NP-7
	10-48	Sandy clay loam, sandy loam, clay loam.	SC, CL, SM	A-2, A-4, A-6, A-7	0-2	90-100	80-100	45-95	25-70	20-50	8-30
	48-56	Sandy clay loam, clay loam, sandy clay.	SC, CL, CH	A-2, A-4, A-6, A-7	0-2	90-100	80-100	45-95	30-80	25-55	8-30
	56-65	Stratified sandy loam to clay.	SM, SC, ML, CL	A-1, A-2, A-4, A-6	0-5	70-100	55-100	30-90	20-60	<40	NP-25
GeB, GeC Georgeville	0-5	Loam	ML	A-4, A-6	0-2	90-100	80-100	65-100	55-95	<40	NP-11
	5-42	Clay, silty clay, silty clay loam.	MH, ML	A-7	0-1	95-100	95-100	90-100	75-98	41-85	15-45
	42-60	Clay loam, loam, silt loam.	ML, CL, CL-ML	A-4, A-6	0-5	90-100	90-100	65-100	51-95	<30	NP-12

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
GgB2, GgC2------- Georgeville	0-3	Silty clay loam	CL, ML	A-6, A-7, A-4	0-2	90-100	90-100	85-100	65-98	24-49	3-20
	3-42	Clay, silty clay, silty clay loam.	MH, ML	A-7	0-1	95-100	95-100	90-100	75-98	41-85	15-45
	42-60	Clay loam, loam, silt loam.	ML, CL, CL-ML	A-4, A-6	0-5	90-100	90-100	65-100	51-95	<30	NP-12
GoA---------- Goldsboro	0-9	Sandy loam-------	SM, SC-SM, SC	A-2, A-4, A-6	0	95-100	95-100	50-100	15-45	<25	NP-14
	9-42	Sandy clay loam, sandy loam.	SC-SM, SC, CL-ML, CL	A-2, A-4, A-6	0	98-100	95-100	60-100	25-55	16-37	4-18
	42-67	Sandy clay loam, clay loam, sandy clay.	SC, CL, CL-ML, CH	A-4, A-6, A-7-6	0	95-100	90-100	65-95	36-70	25-55	6-32
	67-75	Sandy loam, sandy clay loam, sandy clay.	SM-SC, SC, CL-ML, CL, CH	A-2, A-4, A-6, A-7	0	95-100	90-100	60-100	25-70	16-55	4-32
GtB, GtC, GtD, GtF---------- Goldston	0-3	Channery silt loam.	GM, SM, ML	A-2-4, A-4	10-20	60-80	50-80	30-80	25-75	20-40	NP-10
	3-12	Very channery silt loam, very channery very fine sandy loam.	GM, SM, ML	A-2-4, A-4, A-1-b	20-50	40-80	30-80	25-80	20-60	20-40	NP-10
	12-24	Weathered bedrock	---	---	---	---	---	---	---	---	---
	24	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
HnA, HnB--------- Hornsville	0-7	Sandy loam-------	SM	A-2-4, A-4	0	100	100	60-95	30-50	<30	NP-7
	7-36	Sandy clay, clay loam, clay.	SC, CL, CH, MH	A-6, A-7	0	100	100	70-98	45-70	38-56	15-25
	36-60	Sandy clay loam, sandy loam, fine sandy loam.	SM, SC-SM, SC	A-2-4, A-2-6, A-4, A-6	0	100	100	60-100	18-50	<30	NP-12
Jo---------- Johnston	0-38	Sandy loam-------	ML, SM	A-2, A-4	0	100	100	60-100	18-65	<35	NP-10
	38-60	Stratified loamy sand to sand.	SM, SP-SM	A-2, A-3	0	100	100	50-100	5-30	---	NP
KeB---------- Kenansville	0-30	Sand----------	SM, SP-SM	A-1, A-2	0	100	95-100	45-95	10-25	---	NP
	30-41	Sandy loam, fine sandy loam, sandy clay loam.	SM, SC, SC-SM	A-2, A-4	0	100	95-100	50-99	25-45	<30	NP-10
	41-70	Sand, loamy sand, loamy fine sand.	SP-SM, SM	A-1, A-2, A-3	0	100	95-100	40-99	5-30	---	NP
LuB---------- Lucy	0-23	Sand----------	SM, SW-SM	A-2	0	95-100	90-100	50-75	10-30	---	NP
	23-30	Sandy loam, fine sandy loam, sandy clay loam.	SM, SC, SC-SM	A-2, A-4, A-6	0	97-100	95-100	55-95	15-50	10-30	NP-15
	30-72	Sandy clay loam, clay loam, sandy clay.	SC, SC-SM, SM	A-2, A-6, A-4	0	100	95-100	60-95	20-50	20-40	3-20
MaB---------- Mayodan	0-7	Silt loam--------	SM, ML	A-2, A-4	0-5	92-100	83-100	49-98	30-70	<36	NP-8
	7-47	Clay, silty clay, silty clay loam.	MH, CH, CL, ML	A-7	0-2	95-100	90-100	80-100	50-98	41-80	15-45
	47-60	Loam, clay loam, silty clay loam.	CL, ML	A-4, A-6, A-7	0-2	90-100	85-100	80-98	50-95	16-50	7-26

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
MdC2---------- Mayodan	0-5	Silty clay loam	CL, SC	A-4, A-6, A-7-6	0-5	95-100	95-100	90-100	40-90	25-50	7-26
	5-47	Clay, silty clay, silty clay loam.	MH, CH, CL, ML	A-7	0-2	95-100	90-100	80-100	50-98	41-80	15-45
	47-60	Loam, clay loam, silty clay loam.	CL, ML	A-4, A-6, A-7	0-2	90-100	85-100	80-98	50-95	16-50	7-26
NoA---------- Noboco	0-15	Loamy sand-------	SM	A-2	0	95-100	92-100	50-95	13-30	<20	NP
	15-42	Sandy loam, sandy clay loam, clay loam.	SC-SM, SC, CL, CL-ML	A-2, A-4, A-6	0	95-100	95-100	70-96	30-63	20-38	4-15
	42-65	Sandy clay loam, clay loam, sandy clay.	SC-SM, SC, CL, CL-ML	A-4, A-6, A-7-6	0	98-100	98-100	70-98	36-72	20-52	4-23
Og---------- Ogeechee	0-8	Sandy loam-------	SM, SC-SM	A-2, A-1-b	0	100	95-100	48-87	15-27	<30	NP-7
	8-35	Sandy clay loam, clay loam.	SC, CL	A-6	0	100	95-100	65-90	40-55	27-40	12-23
	35-55	Sandy clay, sandy clay loam, clay.	SC, CL	A-6, A-7	0	100	95-100	65-90	43-65	32-46	16-24
	55-65	Sandy clay loam, sandy loam.	SC	A-6, A-2	0	100	90-100	50-65	25-45	30-40	15-25
PaC2, PaD2, PaE2- Pacolet	0-3	Clay loam--------	SC-SM, SC	A-4, A-6	0-1	95-100	90-100	65-85	36-50	20-40	4-17
	3-22	Sandy clay, clay loam, clay.	ML, MH, CL	A-6, A-7	0-1	80-100	80-100	60-95	51-75	38-65	11-30
	22-32	Clay loam, sandy clay loam, loam.	CL, CL-ML, SC-SM, SC	A-2, A-4, A-6	0-2	80-100	70-100	60-80	30-60	20-35	5-15
	32-60	Sandy loam, fine sandy loam, loam.	SM, SC-SM	A-4, A-2-4	0-2	80-100	70-100	60-90	25-50	<28	NP-6
PgB---------- Pageland	0-7	Silt loam--------	ML, CL	A-4	0-1	90-100	88-100	80-95	70-90	16-40	NP-10
	7-26	Silty clay loam, silt loam.	CL, ML	A-4, A-6, A-5, A-7	0-1	95-100	90-100	90-98	80-95	20-49	7-26
	26-33	Silt loam, silty clay loam, silty clay.	ML, CL	A-4, A-6	0-2	95-100	90-100	90-98	89-95	16-40	7-27
	33-60	Weathered bedrock	---	---	---	---	---	---	---	---	---
PlA, PlB, PlC, PlD---------- Pelion	0-14	Loamy sand-------	SM, SP-SM	A-2, A-3	0	98-100	95-100	60-85	8-30	---	NP
	14-19	Sandy clay loam, clay loam.	SC-SM, SC, CL-ML, CL	A-2, A-4, A-6	0	95-100	92-100	50-90	25-55	20-40	5-18
	19-45	Sandy clay loam, sandy clay, clay.	SC-SM, SC, CL-ML, CL	A-2, A-4, A-6	0	98-100	92-100	50-90	25-60	20-47	5-20
	45-66	Sandy clay loam, clay loam, sandy loam, sand.	SM, SC, SC-SM	A-2, A-4, A-6	0	98-100	92-100	50-90	15-60	<42	NP-18
PxF---------- Poindexter	0-5	Fine sandy loam	SM, SC, SC-SM	A-2, A-4	0	90-100	85-100	50-100	20-50	<25	NP-10
	5-17	Clay loam, sandy clay loam, loam.	SC, CL	A-6	0	90-100	80-100	60-100	35-85	30-40	11-20
	17-24	Silt loam, sandy loam.	SM, ML, CL-ML, SC-SM	A-2, A-4	0	90-100	80-100	60-95	30-70	<20	NP-5
	24-60	Weathered bedrock	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
Qz---------- Quartzipsamments	0-80	Sand----------	SP, SP-SM, SM	A-2-4, A-3, A-1-b	0	75-100	70-100	30-100	1-25	---	NP
RnB---------- Rion	0-15	Sandy loam-------	SM	A-2, A-4	0-2	90-100	85-100	60-80	20-45	<35	NP-7
	15-35	Sandy loam, sandy clay loam, clay loam.	SC, SC-SM, CL-ML, CL	A-2, A-4, A-6	0-2	90-100	85-100	60-85	30-60	20-35	5-15
	35-60	Sandy loam, sandy clay loam, loamy sand.	SC, SM, SC-SM	A-2, A-4, A-6	0-2	90-100	80-100	60-85	15-50	<36	NP-12
RoD, RoF--------- Rion	0-15	Very bouldery sandy loam.	SM	A-2, A-4	0-5	85-95	70-85	60-80	30-50	<35	NP-7
	15-35	Sandy loam, sandy clay loam, clay loam.	SC, SC-SM, CL-ML, CL	A-2, A-4, A-6	0-3	90-100	85-100	60-85	30-60	20-35	5-15
	35-60	Sandy loam, sandy clay loam, loamy sand.	SC, SM, SC-SM	A-2, A-4, A-6	0-2	90-100	80-100	60-85	15-50	<36	NP-12
Rv---------- Riverview	0-3	Silt loam--------	CL, CL-ML, ML	A-4, A-6	0	100	100	90-100	60-80	15-30	3-14
	3-38	Sandy clay loam, silty clay loam, loam.	CL, ML, CL-ML	A-4, A-6	0	100	100	90-100	60-95	20-40	3-20
	38-60	Loamy fine sand, sandy loam, sand.	SM, SC-SM	A-2, A-4	0	100	100	50-95	15-45	<20	NP-7
Sm---------- Smithboro	0-8	Loam----------	ML, CL, CL-ML	A-4	0	100	100	85-95	60-75	<35	NP-10
	8-80	Clay, clay loam, silty clay.	CL, ML, CH, MH	A-6, A-7, A-4	0	100	100	94-100	70-95	24-60	9-32
TeA, TeB--------- Tetotum	0-5	Sandy loam-------	SM, ML	A-2, A-4	0	85-100	80-100	45-85	25-55	<30	NP-7
	5-65	Sandy clay loam, clay loam, loam.	SC, CL	A-6, A-7	0-2	85-100	80-100	60-95	35-85	30-45	10-20
TrB, TrC--------- Troup	0-25	Sand----------	SM, SP-SM	A-2	0	95-100	90-100	50-75	10-30	---	NP
	25-46	Loamy sand-------	SM, SP-SM	A-2, A-4	0	95-100	90-100	50-90	10-40	---	NP
	46-55	Sand----------	SM, SP-SM	A-2	0	95-100	90-100	50-75	10-30	---	NP
	55-85	Sandy clay loam, sandy loam, fine sandy loam.	SC, SC-SM, CL-ML, CL	A-4, A-2, A-6	0	95-100	90-100	60-90	24-55	19-40	4-20
Ud---------- Udorthents	0-60	Sandy loam-------	CL, CL-ML, SC, SC-SM	A-2, A-4, A-6, A-7	0-3	95-100	90-100	70-98	30-90	20-45	4-25
VaB, VaC, VaD---- Vaucluse	0-6	Loamy sand-------	SM, SP-SM	A-2, A-3	0-5	90-100	90-100	51-75	8-30	---	NP
	6-16	Sandy clay loam, sandy loam.	SC, SC-SM	A-2, A-4, A-6	0-5	90-100	90-100	51-75	25-50	20-40	5-18
	16-50	Sandy clay loam, sandy loam, sandy clay.	SC, SC-SM, SM	A-2, A-4, A-6	0-5	95-100	92-100	51-80	20-50	<40	NP-20
	50-60	Sandy loam, sandy clay loam, loamy sand.	SM, SC, SC-SM	A-2, A-4, A-6	0-2	95-100	95-100	51-90	15-50	<30	NP-12

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
VgB, VgC, VgD---- Vaucluse	0-6	Gravelly loamy sand.	SM, SP-SM	A-1, A-2	2-5	70-90	55-80	30-50	8-30	---	NP
	6-16	Sandy clay loam, sandy loam.	SC, SC-SM	A-2, A-4, A-6	0-5	90-100	90-100	51-75	25-50	20-40	5-15
	16-50	Sandy clay loam, sandy loam, sandy clay.	SC, SC-SM	A-2, A-4, A-6	0-5	95-100	92-100	55-75	20-50	22-40	4-20
	50-60	Sandy loam, sandy clay loam, sandy clay.	SM, SC, SC-SM	A-2, A-4, A-6	0-5	95-100	95-100	51-90	15-50	<30	NP-12
Wa---------- Wahee	0-5	Silt loam--------	ML, CL-ML, CL	A-4	0	100	100	90-98	51-75	20-35	2-10
	5-58	Clay, clay loam, silty clay.	CL, CH	A-6, A-7	0	100	100	85-100	51-92	38-81	16-54
	58-65	Fine sandy loam, sandy clay loam, clay loam, silty clay loam.	CL, CL-ML, ML, SM, SM-SC	A-2, A-4, A-6	0	95-100	95-100	70-96	36-72	20-52	5-45
WkA, WkB--------- Wickham	0-6	Sandy loam-------	SM, SC-SM, ML, CL-ML	A-4	0	95-100	90-100	70-100	45-80	<25	NP-7
	6-48	Sandy clay loam, clay loam, sandy loam.	CL-ML, CL, SC, SM	A-2, A-4, A-6, A-7-6	0	95-100	90-100	75-100	30-70	20-41	3-15
	48-60	Sand, loamy sand	SM, SP-SM	A-2, A-3	0	95-100	75-100	50-100	5-30	<25	NP-4
Wo---------- Woodington	0-9	Sandy loam-------	SM	A-2, A-4	0	100	95-100	50-100	20-50	<25	NP-3
	9-60	Sandy loam, fine sandy loam.	SM	A-2, A-4	0	100	95-100	50-100	20-50	<25	NP-3
	60-67	Sandy loam, loamy sand, loamy fine sand.	SM, SP-SM	A-2, A-4	0	100	95-100	50-100	10-50	<25	NP-3

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS

(The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated)

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH					Pct
AaA, AaB--------- Ailey	0-28	3-8	1.40-1.55	6.0-20	0.03-0.05	4.5-6.5	Low----------	0.10	4	2	<1
	28-43	15-35	1.55-1.70	0.6-2.0	0.09-0.12	4.5-5.5	Low----------	0.24			
	43-53	18-32	1.70-1.80	0.06-0.2	0.06-0.10	4.5-5.5	Low----------	----			
	53-72	15-30	1.80-1.95	0.06-0.2	0.04-0.08	4.5-5.5	Low----------	0.15			
AeC, AeD--------- Ailey	0-25	3-8	1.40-1.55	6.0-20	0.03-0.05	4.5-6.5	Low----------	0.10	4	1	<1
	25-35	15-35	1.55-1.70	0.6-2.0	0.09-0.12	4.5-5.5	Low----------	0.24			
	35-53	18-32	1.70-1.80	0.06-0.2	0.06-0.10	4.5-5.5	Low----------	----			
	53-63	15-30	1.80-1.95	0.06-0.2	0.04-0.08	4.5-5.5	Low----------	0.15			
AgB---------- Alaga	0-7	1-10	1.30-1.70	6.0-20	0.05-0.09	4.5-6.0	Low----------	0.10	5	1	.5-3
	7-80	2-12	1.30-1.70	6.0-20	0.05-0.09	4.5-6.0	Low----------	0.10			
AmB---------- Alamance	0-6	5-20	1.20-1.50	0.6-2.0	0.08-0.12	4.5-7.3	Low----------	0.32	4	2	.5-2
	6-36	18-35	1.20-1.40	0.6-2.0	0.15-0.20	4.5-5.5	Low----------	0.43			
	36-44	5-20	1.20-1.40	0.6-2.0	0.15-0.18	4.5-5.5	Low----------	0.43			
	44-65	5-20	1.20-1.50	0.6-6.0	0.10-0.13	4.5-5.5	Low----------	0.32			
ApB, ApC, ApD---- Alpin	0-10	1-12	1.35-1.55	2.0-6.0	0.05-0.10	4.5-6.5	Low----------	0.10	5	1	0-2
	10-49	1-7	1.40-1.55	6.0-20	0.03-0.09	4.5-5.5	Low----------	0.10			
	49-88	5-8	1.45-1.65	2.0-6.0	0.06-0.09	4.5-5.5	Low----------	0.10			
BaB, BaC, BaD, BaE---------- Badin	0-6	10-27	1.20-1.45	0.6-2.0	0.16-0.20	4.5-6.5	Low----------	0.32	2	5	1-3
	6-33	35-55	1.30-1.50	0.6-2.0	0.14-0.19	4.5-5.5	Moderate-----	0.24			
	33-40	---	---	---	---	---	----------	----			
	40	---	---	---	---	---	----------	----			
BdB2, BdC2------- Badin	0-6	27-40	1.20-1.45	0.6-2.0	0.14-0.19	4.5-6.5	Low----------	0.28	2	7	.5-2
	6-33	35-55	1.30-1.50	0.6-2.0	0.14-0.19	4.5-5.5	Moderate-----	0.24			
	33-40	---	---	---	---	---	----------	----			
	40	---	---	---	---	---	----------	----			
Bf---------- Bibb	0-7	2-18	1.25-1.55	0.6-2.0	0.12-0.18	4.5-5.5	Low----------	0.20	5	3	.5-2
	7-50	2-18	1.30-1.60	0.6-2.0	0.12-0.20	4.5-5.5	Low----------	0.37			
	50-60	2-12	1.40-1.65	2.0-6.0	0.06-0.10	4.5-5.5	Low----------	0.15			
BoB---------- Bonneau	0-25	2-8	1.30-1.70	6.0-20	0.04-0.08	4.5-6.0	Low----------	0.10	5	1	.5-2
	25-65	13-35	1.40-1.60	0.6-2.0	0.10-0.15	4.5-5.5	Low----------	0.20			
	65-72	15-40	1.40-1.60	0.6-2.0	0.10-0.16	4.5-5.5	Low----------	0.20			
CaB, CaC, CaD---- Candor	0-25	1-4	1.60-1.70	6.0-20	0.02-0.06	4.5-6.0	Low----------	0.10	5	1	.5-1
	25-42	6-12	1.55-1.70	6.0-20	0.06-0.10	4.5-5.5	Low----------	0.10			
	42-60	1-4	1.60-1.70	6.0-20	0.02-0.05	4.5-5.5	Low----------	0.10			
	60-67	10-35	1.35-1.60	0.6-2.0	0.12-0.16	4.5-5.5	Low----------	0.20			
	67-80	10-45	1.55-1.80	0.2-2.0	0.10-0.16	4.5-5.5	Low----------	0.20			
CcB---------- Cecil	0-6	5-20	1.30-1.50	2.0-6.0	0.12-0.14	4.5-6.5	Low----------	0.28	4	3	.5-2
	6-48	35-70	1.30-1.50	0.6-2.0	0.13-0.15	4.5-5.5	Low----------	0.28			
	48-60	20-40	1.20-1.50	0.6-2.0	0.10-0.15	4.5-5.5	Low----------	0.28			
CeB2, CeC2------- Cecil	0-2	20-35	1.30-1.50	0.6-2.0	0.13-0.15	4.5-6.5	Low----------	0.28	3	3	.5-1
	2-48	35-70	1.30-1.50	0.6-2.0	0.13-0.15	4.5-5.5	Low----------	0.28			
	48-60	20-40	1.20-1.50	0.6-2.0	0.10-0.15	4.5-5.5	Low----------	0.28			
Ch---------- Chewacla	0-7	27-35	1.30-1.60	0.6-2.0	0.15-0.24	4.5-6.5	Low----------	0.28	5	5	1-4
	7-50	18-35	1.30-1.50	0.6-2.0	0.15-0.24	4.5-6.5	Low----------	0.32			
	50-65	18-35	1.30-1.60	0.6-2.0	0.12-0.20	4.5-6.5	Low----------	0.28			

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodi-bility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH					Pct
Cm*:											
Chewacla	0-7	27-35	1.30-1.60	0.6-2.0	0.15-0.24	4.5-6.0	Low	0.28	5	5	1-4
	7-50	18-35	1.30-1.50	0.6-2.0	0.15-0.24	4.5-6.0	Low	0.32			
	50-65	18-35	1.30-1.60	0.6-2.0	0.12-0.20	4.5-6.0	Low	0.28			
Chastain	0-6	15-27	1.20-1.40	0.2-0.6	0.12-0.18	4.5-6.0	Moderate	0.32	5	5	1-6
	6-65	35-60	1.30-1.50	0.06-0.2	0.12-0.16	4.5-6.0	Moderate	0.37			
CrA, CrB Claycreek	0-4	4-20	1.20-1.40	0.6-2.0	0.15-0.22	4.5-6.5	Low	0.43	3	5	.5-2
	4-22	18-35	1.20-1.40	0.2-0.6	0.12-0.18	4.5-6.0	Low	0.43			
	22-33	27-50	1.20-1.40	0.2-0.6	0.11-0.18	4.5-6.0	Moderate	0.37			
	33-39	18-35	1.30-1.50	0.2-0.6	0.15-0.18	4.5-6.0	Moderate	0.37			
	39-63	10-35	1.20-1.50	0.2-0.6	0.12-0.18	4.5-6.0	Low	0.37			
Cx Coxville	0-6	5-27	1.45-1.65	0.6-2.0	0.12-0.17	4.5-5.5	Low	0.24	5	3	2-4
	6-60	35-60	1.25-1.45	0.2-0.6	0.14-0.18	4.5-5.5	Moderate	0.32			
	60-70	20-60	1.25-1.65	0.2-0.6	0.10-0.18	4.5-5.5	Low	0.28			
EmA, EmB, EmC Emporia	0-10	5-10	1.30-1.40	6.0-20	0.05-0.10	4.5-6.0	Low	0.28	4	2	.5-2
	10-48	18-35	1.35-1.45	0.2-2.0	0.10-0.18	4.5-6.0	Low	0.28			
	48-56	21-40	1.45-1.60	0.06-0.6	0.10-0.16	4.5-6.0	Moderate	0.20			
	56-65	5-40	1.45-1.60	0.06-2.0	0.08-0.18	4.5-6.0	Moderate	0.20			
GeB, GeC Georgeville	0-5	5-27	1.20-1.40	0.6-2.0	0.15-0.20	4.5-6.0	Low	0.43	4	5	.5-2
	5-42	35-65	1.20-1.40	0.6-2.0	0.13-0.18	4.5-5.5	Low	0.28			
	42-60	15-40	1.20-1.40	0.6-2.0	0.05-0.10	4.5-5.5	Low	0.32			
GgB2, GgC2 Georgeville	0-3	27-35	1.20-1.40	0.6-2.0	0.13-0.18	4.5-6.0	Low	0.49	4	6	<.5
	3-42	35-65	1.20-1.40	0.6-2.0	0.13-0.18	4.5-5.5	Low	0.28			
	42-60	15-40	1.20-1.40	0.6-2.0	0.05-0.10	4.5-5.5	Low	0.32			
GoA Goldsboro	0-9	5-15	1.40-1.60	2.0-6.0	0.10-0.15	4.5-6.0	Low	0.20	5	3	.5-2
	9-42	18-30	1.30-1.50	0.6-2.0	0.11-0.17	4.5-5.5	Low	0.24			
	42-67	20-34	1.30-1.40	0.6-2.0	0.11-0.20	4.5-5.5	Low	0.24			
	67-75	20-43	1.30-1.70	0.6-2.0	0.10-0.20	4.5-5.5	Low	0.24			
GtB, GtC, GtD, GtF Goldston	0-3	5-27	1.40-1.60	2.0-6.0	0.10-0.16	4.5-6.0	Low	0.15	1	8	.5-2
	3-12	5-27	1.40-1.60	2.0-6.0	0.06-0.12	4.5-6.0	Low	0.05			
	12-24	---	---	---	---	---	---	---			
	24	---	---	---	---	---	---	---			
HnA, HnB Hornsville	0-7	6-15	1.44-1.68	6.0-20	0.08-0.12	4.5-6.0	Low	0.20	5	3	1-4
	7-36	35-60	1.58-1.63	0.2-0.6	0.12-0.16	4.5-5.5	Low	0.28			
	36-60	12-35	1.62-1.69	0.6-2.0	0.10-0.14	4.5-5.5	Low	0.24			
Jo Johnston	0-38	5-18	1.30-1.55	2.0-6.0	0.10-0.20	4.5-5.5	Low	0.20	5	5	3-8
	38-60	2-12	1.55-1.65	6.0-20	0.02-0.07	4.5-5.5	Low	0.17			
KeB Kenansville	0-30	3-10	1.50-1.70	6.0-20	0.03-0.07	4.5-6.0	Low	0.15	5	1	.5-2
	30-41	5-18	1.30-1.50	0.6-6.0	0.10-0.16	4.5-5.5	Low	0.15			
	41-70	1-10	1.50-1.70	6.0-20	<0.05	4.5-5.5	Low	0.10			
LuB Lucy	0-23	1-10	1.30-1.70	6.0-20	0.05-0.10	4.5-6.0	Low	0.10	5	1	.5-1
	23-30	10-30	1.40-1.60	2.0-6.0	0.10-0.12	4.5-5.5	Low	0.24			
	30-72	20-45	1.40-1.60	0.6-2.0	0.12-0.14	4.5-5.5	Low	0.28			
MaB Mayodan	0-7	5-20	1.40-1.65	2.0-6.0	0.11-0.17	4.5-6.0	Low	0.24	4	3	.5-2
	7-47	35-60	1.25-1.55	0.6-2.0	0.12-0.18	4.5-5.5	Moderate	0.28			
	47-60	18-40	1.30-1.55	0.6-2.0	0.12-0.18	4.5-5.5	Moderate	0.28			

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodi-bility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH					Pct
MdC2---------- Mayodan	0-5	20-30	1.35-1.55	0.6-2.0	0.12-0.22	4.5-6.0	Low----------	0.32	3	6	.5-2
	5-47	35-60	1.25-1.55	0.6-2.0	0.12-0.18	4.5-5.5	Moderate-----	0.28			
	47-60	18-40	1.30-1.55	0.6-2.0	0.12-0.18	4.5-5.5	Moderate-----	0.28			
NoA---------- Noboco	0-15	2-8	1.55-1.80	6.0-20	0.08-0.11	4.5-6.0	Low----------	0.10	5	---	.5-2
	15-42	18-35	1.45-1.75	0.6-2.0	0.11-0.14	4.5-5.5	Low----------	0.24			
	42-65	20-43	1.45-1.70	0.6-2.0	0.06-0.14	4.5-5.5	Low----------	0.24			
Og---------- Ogeechee	0-8	5-10	1.35-1.45	0.6-2.0	0.10-0.14	4.5-5.5	Low----------	0.10	5	3	1-2
	8-35	20-35	1.55-1.65	0.6-2.0	0.08-0.14	4.5-5.5	Low----------	0.15			
	35-55	30-45	1.60-1.70	0.6-2.0	0.10-0.14	4.5-5.5	Low----------	0.15			
	55-65	15-30	1.55-1.65	0.6-2.0	0.10-0.14	4.5-5.5	Low----------	0.15			
PaC2, PaD2, PaE2- Pacolet	0-3	20-35	1.30-1.50	0.6-2.0	0.10-0.14	4.5-6.5	Low----------	0.24	2	5	.5-1
	3-22	35-65	1.30-1.50	0.6-2.0	0.12-0.15	4.5-6.0	Low----------	0.28			
	22-32	15-30	1.20-1.50	0.6-2.0	0.08-0.15	4.5-6.0	Low----------	0.28			
	32-60	10-25	1.20-1.50	0.6-2.0	0.08-0.15	4.5-6.0	Low----------	0.28			
PgB---------- Pageland	0-7	4-24	1.20-1.40	0.6-2.0	0.15-0.22	3.6-6.5	Low----------	0.43	2	5	.5-2
	7-26	18-35	1.20-1.40	0.2-0.6	0.12-0.18	3.6-5.5	Low----------	0.43			
	26-33	18-45	1.20-1.40	0.2-0.6	0.11-0.18	4.5-6.0	Low----------	0.37			
	33-60	---	---	---	---	---	----------	----			
PlA, PlB, PlC, PlD---------- Pelion	0-14	2-10	1.35-1.75	>6.0	0.03-0.06	4.5-6.5	Low----------	0.15	3	2	.5-2
	14-19	18-35	1.40-1.60	0.6-2.0	0.12-0.16	3.6-5.5	Low----------	0.17			
	19-45	25-50	1.40-1.75	0.06-0.6	0.06-0.10	3.6-5.5	Low----------	0.20			
	45-66	2-40	1.40-1.60	0.6-2.0	0.06-0.10	3.6-5.5	Low----------	0.15			
PxF---------- Poindexter	0-5	5-18	1.30-1.55	2.0-6.0	0.08-0.15	5.1-7.3	Low----------	0.28	3	3	.5-2
	5-17	20-35	1.35-1.45	0.6-2.0	0.13-0.19	5.1-7.3	Low----------	0.24			
	17-24	10-27	1.30-1.55	0.6-6.0	0.08-0.15	5.1-7.3	Low----------	0.24			
	24-60	---	---	0.0-0.06	---	---	----------	----			
Qz---------- Quartzipsamments	0-80	1-14	1.35-1.60	>6.0	0.02-0.11	4.5-7.3	Low----------	0.10	5	2	<1
RnB---------- Rion	0-15	5-20	1.30-1.50	2.0-6.0	0.08-0.12	4.5-6.5	Low----------	0.24	3	3	.5-2
	15-35	18-35	1.40-1.50	0.6-2.0	0.08-0.15	4.5-5.5	Low----------	0.20			
	35-60	2-30	1.30-1.50	2.0-6.0	0.06-0.12	4.5-5.5	Low----------	0.20			
RoD, RoF--------- Rion	0-15	5-20	1.30-1.50	2.0-6.0	0.08-0.12	4.5-5.5	Low----------	0.24	3	8	.5-2
	15-35	18-33	1.40-1.50	0.6-2.0	0.08-0.15	4.5-5.5	Low----------	0.20			
	35-60	2-30	1.30-1.50	2.0-6.0	0.06-0.12	4.5-5.5	Low----------	0.20			
Rv---------- Riverview	0-3	10-27	1.30-1.60	0.6-2.0	0.16-0.24	4.5-6.5	Low----------	0.32	5	5	.5-2
	3-38	18-35	1.20-1.40	0.6-2.0	0.15-0.22	4.5-5.5	Low----------	0.24			
	38-60	4-18	1.20-1.50	2.0-6.0	0.07-0.11	4.5-5.5	Low----------	0.17			
Sm---------- Smithboro	0-8	10-20	1.20-1.40	0.6-2.0	0.15-0.20	4.5-6.0	Low----------	0.28	5	5	.5-3
	8-80	35-60	1.30-1.60	0.06-0.2	0.14-0.18	4.5-5.5	Moderate-----	0.32			
TeA, TeB--------- Tetotum	0-5	5-15	1.50-1.70	2.0-6.0	0.10-0.14	4.5-5.5	Low----------	0.28	4	3	.5-2
	5-65	18-35	1.40-1.65	0.6-2.0	0.14-0.19	4.5-5.5	Low----------	0.32			
TrB, TrC--------- Troup	0-25	1-10	1.30-1.70	6.0-20	0.05-0.10	4.5-6.0	Very low-----	0.10	5	1	<1
	25-46	2-12	1.30-1.70	6.0-20	0.08-0.12	4.5-6.0	Very low-----	0.10			
	46-55	1-10	1.30-1.70	6.0-20	0.05-0.10	4.5-6.0	Very low-----	0.10			
	55-85	15-35	1.40-1.60	0.6-2.0	0.10-0.13	4.5-5.5	Low----------	0.20			

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodi-bility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH					Pct
Ud---------- Udorthents	0-60	10-50	1.30-1.65	0.06-2.0	0.10-0.17	4.5-7.8	Moderate-----	0.28	5	---	0-1
VaB, VaC, VaD---- Vaucluse	0-6	2-10	1.30-1.60	6.0-20	0.04-0.08	4.5-6.0	Low----------	0.15	3	2	<1
	6-16	18-35	1.35-1.75	0.6-2.0	0.10-0.15	3.6-5.5	Low----------	0.24			
	16-50	18-45	1.75-1.95	0.06-0.6	0.04-0.08	3.6-5.5	Low----------	0.24			
	50-60	5-30	1.55-1.90	2.0-6.0	0.04-0.08	3.6-5.5	Low----------	0.17			
VgB, VgC, VgD---- Vaucluse	0-6	0-10	1.30-1.60	6.0-20	0.04-0.07	4.5-6.0	Low----------	0.10	3	2	<2
	6-16	18-35	1.35-1.75	0.6-2.0	0.10-0.15	4.5-5.5	Low----------	0.24			
	16-50	18-45	1.75-1.95	0.06-0.6	0.04-0.08	3.6-5.5	Low----------	0.24			
	50-60	5-30	1.55-1.90	2.0-6.0	0.04-0.08	3.6-5.5	Low----------	0.17			
Wa---------- Wahee	0-5	10-27	1.20-1.50	0.2-2.0	0.15-0.20	4.5-6.0	Low----------	0.28	5	5	.5-5
	5-58	35-60	1.40-1.60	0.06-0.2	0.12-0.20	4.5-5.5	Moderate-----	0.28			
	58-65	10-40	1.20-1.65	0.2-2.0	0.14-0.19	4.5-5.5	Moderate-----	0.28			
WkA, WkB--------- Wickham	0-6	8-15	1.45-1.65	2.0-6.0	0.11-0.16	4.5-6.0	Low----------	0.24	5	3	.5-2
	6-48	18-35	1.30-1.50	0.6-2.0	0.12-0.17	4.5-6.0	Low----------	0.24			
	48-60	3-12	1.45-1.65	2.0-20	0.06-0.12	4.5-5.5	Low----------	0.10			
Wo---------- Woodington	0-9	5-18	1.45-1.65	2.0-6.0	0.10-0.15	4.5-6.5	Low----------	0.20	5	3	2-4
	9-60	5-18	1.45-1.65	2.0-6.0	0.10-0.15	4.5-5.5	Low----------	0.20			
	60-67	3-18	1.45-1.65	2.0-20	0.06-0.15	4.5-5.5	Low----------	0.10			

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 16.--SOIL AND WATER FEATURES

("Flooding" and "water table" and terms such as "rare," "brief," "apparent," and "perched" are explained in the text. The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hard-ness	Uncoated steel	Concrete
					Ft			In			
AaA, AaB---------- Ailey	B	None--------	---	---	4.0-6.0	Perched	Jan-Apr	>60	---	Moderate	Moderate.
AeC, AeD---------- Ailey	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
AgB---------- Alaga	A	Rare--------	---	---	>6.0	---	---	>60	---	Low------	Moderate.
AmB---------- Alamance	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	High.
ApB, ApC, ApD----- Alpin	A	None--------	---	---	>6.0	---	---	>60	---	Low------	High.
BaB, BaC, BaD, BaE, BdB2, BdC2-- Badin	B	None--------	---	---	>6.0	---	---	20-40	Soft	High-----	High.
Bf---------- Bibb	D	Frequent----	Brief or long.	Dec-May	0.5-1.5	Apparent	Dec-Apr	>60	---	High-----	Moderate.
BoB---------- Bonneau	A	None--------	---	---	3.5-5.0	Apparent	Dec-Mar	>60	---	Low------	High.
CaB, CaC, CaD----- Candor	A	None--------	---	---	>6.0	---	---	>60	---	Low------	Low.
CcB, CeB2, CeC2--- Cecil	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
Ch---------- Chewacla	C	Frequent----	Brief or long.	Dec-Apr	0.5-1.5	Apparent	Nov-Apr	>60	---	High-----	Moderate.
Cm*:											
Chewacla---------	C	Frequent----	Brief or long.	Dec-Apr	0.5-1.5	Apparent	Nov-Apr	>60	---	High-----	Moderate.
Chastain---------	D	Frequent----	Very long	Dec-Apr	0-1.0	Apparent	Nov-May	>60	---	High-----	High.
CrA, CrB---------- Claycreek	C	None--------	---	---	1.5-3.0	Perched	Dec-Mar	>60	---	Moderate	Moderate.
Cx---------- Coxville	D	None--------	---	---	0-1.5	Apparent	Nov-Apr	>60	---	High-----	High.
EmA, EmB, EmC----- Emporia	C	None--------	---	---	3.0-4.5	Perched	Nov-Apr	>60	---	Moderate	High.
GeB, GeC, GgB2, GgC2---------- Georgeville	B	None--------	---	---	>6.0	---	---	>60	---	High-----	High.
GoA---------- Goldsboro	B	None--------	---	---	2.0-3.0	Apparent	Dec-Apr	>60	---	Moderate	High.

See footnote at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Uncoated steel	Concrete
					Ft			In			
GtB, GtC, GtD, GtF---------- Goldston	C	None--------	---	---	>6.0	---	---	10-20	Soft	Moderate	High.
HnA, HnB---------- Hornsville	C	Rare--------	---	---	2.5-3.5	Apparent	Dec-Apr	>60	---	High-----	High.
Jo---------- Johnston	D	Frequent----	Brief or long.	Nov-Jul	+1-1.5	Apparent	Nov-Jun	>60	---	High-----	High.
KeB---------- Kenansville	A	None--------	---	---	>6.0	---	---	>60	---	Low------	High.
LuB---------- Lucy	A	None--------	---	---	>6.0	---	---	>60	---	Low------	High.
MaB, MdC2--------- Mayodan	B	None--------	---	---	>6.0	---	---	>60	---	High-----	Moderate
NoA---------- Noboco	B	None--------	---	---	2.5-4.0	Apparent	Dec-Mar	>60	---	Moderate	High.
Og---------- Ogeechee	B/D	None--------	---	---	0-1.0	Apparent	Dec-May	>60	---	High-----	High.
PaC2, PaD2, PaE2-- Pacolet	B	None--------	---	---	>6.0	---	---	>60	---	High-----	High.
PgB---------- Pageland	C	None--------	---	---	1.5-3.0	Perched	Dec-Mar	20-40	Soft	Moderate	Moderate
PlA, PlB, PlC, PlD---------- Pelion	B/D	None--------	---	---	1.0-2.5	Perched	Nov-Apr	>60	---	High-----	High.
PxF---------- Poindexter	B	None--------	---	---	>6.0	---	---	20-40	Soft	Moderate	Moderate
Qz---------- Quartzipsamments	A	None--------	---	---	>6.0	---	---	>60	---	Low------	High.
RnB, RoD, RoF----- Rion	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	High.
Rv---------- Riverview	B	Frequent----	Brief-----	Dec-Mar	3.0-5.0	Apparent	Dec-Mar	>60	---	Low------	Moderate
Sm---------- Smithboro	D	None--------	---	---	0.5-1.5	Apparent	Dec-Mar	>60	---	High-----	High.
TeA, TeB---------- Tetotum	C	Rare--------	---	---	1.5-2.5	Apparent	Dec-Apr	>60	---	High-----	High.
TrB, TrC---------- Troup	A	None--------	---	---	>6.0	---	---	>60	---	Low------	Moderate
Ud---------- Udorthents	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	High.

See footnote at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Uncoated steel	Concrete
					Ft			In			
VaB, VaC, VaD, VgB, VgC, VgD---- Vaucluse	C	None--------	---	---	>6.0	---	---	>60	---	Low------	High.
Wa---------- Wahee	D	Rare--------	---	---	0.5-1.5	Apparent	Dec-Mar	>60	---	High-----	High.
WkA, WkB---------- Wickham	B	Rare--------	---	---	>6.0	---	---	>60	---	Moderate	High.
Wo---------- Woodington	B/D	None--------	---	---	0-1.0	Apparent	Dec-May	>60	---	High-----	High.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 17.--PHYSICAL, CHEMICAL, AND MINERALOGICAL PROPERTIES OF SELECTED SOILS

(Dashes indicate that no determination was made)

Soil name, horizon, and depth in inches	Total: Sand (2-0.05 mm)	Total: Silt (0.05-0.002 mm)	Total: Clay (<0.002 mm)	Exchangeable bases: Ca	Exchangeable bases: Mg	Exchangeable bases: K	Exchangeable bases: Na	Extractable acidity	Cation-exchange capacity: Sum of cations	Cation-exchange capacity: Ammonium acetate	Exchangeable aluminum	ECEC	Base saturation	Aluminum saturation	pH	Clay mineralogy[1]
	Pct			Milliequivalents/100 grams									Pct			
Ailey:																
Ap----- 0 to 8	92.5	6.6	0.9	0.34	0.03	0.04	0.15	3.16	3.71	---	0.16	0.71	14.9	22.0	5.6	---
E1----- 8 to 25	89.3	7.8	2.8	0.13	0.02	0.15	0.79	0.79	1.11	---	0.11	0.43	28.9	25.5	5.6	---
E2-----25 to 30	86.4	7.4	6.2	0.16	0.02	0.04	0.37	1.18	1.77	---	0.27	0.85	33.0	31.4	5.3	---
Bt-----30 to 41	71.9[2]	6.6	21.5	0.29	0.06	0.06	0.15	5.52	6.08	---	0.98	1.53	9.2	63.7	4.9	KK-4,GB-2,HIV-1
Btx----41 to 48	69.5	6.6	23.9	0.23	0.07	0.05	0.41	3.95	4.71	---	0.85	1.62	16.2	52.9	4.9	KK-4,GB-1,HIV-1
C------48 to 61	70.8	5.3	23.8	0.14	0.06	0.03	0.22	3.16	3.61	---	0.92	1.37	12.5	67.1	4.8	---
Alamance:																
A------ 0 to 3	31.0	57.3	11.6	3.89	1.16	0.48	0.12	20.29	25.96	4.00	1.44	7.11	21.8	20.3	4.8	---
Bt1---- 3 to 5	9.6	67.2	23.0	0.19	0.38	0.20	0.16	9.55	10.49	5.20	3.77	4.71	9.0	80.0	4.7	---
Bt2---- 5 to 16	4.4	62.2	33.2	0.08	1.41	0.24	0.19	9.15	11.09	4.00	1.88	3.83	17.5	49.3	5.2	KK-4,GB-2,HIV-1
BC-----16 to 32	3.1	83.1	13.7	0.08	0.51	0.15	0.15	6.36	7.28	6.30	1.33	2.24	12.5	59.3	5.3	---
C1-----32 to 52	5.7	89.3	4.9	0.08	0.22	0.08	0.21	4.37	4.98	3.70	1.44	2.05	12.3	70.2	5.2	---
C2-----52 to 60	6.4	88.9	4.6	0.07	0.22	0.08	0.22	4.37	4.98	4.80	1.33	1.94	12.2	68.6	5.1	---
Alpin:																
A------ 0 to 7	91.0	6.9	1.9	0.22	0.07	0.05	0.18	6.36	6.91	0.70	1.33	1.87	7.9	70.9	4.4	---
E------ 7 to 27	89.9	6.3	3.6	0.11	0.02	0.01	0.16	3.58	3.90	4.30	0.38	0.71	8.2	54.7	4.9	---
E&B1---27 to 44	87.8	7.6	4.5	0.12	0.02	0.02	0.06	2.78	3.01	2.60	0.55	0.78	7.7	70.6	4.8	---
E&B2---44 to 49	93.2	4.6	2.1	0.04	0.00	0.01	0.15	1.59	1.82	0.90	0.44	0.67	12.7	65.7	4.9	---
E'-----49 to 88	94.1	3.5	2.2	0.05	0.01	0.01	0.12	1.19	1.40	1.10	0.22	0.42	14.8	51.7	5.0	---
Bt-----88+	86.1	4.9	8.9	0.11	0.14	0.02	0.16	3.18	3.63	0.20	0.44	0.89	12.3	49.8	4.8	---
Badin:																
Ap----- 0 to 3	81.7	12.6	5.6	2.17	0.91	0.18	0.10	2.62	5.99	---	0.00	3.37	56.2	0.0	7.1	---
Bt----- 3 to 15	15.9	40.3	43.8	1.97	0.91	0.12	0.10	9.74	12.85	---	2.60	5.70	24.2	45.5	4.7	KK-4,HIV-2,MI-1
BC-----15 to 29	8.3	56.7	35.1	0.87	0.42	0.04	0.23	15.37	16.92	---	7.88	9.44	9.2	83.5	4.4	---
Cr-----29 to 40	17.5	51.5	31.0	0.21	0.22	0.03	0.15	13.12	13.73	---	7.77	8.38	4.5	92.7	4.3	---
Candor:																
E------ 3 to 29	93.2	2.1	4.7	0.06	0.02	0.02	0.03	3.56	3.68	---	0.11	0.23	3.3	47.5	5.1	---
Bt-----29 to 58	89.2	1.7	9.1	0.20	0.05	0.03	0.06	3.56	3.89	---	0.22	0.55	8.5	40.2	5.1	KK-4,HIV-3,GB-2
E'-----58 to 75	94.8	.4	4.8	0.12	0.03	0.03	0.01	3.17	3.36	---	0.11	0.30	5.8	36.5	5.2	---
B't----75 to 82	81.7	2.3	16.0	0.44	0.13	0.03	0.06	3.17	3.83	---	0.33	1.00	17.3	33.5	5.1	---

See footnotes at end of table.

TABLE 17.--PHYSICAL, CHEMICAL, AND MINERALOGICAL PROPERTIES OF SELECTED SOILS--Continued

Soil name, horizon, and depth in inches	Total Sand (2-0.05 mm)	Total Silt (0.05-0.002 mm)	Total Clay (<0.002 mm)	Exchangeable bases Ca	Exchangeable bases Mg	Exchangeable bases K	Exchangeable bases Na	Extractable acidity	Cation-exchange capacity: Sum of cations	Cation-exchange capacity: Ammonium acetate	Exchangeable aluminum	ECEC	Base saturation	Aluminum saturation	pH	Clay mineralogy[1]
	Pct			Milliequivalents/100 grams									Pct			
Cecil:																
A------ 0 to 4	76.8	17.6	5.6	0.21	0.09	0.07	0.11	4.12	4.60	---	0.37	0.84	10.4	43.5	4.9	---
Bt1---- 4 to 13	35.5	17.6	46.9	0.99	1.48	0.21	0.14	8.62	11.43	---	0.60	3.41	24.6	17.6	5.0	KK-4,GB-2,HIV-1
Bt2----13 to 25	33.1	20.9	46.1	0.27	0.63	0.14	0.15	10.12	11.30	---	1.78	2.96	10.5	60.0	4.9	KK-4,GB-2,HIV-1
Bt3----25 to 45	29.4	28.8	41.8	0.04	0.17	0.10	0.19	10.49	10.99	---	3.00	3.50	4.6	85.7	4.7	KK-4,GB-1,HIV-1
BC-----45 to 65	28.0	33.7	38.3	0.06	0.13	0.08	0.16	10.87	11.30	---	3.89	4.32	3.8	90.0	4.6	---
Claycreek:																
A------ 0 to 4	22.1	65.6	12.3	2.07	1.33	0.09	0.12	5.25	8.86	---	0.08	3.69	40.8	2.1	6.0	---
Bt1---- 4 to 15	6.7	69.1	24.2	1.42	1.08	0.06	0.22	7.87	10.65	---	2.99	5.77	26.1	51.8	4.8	KK-4,VR-2,MT-1,MI-1
Bt2----15 to 22	5.1	65.2	29.7	0.97	1.70	0.06	0.65	11.99	15.38	---	5.52	8.90	22.0	62.0	4.7	KK-4,VR-2,MT-2,MI-1
Bt3----22 to 33	4.9	68.0	27.1	0.47	1.83	0.06	0.74	13.87	16.97	---	7.55	0.65	18.3	70.9	4.8	KK-3,VR-1,MT-3,MI-1
BC-----33 to 39	6.0	69.7	24.3	0.57	2.16	0.05	0.78	12.37	15.93	---	4.78	8.35	22.4	57.3	5.0	---
C------39 to 63	4.1	62.1	33.8	2.47	6.39	0.12	1.99	9.00	19.97	---	4.11	5.08	55.0	27.2	5.2	---
Coxville:																
A------ 0 to 6	55.5	27.3	17.2	0.89	0.48	0.09	0.13	16.57	18.17	---	2.01	3.60	8.8	55.8	5.0	---
BA----- 6 to 9	41.0	26.2	32.8	0.62	0.28	0.07	0.11	11.84	12.92	---	2.62	3.70	8.4	70.8	4.7	---
Btg1--- 9 to 24	35.2	24.7	40.1	0.42	0.22	0.07	0.12	11.05	11.87	---	3.43	4.25	6.9	80.7	4.7	KK-4,HIV-2
Btg2---24 to 31	32.0	27.8	40.2	0.19	0.31	0.06	0.12	11.05	11.72	---	3.56	4.24	5.8	84.0	4.9	---
Btg3---31 to 54	34.3	22.0	43.7	0.17	0.35	0.05	0.12	10.26	10.95	---	3.43	4.12	6.3	83.3	4.9	KK-4,HIV-1
BCg----54 to 60	27.5	22.0	50.5	0.24	0.37	0.04	0.14	11.05	11.83	---	4.66	5.45	6.6	85.6	5.0	---
Cg-----60 to 80	17.3	28.4	54.3	0.22	0.32	0.05	0.19	11.44	12.22	---	5.59	6.38	6.4	87.7	5.1	---
Goldsboro:																
Ap----- 0 to 9	73.6	19.9	6.5	0.94	0.43	0.22	0.15	7.13	8.87	---	0.39	2.13	19.6	18.3	5.4	---
Bt1---- 9 to 16	56.1	21.0	22.9	1.16	0.35	0.15	0.10	7.13	8.89	---	1.05	2.82	19.8	37.5	4.8	KK-4,HIV-2,GB-2
Bt2----16 to 26	51.0	20.8	28.1	1.14	0.36	0.11	0.12	9.00	10.72	---	1.33	3.05	16.0	43.7	4.7	KK-4,HIV-2,GB-2
Bt3----26 to 42	53.4	18.7	27.9	1.04	0.28	0.07	0.12	8.63	10.14	---	1.33	2.84	14.9	46.9	4.7	KK-4,HIV-1,GB-1
Bt4----42 to 67	53.5	17.8	28.6	0.44	0.21	0.04	0.09	8.25	9.04	---	1.78	2.56	8.7	69.5	4.5	---
C------67 to 75	49.9	17.5	32.6	0.64	0.25	0.04	0.09	7.13	8.14	---	1.67	2.68	12.5	62.2	4.5	---
Noboco:																
A------ 0 to 5	77.4	18.9	3.5	1.39	0.44	0.15	0.15	3.18	5.33	1.60	0.00	2.14	40.3	0.0	6.1	---
BE----- 5 to 8	67.6	23.4	8.9	0.79	0.39	0.19	0.06	2.78	4.22	7.60	0.00	1.43	34.0	0.0	6.1	---
Bt1---- 8 to 23	49.9	20.1	29.9	1.54	0.73	0.43	0.06	5.97	8.73	2.60	0.11	2.88	31.7	3.9	5.5	KK-3,GB-3,HIV-2
Bt2----23 to 38	45.7	15.0	39.2	1.89	0.53	0.30	0.13	7.96	10.82	4.90	0.55	3.41	26.5	16.2	5.0	KK-4,GB-2,HIV-1
Bt3----38 to 52	44.1	12.0	43.7	1.94	0.58	0.14	0.16	7.96	10.80	5.10	0.99	3.83	26.3	26.0	4.9	KK-4,GB-2,HIV-1
Bt4----52 to 62	50.3	11.5	38.0	0.32	0.25	0.04	0.12	7.16	7.90	3.90	1.88	2.63	9.4	71.7	4.3	---

See footnotes at end of table.

TABLE 17.--PHYSICAL, CHEMICAL, AND MINERALOGICAL PROPERTIES OF SELECTED SOILS--Continued

Soil name, horizon, and depth in inches	Total: Sand (2-0.05 mm)	Total: Silt (0.05-0.002 mm)	Total: Clay (<0.002 mm)	Exchangeable bases: Ca	Exchangeable bases: Mg	Exchangeable bases: K	Exchangeable bases: Na	Extractable acidity	Cation-exchange capacity: Sum of cations	Cation-exchange capacity: Ammonium acetate	Exchangeable aluminum	ECEC	Base saturation	Aluminum saturation	pH	Clay mineralogy[1]
	Pct			Milliequivalents/100 grams									Pct			
Pelion:																
Bt-----14 to 19	68.4	7.4	24.2	0.15	0.08	0.02	0.15	8.68	9.09	---	1.55	1.96	4.5	79.2	4.3	KK-4
Btx1---19 to 25	63.9	6.4	29.7	0.30	0.08	0.02	0.14	9.47	10.02	---	1.72	2.27	5.5	75.8	4.4	KK-4
Btx2---25 to 32	64.2	5.6	30.2	0.15	0.08	0.02	0.17	7.50	7.92	---	1.89	2.31	5.3	81.8	4.3	KK-4
BC-----32 to 45	62.5	6.3	31.1	0.20	0.08	0.03	0.17	9.08	9.56	---	2.00	2.48	5.0	80.6	4.3	KK-4
2C-----45 to 50	62.2	6.0	31.9	0.20	0.08	0.04	0.17	9.08	9.57	---	1.89	2.38	5.2	79.2	4.3	---
3C-----50 to 60	74.9	4.3	20.8	0.15	0.08	0.02	0.16	7.89	8.31	---	1.22	1.64	5.0	74.6	4.0	---
4C-----60 to 66	33.3	38.2	28.4	0.23	0.12	0.04	0.16	9.87	10.42	---	2.33	2.89	5.3	80.8	4.3	---
Troup:																
A------ 0 to 5	91.7	5.4	2.8	0.79	0.30	0.05	0.15	2.37	3.66	---	0.03	1.32	35.2	2.5	6.2	---
E------ 5 to 25	87.8	6.9	5.3	0.19	0.09	0.03	0.43	1.97	2.70	---	0.30	1.03	27.0	29.0	4.9	---
Bt-----25 to 45	86.0	6.8	7.2	0.10	0.12	0.03	0.15	1.97	2.37	---	0.40	0.80	16.9	49.9	4.8	---
E'-----45 to 65	92.0	4.3	3.7	0.07	0.06	0.02	0.15	1.58	1.87	---	0.13	0.43	15.7	31.2	4.9	---
B't----65 to 85	81.7	4.3	14.0	0.19	0.10	0.04	0.15	2.37	2.84	---	0.32	0.79	16.6	40.6	4.8	---
Vaucluse:																
A------ 0 to 2	88.8	5.5	5.6	0.07	0.04	0.05	0.16	9.55	9.88	2.00	2.77	3.10	3.4	89.3	3.9	---
E------ 2 to 6	84.4	6.2	9.3	0.06	0.01	0.03	0.14	5.57	5.83	7.60	1.22	1.48	4.4	82.5	4.5	---
Bt----- 6 to 16	65.8	8.1	26.0	0.06	0.00	0.02	0.13	3.58	3.81	2.90	1.11	1.34	6.0	82.7	4.5	KK-4,GB-2
Bx-----16 to 25	73.1	4.6	22.1	0.06	0.03	0.02	0.05	3.58	3.74	2.10	0.66	0.83	4.4	80.0	4.7	KK-4,GB-2
BC-----25 to 50	75.5	3.8	20.6	0.06	0.02	0.02	0.10	3.18	3.41	1.80	0.66	0.89	6.6	74.7	4.7	---
C------50 to 60	73.7	7.1	19.0	0.06	0.00	0.02	0.13	3.18	3.41	2.00	0.83	1.05	6.6	78.6	4.6	---
Wickham:																
Ap----- 0 to 6	59.0	30.6	10.4	2.02	0.91	0.20	0.15	6.31	9.60	---	0.11	3.39	34.2	3.3	6.6	---
Bt1---- 6 to 26	38.1[3]	29.8	32.1	3.01	1.25	0.07	0.18	8.29	12.79	---	0.02	4.53	35.2	0.5	5.8	KK-4,MI-3,VR-1
Bt2----26 to 40	49.9[3]	23.0	27.1	1.96	1.49	0.05	0.15	7.50	11.15	---	0.03	3.69	32.8	0.9	5.9	KK-4,MI-3,VR-1
BC-----40 to 48	64.1	14.4	21.5	1.16	1.33	0.42	0.15	6.31	9.37	---	0.01	3.07	32.7	0.4	5.6	---
C------48 to 80	86.4	4.3	9.3	0.44	0.61	0.03	0.14	3.55	4.77	---	0.00	1.22	25.5	0.0	5.6	---

[1] GB means gibbsite; HIV, hydroxy-Al interlayered vermiculite; KK, kaolinite; MI, mica; MT, montmorillonite; and VR, vermiculite. The number 4 indicates that the clay mineral makes up more than 50 percent of the clay fraction; the number 3, 25 to 50 percent; the number 2, 10 to 25 percent; and the number 1, less than 10 percent.

[2] More than 95 percent quartz.

[3] Approximately 75 percent quartz, 15 percent feldspars, 5 percent mica, and 5 percent heavy and opaque minerals (1/2 weatherable, 1/2 resistant).

TABLE 18.--ENGINEERING INDEX TEST DATA

(Dashes indicate that data were not available. NP means nonplastic)

Soil name, report number, horizon, and depth in inches	Classification		Grain-size distribution					Liquid limit	Plasticity index
			Percentage passing sieve--				Percentage smaller than .005 mm		
	AASHTO	Unified	No. 4	No. 10	No. 60	No. 200			
								Pct	
Alpin:* (S87SC25-2)									
A------ 0 to 10	A-2-4	SM	100	100	35	14	8	---	NP
E2----- 27 to 44	A-2-4	SM	100	100	33	14	9	---	NP
E3----- 44 to 49	A-3(0)	SP-SM	100	100	28	9	5	---	NP
Claycreek:* (S85SC25-23)									
Ap----- 0 to 4	A-6(8)	CL	99	96	90	84	61	35	11
Bt1---- 4 to 15	A-6(19)	ML	100	97	96	93	81	39	12
Bt2---- 15 to 22	A-6(10)	CL	99	98	97	94	77	39	14
BC----- 33 to 39	A-4-1	SC	63	42	40	38	29	32	9
Emporia:* (S87SC25-12)									
Bt1---- 10 to 18	A-4-1	SC	100	99	62	41	29	27	10
Bt2---- 18 to 37	A-7-6(7)	CL	100	99	70	52	43	43	17
Bt3---- 37 to 48	A-4-1	SM	100	99	66	38	29	33	9
BC,C--- 48 to 65	A-7-6(6)	ML	100	100	92	54	44	43	16
Lucy:* (S85SC25-40)									
A------ 0 to 7	A-2-4	SW-SM	100	100	34	11	6	---	NP
E1----- 7 to 19	A-2-4	SM	100	99	29	13	9	---	NP
Bt2---- 30 to 64	A-4(0)	SC	99	99	53	37	33	34	10
Mayodan:* (S85SC25-24)									
A------ 0 to 7	A-4(4)	ML	86	78	63	55	32	---	NP
Bt2---- 22 to 33	A-7-5(18)	MH	98	96	93	92	80	60	25
BC----- 33 to 47	A-7-5(18)	MH	97	94	88	86	74	60	25
Pacolet:** (S86SC25-43)									
Bt1---- 3 to 13	A-7-5(13)	MH	100	100	88	74	64	55	15
BC----- 26 to 45	A-4(5)	ML	100	100	81	61	48	---	NP
Pelion:* (S85SC25-16)									
A------ 0 to 7	A-2-4	SM	100	98	37	13	6	---	NP
Btx1--- 19 to 25	A-7-5(4)	SC	100	97	56	41	37	47	20
C------ 45 to 60	A-7-6(7)	CL	100	100	89	59	47	41	16

See footnotes at end of table.

TABLE 18.--ENGINEERING INDEX TEST DATA--Continued

Soil name, report number, horizon, and depth in inches	Classification		Grain-size distribution					Liquid limit	Plasticity index
			Percentage passing sieve--				Percentage smaller than .005 mm		
	AASHTO	Unified	No. 4	No. 10	No. 60	No. 200			
								Pct	
Vaucluse:* (S87SC25-1)									
A----- 0 to 2	A-2-4	SM	100	98	50	18	11	---	NP
E----- 2 to 6	A-2-4	SM	99	97	55	18	11	---	NP
Bt---- 6 to 16	A-4(0)	SC	100	95	63	36	28	31	10
Btx--- 16 to 25	A-2-6(0)	SC	98	90	53	29	23	35	11

* Location of pedon sampled is the same as that given for the typical pedon in "Soil Series and Their Morphology."

** This pedon is 5 miles south of Pageland; 1.5 miles west on South Carolina Highway 68; 0.2 mile north on secondary highway 40; 0.4 mile northwest on a farm road; 100 feet southeast of the road.

TABLE 19.--CLASSIFICATION OF THE SOILS

Soil name	Family or higher taxonomic class
Ailey	Loamy, siliceous, thermic Arenic Kanhapludults
Alaga	Thermic, coated Typic Quartzipsamments
Alamance	Fine-silty, siliceous, thermic Typic Hapludults
Alpin	Thermic, coated Typic Quartzipsamments
Badin	Clayey, mixed, thermic Typic Hapludults
Bibb	Coarse-loamy, siliceous, acid, thermic Typic Fluvaquents
Bonneau	Loamy, siliceous, thermic Arenic Paleudults
Candor	Sandy, siliceous, thermic Arenic Paleudults
Cecil	Clayey, kaolinitic, thermic Typic Kanhapludults
Chastain	Fine, mixed, acid, thermic Typic Fluvaquents
Chewacla	Fine-loamy, mixed, thermic Fluvaquentic Dystrochrepts
Claycreek	Fine-silty, siliceous, thermic Ultic Hapludalfs
Coxville	Clayey, kaolinitic, thermic Typic Paleaquults
Emporia	Fine-loamy, siliceous, thermic Typic Hapludults
Georgeville	Clayey, kaolinitic, thermic Typic Hapludults
Goldsboro	Fine-loamy, siliceous, thermic Aquic Paleudults
Goldston	Loamy-skeletal, siliceous, thermic, shallow Typic Dystrochrepts
Hornsville	Clayey, kaolinitic, thermic Aquic Hapludults
Johnston	Coarse-loamy, siliceous, acid, thermic Cumulic Humaquepts
Kenansville	Loamy, siliceous, thermic Arenic Hapludults
Lucy	Loamy, siliceous, thermic Arenic Kandiudults
Mayodan	Clayey, mixed, thermic Typic Hapludults
Noboco	Fine-loamy, siliceous, thermic Typic Paleudults
Ogeechee	Fine-loamy, siliceous, thermic Typic Ochraquults
Pacolet	Clayey, kaolinitic, thermic Typic Kanhapludults
Pageland	Fine-silty, siliceous, thermic Ultic Hapludalfs
Pelion	Fine-loamy, siliceous, thermic Aquic Hapludults
Poindexter	Fine-loamy, mixed, thermic Typic Hapludalfs
Quartzipsamments	Quartzipsamments
Rion	Fine-loamy, mixed, thermic Typic Hapludults
Riverview	Fine-loamy, mixed, thermic Fluventic Dystrochrepts
Smithboro	Clayey, kaolinitic, thermic Aeric Paleaquults
Tetotum	Fine-loamy, mixed, thermic Aquic Hapludults
Troup	Loamy, siliceous, thermic Grossarenic Kandiudults
Udorthents	Udorthents
Vaucluse	Fine-loamy, siliceous, thermic Typic Kanhapludults
Wahee	Clayey, mixed, thermic Aeric Ochraquults
Wickham	Fine-loamy, mixed, thermic Typic Hapludults
Woodington	Coarse-loamy, siliceous, thermic Typic Paleaquults

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