United States Department of Agriculture

Soil Conservation Service

In cooperation with North Carolina Department of Environment, Health, and Natural Resources; North Carolina Agricultural Research Service; North Carolina Cooperative Extension Service; United States Department of Agriculture, Forest Service; and Davidson County Board of Commissioners

Soil Survey of Davidson County, North Carolina

How To Use This Soil Survey

General Soil Map

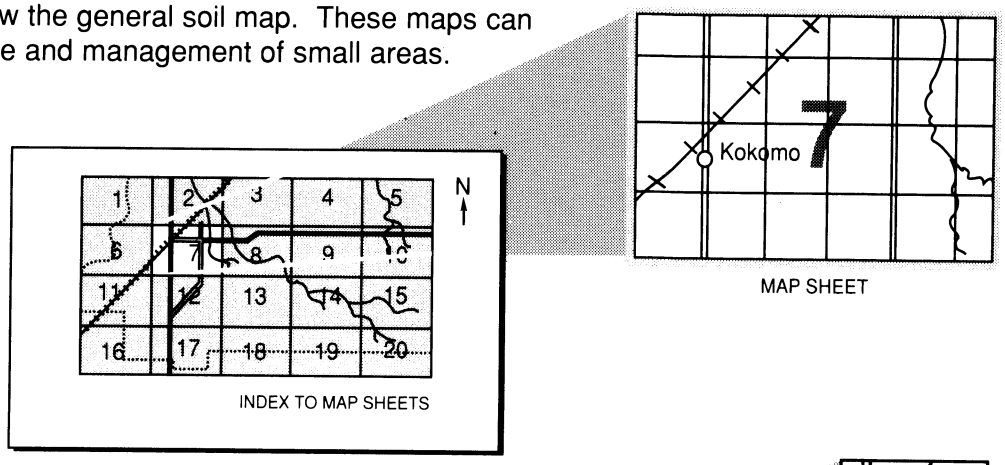
The general soil map, which is the color map preceding the detailed soil maps, shows the survey area divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

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.

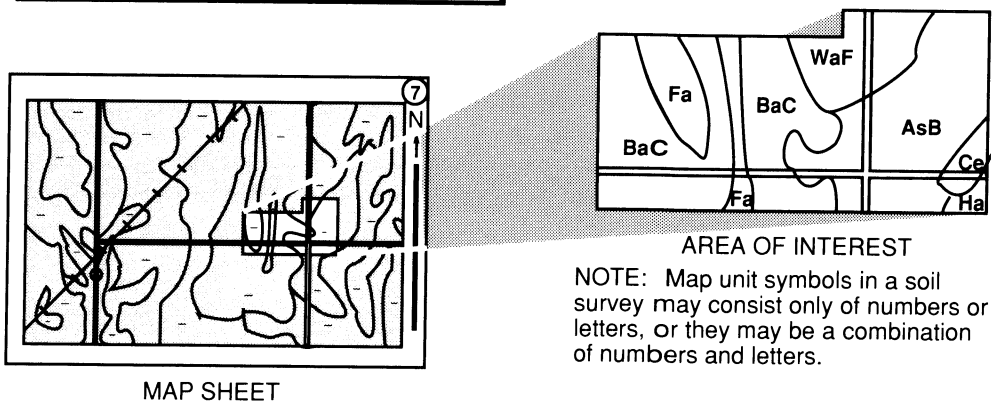
Detailed Soil Maps

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

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



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



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 North Carolina Agricultural Research Service, 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 1984. Soil names and descriptions were approved in 1985. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1985. This soil survey was made cooperatively by the Soil Conservation Service; the North Carolina Department of Environment, Health, and Natural Resources; North Carolina Agricultural Research Service; North Carolina Cooperative Extension Service; United States Department of Agriculture, Forest Service; and the Davidson County Board of Commissioners. The survey is part of the technical assistance furnished to the Davidson 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.

The first soil survey of Davidson County was published in 1915 by the U.S. Department of Agriculture. This survey updates the first survey, provides more detailed maps on aerial photographs, and contains more interpretive information *(13)*.

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: Historic Jersey Church near Linwood in Davidson County. The very deep, dark red soils, formerly known as "Jersey land," are now recognized as the Davidson series.

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Issued July 1994

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Foreword

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

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

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow over bedrock. Some are too unstable to be used as a foundation for buildings or roads. Wet soils and some clayey 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 North Carolina Cooperative Extension Service.

Coy A. Garrett
State Conservationist
Soil Conservation Service

Soil Survey of Davidson County, North Carolina

By Clifford M. McCachren, Soil Conservation Service

Soils surveyed by Clifford M. McCachren and Marcus R. Bostian, Soil Conservation Service, and Joseph A. Hinton and David T. Knight, North Carolina Department of Environment, Health, and Natural Resources

United States Department of Agriculture, Soil Conservation Service,
in cooperation with
North Carolina Department of Environment, Health, and Natural Resources; North Carolina Agricultural Research Service; North Carolina Cooperative Extension Service; United States Department of Agriculture, Forest Service; and Davidson County Board of Commissioners

DAVIDSON COUNTY is in the central part of North Carolina (fig. 1). It is bounded on the north by Forsyth County, on the west by Davie and Rowan Counties, on the south by Montgomery County, and on the east by Randolph and Guilford Counties. It has a total area of 362,611 acres, or about 567 square miles. The total land area is 348,619 acres. The population of the county in 1980 was 113,162 *(19)*.

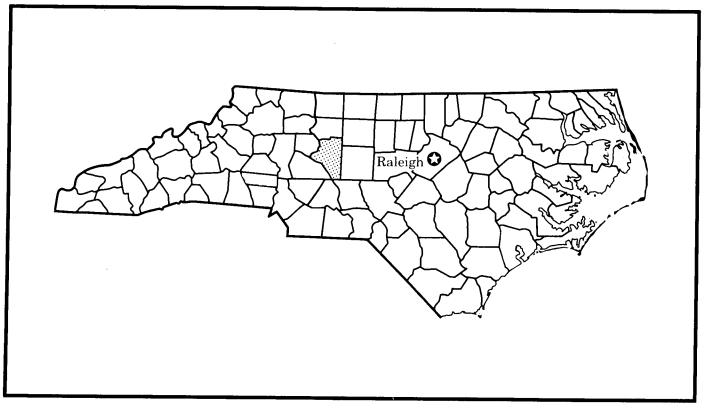

Figure 1.—Location of Davidson County in North Carolina.

General Nature of the County

This section gives general information about Davidson County. It describes history and development; physiography, relief, and drainage; water resources; geology and mineral resources; and climate.

History and Development

Davidson County was established in 1822 from a part of Rowan County by an act of the North Carolina General Assembly. It was named in honor of General William Lee Davidson, who was killed in a battle with British forces during the Revolutionary War. Lexington became the county seat in 1824.

The first settlers were immigrants from the British Isles, who came by way of New Jersey to the Yadkin River Valley in the 1720's *(11)*. They claimed land in the Linwood area and called their community Jersey Settlement. The highly productive soils in the area provided the early settlers with a variety of agricultural crops and supported an abundance of native wildlife. The deep, dark red soil became known as "Jersey land." It is now recognized as the Davidson series and is still used as cropland.

By the early 1800's, the agricultural economy was thriving. Corn, wheat, cotton, and tobacco were the main crops. Wheat from the farms on Jersey land won

first prize at the Chicago World's Fair in 1893. Meanwhile, tobacco grown in the county won first prize at the Vienna, Austria Exposition *(8)*. Important agricultural products include tobacco, dairy products, poultry and poultry products, swine, corn, soybeans, and beef.

After the county was established, progress toward industrialization was rapid. Today, the economy of Lexington and of the county is based primarily on manufacturing. Products manufactured in the area include furniture, textile fabrics and yarns, clothing, fiber glass, machinery, ceramic tile and brick, batteries, and various food products *(9)*.

Because the county is within the rapidly developing Piedmont industrial crescent and is close to the large industrial and commercial centers of Greensboro, Winston-Salem, and High Point, its population has been increasing steadily.

Physiography, Relief, and Drainage

Davidson County is in the center of the Piedmont physiographic region of North Carolina. Most of the county is characterized by gently rolling to hilly landscapes. In the southern part of the county, a number of prominent peaks in the Uwharrie mountain chain rise above the general landscape. Eight or more of these peaks are at an elevation of more than 1,000 feet. Flat Swamp Mountain, the highest, is at an elevation of 1,180 feet. The lowest elevation in the county is about 510 feet at Badin Lake on the southern boundary of the county.

The county is drained by the Yadkin River and its tributaries, which flow south or southwestward. Major watersheds are Muddy Creek, Reedy Creek, Swearing Creek, Abbots Creek, Bushy Fork, Rich Fork, Hamby's Creek, Flat Swamp Creek, and Lick Creek.

Water Resources

Davidson County has an adequate supply of water for industrial and domestic use from rivers, creeks, lakes, and ground water. A network of county and municipal water systems distributes most of the water used in the county.

The largest cities, Lexington and Thomasville, are supplied by Lake Tom-a-lex on Abbots Creek. Denton is supplied from the backwaters of Tuckertown Reservoir on the Yadkin River. Some parts of the county that are not supplied by these municipal systems are supplied by a corporation that takes water from the Yadkin River south of U.S. Highway 64. Many private wells are in use in rural areas.

Two major lakes impound the waters of the Yadkin River in the southwestern part of the county for hydroelectric generation. High Rock Lake, which has a surface area of more than 15,000 acres, is a major recreational site in the region. More than 1,000 acres of backwater from Tuckertown Reservoir, which is adjacent to the county, provides recreational access to that larger body of water.

Numerous smaller lakes and ponds and annual and perennial streams throughout the county provide water for livestock, irrigation, and recreational purposes.

Geology and Mineral Resources

P.A. Carpenter, III, geologist, North Carolina Department of Natural Resources and Community Development, helped prepare this section.

Davidson County is on the boundary between two major geologic belts, the Charlotte Belt to the north and the Carolina Slate Belt to the south. This boundary trends northeastward from near Southmont to Thomasville.

The Charlotte Belt is characterized by felsic (light colored) and mafic (dark colored) igneous rocks. The felsic rocks, primarily granites, can be divided into two main types—rocks that have all minerals of about the same size, mainly in the Thomasville area, and rocks that have large feldspar crystals surrounded by smaller grains, mainly in the northwestern part of the county. The mafic rocks, primarily gabbro, are dominant in the Linwood and Lexington areas.

The Carolina Slate Belt includes various types of volcanic and sedimentary rocks, such as mudstone, and mixtures of volcanic debris. The volcanic rocks are divided into felsic and mafic types. The felsic volcanic rocks are very resistant to weathering and underlie the more prominent topographic features, such as Flat Swamp Mountain, Bald Mountain, Wildcat Mountain, and Grist Mountain.

The sedimentary rocks consist of such rocks as mudstone and siltstone that have been physically and chemically altered by processes of metamorphism to a more indurated state. Much of this rock is intermediate in hardness between the parent sedimentary rocks and slate and is classified as argillite. Rocks of this type are known locally as "Carolina Slate." In places these metamorphic rocks have been intruded by dark colored igneous rock (diabase) that formed narrow bands of material called dikes.

A variety of rocks and minerals are being mined or have been mined in the county. Quarries that produce both felsic and mafic igneous rock for road aggregate are common in the county. Sand deposited along streams and sand that occurs in some lightly weathered zones of felsic igneous rock are used for construction

purposes and as roadfill material. Clays that formed from weathering mudstone are a primary material used for brick and tile products. In the southern part of the county, shale, the hard layers within the mudstone, is quarried and marketed as "flagstone." This rock is used extensively for flooring, stair treads, borders, coping, and windowsills.

Gold, silver, copper, lead, and zinc were mined primarily in the 1800's from deposits in rocks of the Carolina Slate Belt. The total value of the gold produced has been estimated at several million dollars. Major production was from the Silver Hill Mine, which was in the area known as the Cid Mining District.

Climate

Davidson County is hot and generally humid in summer because of the moist maritime air. Winter is moderately cold but short because the mountains to the west protect the area against many cold waves. Precipitation is evenly distributed throughout the year and is adequate for all of the crops grown in most years.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Lexington, North Carolina, in the period 1951 to 1981. 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 42 degrees F and the average daily minimum temperature is 32 degrees. The lowest temperature on record, which occurred at Lexington on January 31, 1981, 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 Lexington on July 29, 1952, is 107 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 average annual precipitation is about 45 inches. Of this, 23 inches, or 50 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 19 inches. The heaviest 1-day rainfall during the period of record was 6.57 inches at Lexington on October 15, 1954. Thunderstorms occur on about 46 days each year. Every few years in late summer or autumn, a tropical storm moving inland from the Atlantic Ocean causes extremely heavy rain for 1 to 3 days.

The average seasonal snowfall is 8 inches. The greatest snow depth at any one time during the period of record was 13 inches. Every few years, snow covers the ground for a few days to a week, but few days have as much as 1 inch of snow on the ground. The number of such days varies greatly from year to year.

The average relative humidity in midafternoon is about 55 percent. Humidity is higher at night, and the average at dawn is about 85 percent. The sun shines 65 percent of the time possible in summer and 55 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 Davidson County. 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 studied many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. It extends from the surface down into the material from which the soil formed.

Soils occur in an orderly pattern that results from the combined influence over time of climate, parent material, relief, and plants and animals. Each kind of soil is associated with a particular kind of landscape or with a segment of the landscape. By observing the soils and relating their position to specific segments of the landscape, soil scientists develop a concept, or model, of how the soils were formed. This model enables the soil scientists 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 the soils. After describing the soils and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. The system of taxonomic classification used in the United States is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area are generally collected for laboratory analyses and for engineering tests. The data from these analyses and tests and from field-observed characteristics and soil properties are used to predict behavior of the soils under different uses. Interpretations 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.

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 relatively 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 be at a specific level in the soil on a specific date.

Soil boundaries are drawn on aerial photographs and each delineation is identified as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in accurately locating boundaries.

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 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 minor soils.

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

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

General Soil Map Units

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

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

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

Davidson County has been divided into nine general soil map units. Descriptions of the soils and landscapes in these map units follow. Diagrams are included to show soil-landscape relationships in six of these map units.

Several inconsistencies in joining the general soil maps for Davidson and Forsyth Counties occur between U.S. Highway 52 and Muddy Creek and east of North Carolina Highway 109. In both areas in Forsyth County the Wedowee-Louisburg Association meets the Pacolet or the Cecil-Pacolet general soil map unit in Davidson County. The join could not be made because the coarse-textured Louisburg soil does not occur in Davidson County. Several other minor differences in soil names occur, but the association boundaries join with those of the general soil map units.

1. Chewacla-Congaree

Nearly level, very deep, somewhat poorly drained to well drained soils that have a loamy surface layer and subsoil; formed in recent alluvium on flood plains

This map unit is in the northern part of the county on flood plains along the Yadkin River and its major tributaries (fig. 2). The Chewacla soils are frequently flooded, and the Congaree soils are occasionally flooded for brief periods.

This map unit makes up about 3 percent of the county. It is about 75 percent Chewacla soils, 14 percent Congaree soils, and 11 percent soils of minor extent.

The somewhat poorly drained Chewacla soils are throughout the smaller flood plains or are further from channels than the Congaree soils on the larger flood plains. Typically, the surface layer is brown loam. The subsoil is loamy material in shades of brown and gray.

The well drained and moderately well drained Congaree soils are on long, slightly elevated strips beside the larger stream channels. The surface layer is dark brown loam. The underlying material is yellowish brown and strong brown loam.

The minor soils include the moderately well drained Altavista and the somewhat poorly drained Wahee soils that are on nearly level and gently sloping stream terraces or flood plains generally adjacent to the upland side slopes. Altavista soils are not flooded or are occasionally flooded. Wahee soils are occasionally flooded.

Most of the soils in this map unit are used as woodland, but many areas are used for cultivated crops and pasture. The wetness and the flooding are the main limitations affecting urban and recreational uses.

2. Pacolet

Gently sloping to steep, very deep, well drained soils that have a loamy surface layer and a clayey subsoil; formed in material weathered from felsic crystalline rocks on uplands

This map unit is on long, narrow, gently sloping and strongly sloping ridges and moderately steep and steep side slopes. It is dissected by many drainageways that have narrow flood plains (fig. 3). It is in the western part of the county, along the Yadkin River.

This map unit makes up about 10 percent of the county. It is about 80 percent Pacolet soils and 20 percent soils of minor extent.

Typically, the surface layer of the Pacolet soils is

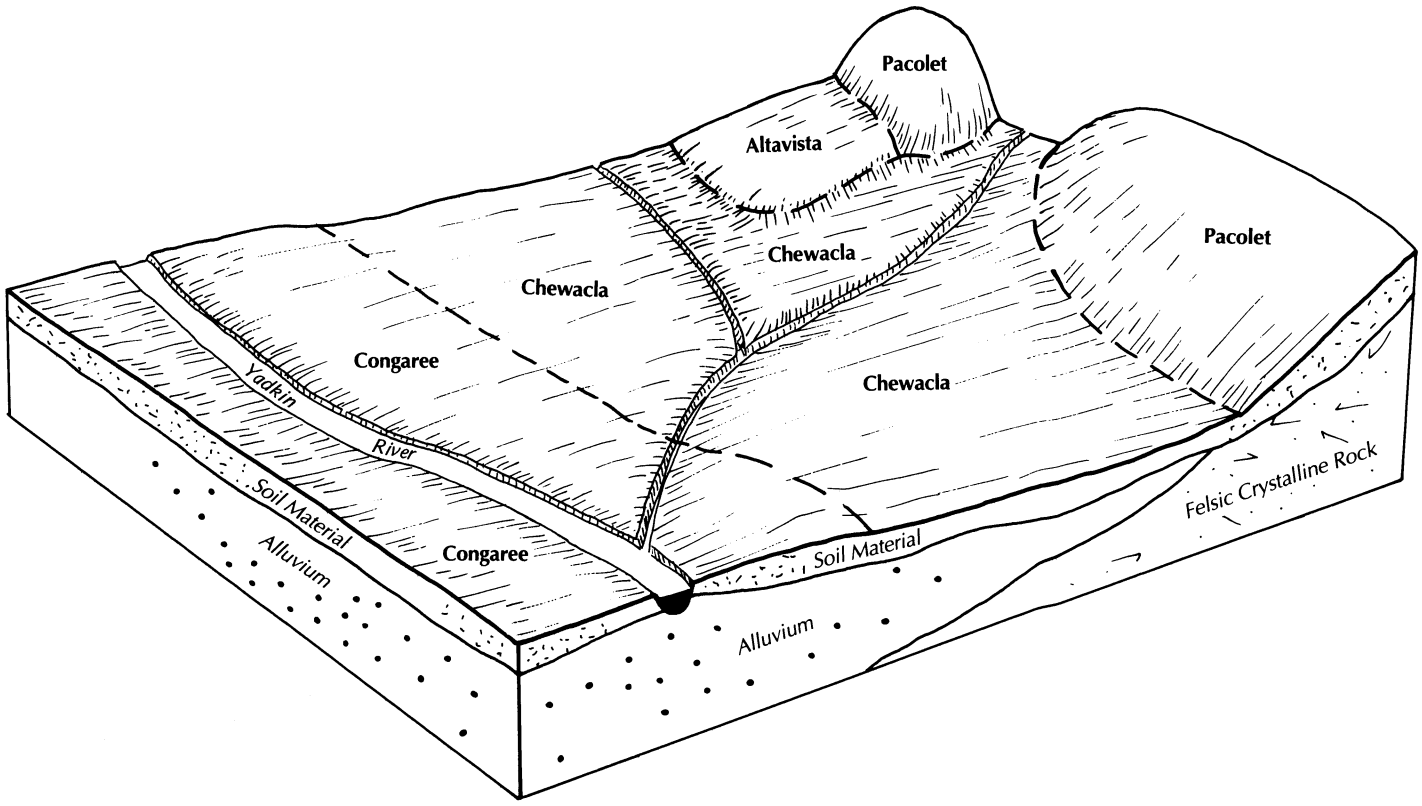

Figure 2.—The relationship of soils, parent material, and landscape in the Chewacla-Congaree map unit as related to those in the Pacolet map unit.

very dark grayish brown sandy loam and the subsoil is predominantly red sandy clay.

The minor soils include Appling, Cecil, Chewacla, and Wedowee soils. The well drained Appling and Cecil soils are on the broader ridges, and the well drained Wedowee soils are intermingled with areas of the Pacolet soil on ridges and side slopes. The somewhat poorly drained, frequently flooded Chewacla soils are on the narrow flood plains.

Most of the soils in this map unit are used as woodland. Many areas on ridges and the less sloping side slopes are used as cropland or pasture. The slope is the main limitation affecting cropland and urban and recreational uses.

3. Cecil-Pacolet

Gently sloping to moderately steep, very deep, well drained soils that have a loamy surface layer and a clayey subsoil; formed in material weathered from felsic crystalline rocks on uplands

This map unit is on broad to narrow, gently sloping ridges and strongly sloping and moderately steep side slopes. The ridges are dissected by numerous drainageways that have flood plains of narrow to medium width (fig. 4). The map unit makes up most of the northwestern part of the county.

This map unit makes up about 24 percent of the county. It is about 35 percent Cecil soils, 29 percent Pacolet soils, and 36 percent soils of minor extent.

The Cecil soils are on the broad, gently sloping ridges and strongly sloping side slopes. Typically, they have a surface layer of brown sandy loam and a subsoil of thick, predominantly red clay.

The Pacolet soils are on the broad to narrow, gently sloping ridges and strongly sloping and moderately steep side slopes. Typically, they have a surface layer of very dark grayish brown sandy loam and a subsoil of predominantly red sandy clay.

The minor soils include Appling, Chewacla, Enon, Vance, and Wedowee soils. Appling soils are yellower than the major soils. They are on broad ridges. Wedowee and Vance soils are browner than the major soils. They are on broad to narrow ridges and narrow side slopes. Enon soils are browner and less acid than the major soils. They are on ridges where the geologic

material is intermediate or mafic crystalline rocks. The somewhat poorly drained, frequently flooded Chewacla soils are on flood plains along streams.

Most of the soils in this map unit are used as cropland or pasture. The soils in the moderately steep and steep areas are used mainly as woodland. The slope is the main limitation affecting cropland and urban and recreational uses.

4. Vance-Wedowee-Pacolet

Gently sloping to strongly sloping, very deep, well drained soils that have a loamy surface layer and a clayey subsoil; formed in material weathered from felsic crystalline rocks on uplands

This map unit is on broad to narrow, gently sloping ridges and gently sloping and strongly sloping side slopes. It is in the north-central part of the county.

This map unit makes up about 2 percent of the county. It is about 35 percent Vance soils, 25 percent Wedowee soils, 15 percent Pacolet soils, and 25 percent minor soils.

The Vance soils are mostly on the gently sloping, broad ridges, and in some places they are on strongly sloping side slopes. Typically, they have a surface layer of yellowish brown sandy loam. The subsoil is predominantly clay. It is yellowish brown and very firm.

The Wedowee soils are on the moderately broad to narrow, gently sloping ridges and on narrow, strongly sloping side slopes. Typically, they have a surface layer of yellowish brown sandy loam. The subsoil is predominantly sandy clay. It is strong brown.

The Pacolet soils are on the broad to narrow, gently sloping ridges and strongly sloping side slopes. Typically, they have a surface layer of very dark grayish brown sandy loam. The subsoil is predominantly red sandy clay.

The minor soils include Appling, Cecil, and Chewacla soils. The well drained Appling and Cecil soils are on broad ridges, and the somewhat poorly drained, frequently flooded Chewacla soils are on flood plains.

In this map unit, most of the soils on the gently sloping ridges are used as cropland or pasture. The soils on the steeper parts of the map unit are used mostly as woodland. Some are used as pasture. The slope is the main limitation affecting cropland.

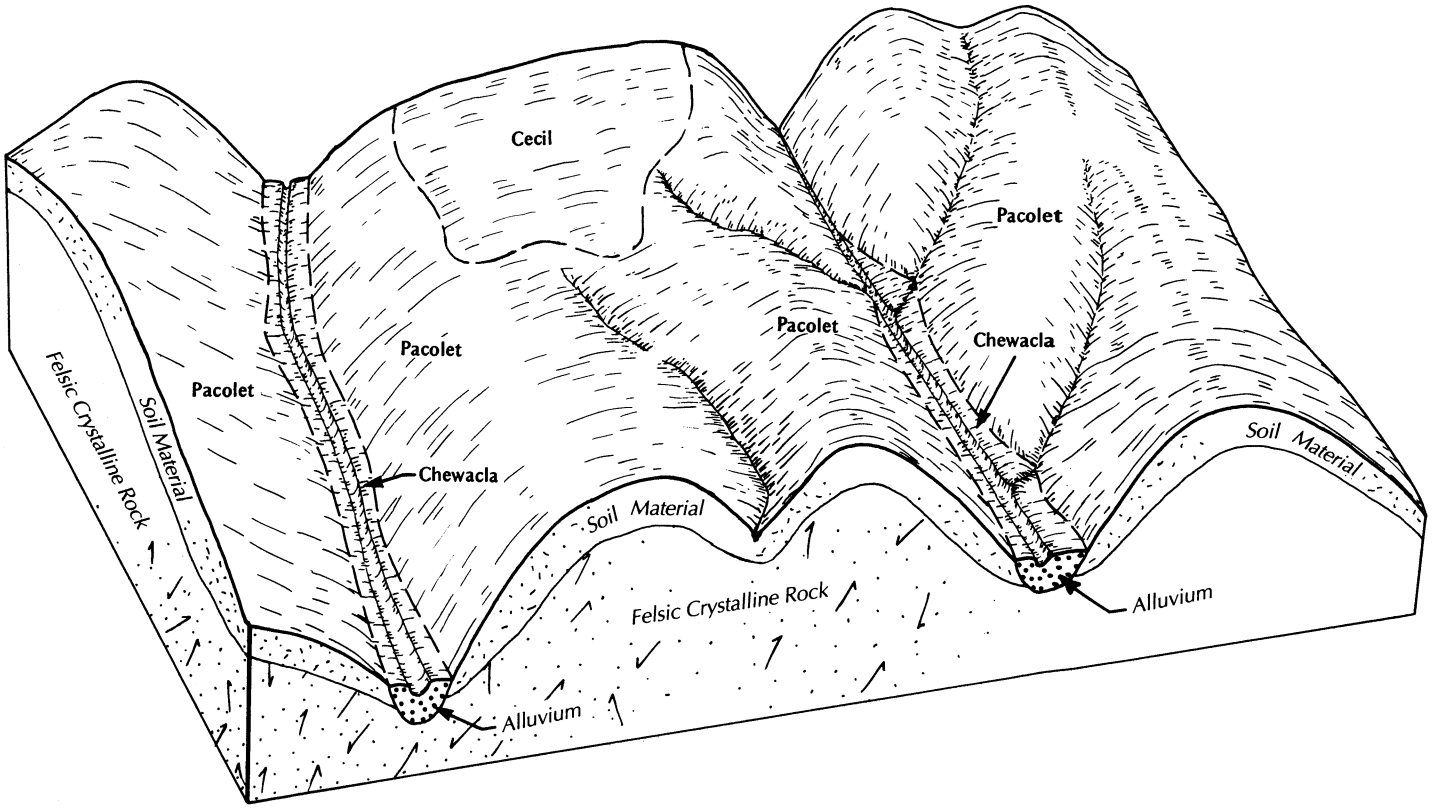

Figure 3.—The relationship of soils, parent material, and landscape in the Pacolet map unit.

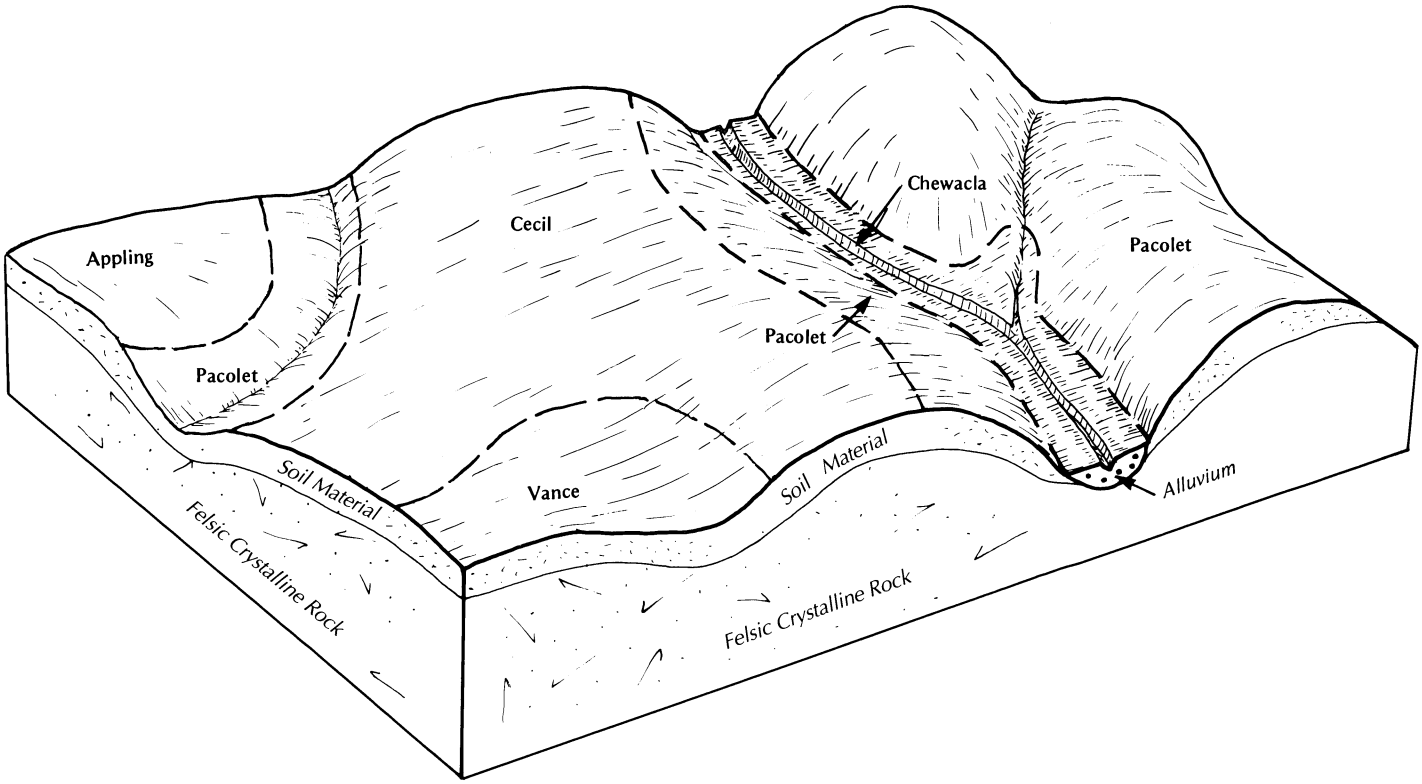

Figure 4.—The relationship of soils, parent material, and landscape in the Cecil-Pacolet map unit.

The main limitations affecting most urban and recreational uses are the slope in areas of the Pacolet and Wedowee soils and a moderate shrink-swell potential, slow permeability, and the slope in areas of the Vance soils.

5. Davidson-Mecklenburg

Gently sloping to moderately steep, very deep, well drained soils that have a loamy surface layer and a clayey subsoil; formed in material weathered from mafic and intermediate crystalline rocks on uplands

This map unit is on broad, gently sloping ridges that have broad to narrow, strongly sloping and moderately steep side slopes. It is dominantly southwest of Lexington, in the vicinity of Linwood, Southmont, and Cotton Grove.

This map unit makes up about 6 percent of the county. It is about 58 percent Davidson soils, 22 percent Mecklenburg soils, and 20 percent soils of minor extent.

The Davidson soils are on the broad, gently sloping ridges and strongly sloping and moderately steep side slopes. Typically, they have a surface layer of dark reddish brown loam and a very thick subsoil of dark reddish brown and dark red clay.

The Mecklenburg soils are on the broad, gently sloping ridges and broad to narrow, strongly sloping side slopes. Typically, they have a surface layer of reddish brown loam. The subsoil is predominantly yellowish red clay.

The minor soils include Cecil, Armenia, Chewacla, and Iredell soils. The well drained Cecil soils are intermingled with areas of the major soils where the geologic material is felsic crystalline rocks. The poorly drained, occasionally flooded Armenia soils are at the head of drainageways and on small flood plains. The somewhat poorly drained, frequently flooded Chewacla soils are on flood plains. The moderately well drained and somewhat poorly drained Iredell soils are on smooth ridges and on broad, gentle slopes at the head of drainageways.

Most of the soils in this map unit are used as cropland or pasture. The rest are mainly used as woodland. The slope is the main limitation affecting cropland.

The slope and moderate permeability are the main limitations affecting most urban and recreational uses in

areas of the Davidson soils. Slow permeability, a moderate shrink-swell potential, and the slope are the main limitations in areas of the Mecklenburg soils.

6. Poindexter-Enon-Zion

Gently sloping to steep, moderately deep and very deep, well drained soils that have a loamy surface layer and a loamy or clayey subsoil; formed in material weathered from mafic and intermediate crystalline rocks on uplands

This map unit is on narrow to broad, gently sloping ridges and strongly sloping to steep side slopes. In areas of the narrow ridges and steep side slopes, the map unit is dissected by many drainageways that have narrow flood plains. It is mainly in the northeastern part of the county.

This map unit makes up about 18 percent of the county. It is about 30 percent Poindexter soils, 26 percent Enon soils, 20 percent Zion soils, and 24 percent minor soils.

The moderately deep Poindexter soils are dominantly on the steeper side slopes, but in places they are on gently sloping ridges. Typically, they have a surface layer of yellowish brown sandy loam and a subsoil of yellowish brown and brownish yellow sandy clay loam and sandy loam. Weathered bedrock is at a depth of 36 inches.

The very deep Enon soils are mainly on the broad, gently sloping ridges and strongly sloping side slopes. Typically, they have a surface layer of yellowish brown fine sandy loam. The subsoil is predominantly strong brown and yellowish brown clay.

The moderately deep Zion soils are mainly on the broad, gently sloping ridges and strongly sloping to steep side slopes. Typically, they have a surface layer of dark brown sandy loam and a subsoil of predominantly dark yellowish brown and yellowish brown clay. Weathered bedrock is at a depth of 33 inches, and hard bedrock is at a depth of 39 inches.

The minor soils include Cecil, Chewacla, Mecklenburg, Sedgefield, and Vance soils. Generally, the well drained Mecklenburg, Vance, and Cecil soils are on broad ridges. Mecklenburg soils are redder than the major soils. Vance and Cecil soils are more acid than the major soils. They are in areas of felsic crystalline geologic material. The moderately well drained and somewhat poorly drained Sedgefield soils are on nearly level and gently sloping upland ridges and at the head of drainageways. The somewhat poorly

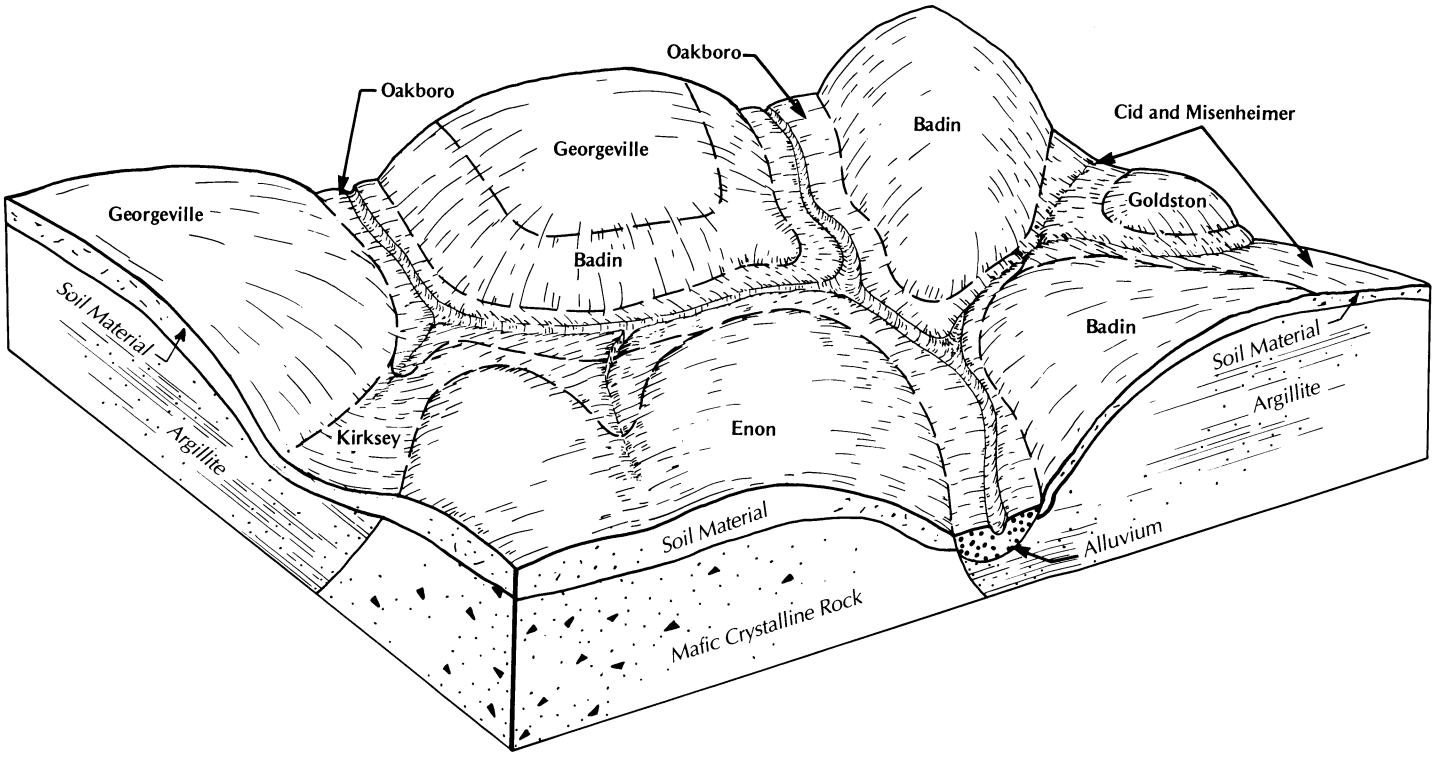

Figure 5.—The relationship of soils, parent material, and landscape in the Badin-Georgeville-Enon map unit.

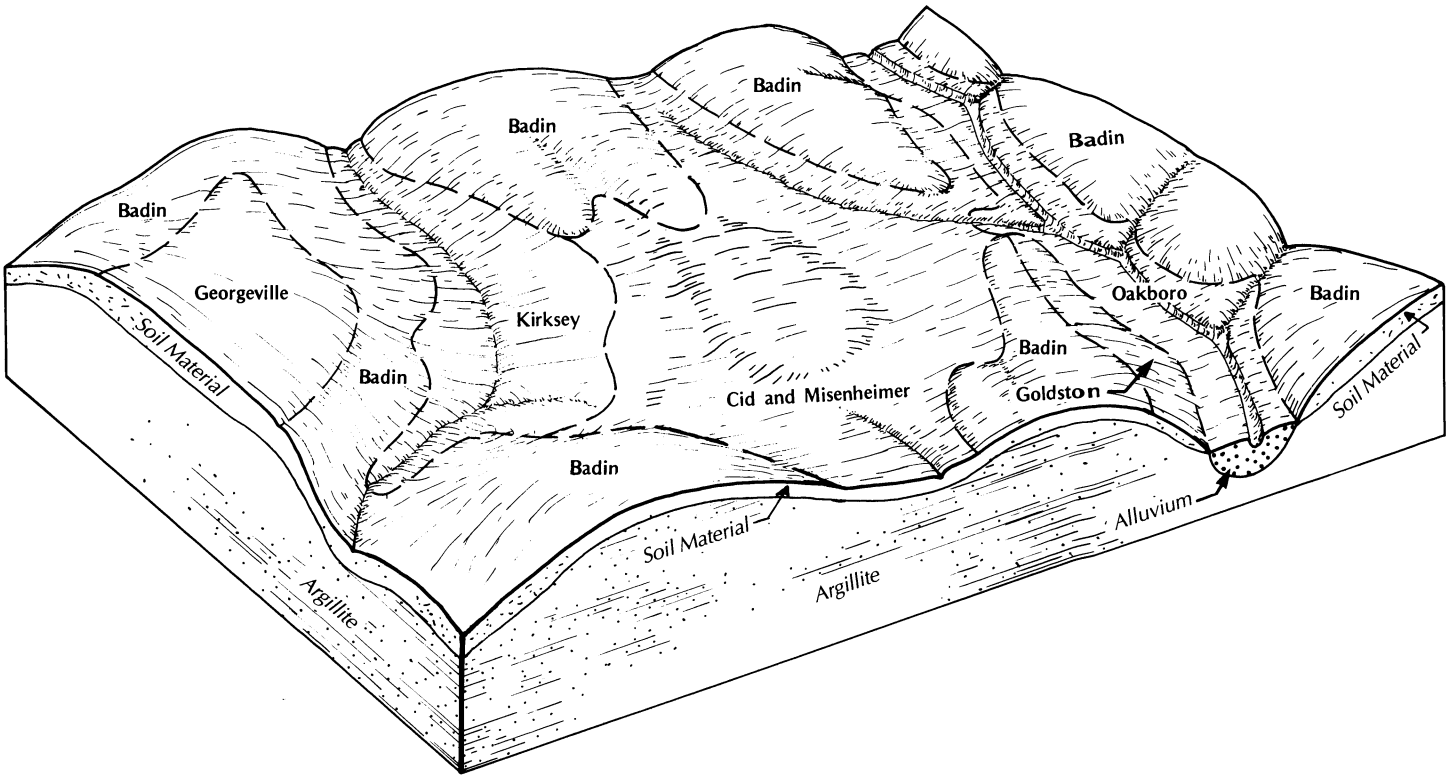

Figure 6.—The relationship of soils, parent material, and landscape in the Badin-Kirksey-Cid-Misenheimer map unit.

drained, frequently flooded Chewacla soils are on flood plains.

Most of the soils in this map unit are used as woodland, but many of the gently sloping and strongly sloping areas are used as cropland or pasture. The slope is the main limitation affecting cropland.

The main limitations affecting urban and residential uses are the depth to bedrock and the slope in areas of the Poindexter soils; a high shrink-swell potential, slow permeability, and the slope in areas of the Enon soils; and the depth to bedrock, a high shrink-swell potential, slow permeability, and the slope in areas of the Zion soils.

7. Badin-Georgeville-Enon

Gently sloping to moderately steep, moderately deep and very deep, well drained soils that have a loamy surface layer and a loamy or clayey subsoil; formed in material weathered from slate, argillite, and intermediate and mafic crystalline rocks on uplands

This map unit is on broad, gently sloping ridges and strongly sloping and moderately steep side slopes (fig. 5). It is throughout the east-central and southern parts of the county, in the Carolina Slate Belt.

This map unit makes up about 23 percent of the county. It is about 35 percent Badin soils, 25 percent Georgeville soils, 10 percent Enon soils, and 30 percent soils of minor extent.

The moderately deep Badin soils formed in material weathered from slate or argillite. They are on broad, gently sloping ridges and strongly sloping and moderately steep side slopes. Typically, they have a surface layer of yellowish brown channery silt loam. The subsoil is a thin layer of predominantly yellowish red silty clay loam. Weathered bedrock is at a depth of 24 inches.

The very deep Georgeville soils formed in material weathered from slate or argillite. They are on gently sloping ridges and strongly sloping side slopes. Typically, they have a surface layer of strong brown silt loam. The subsoil is predominantly clay. It is thick and red.

The very deep Enon soils formed in material weathered from intermediate and mafic crystalline rocks. They are on gently sloping ridges and strongly sloping side slopes. Typically, they have a surface layer of yellowish brown fine sandy loam, gravelly loam,

or very stony loam and a subsoil of predominantly strong brown and yellowish brown clay.

The minor soils include Cid, Davidson, Goldston, Herndon, Kirksey, Misenheimer, and Oakboro soils. The well drained Herndon soils are on broad ridges. The moderately well drained Kirksey soils are on the lower slopes of ridges and at the head of or along intermittent drainageways. The moderately well drained and somewhat poorly drained Misenheimer and Cid soils are on broad flats and gently sloping ridges in the uplands. The well drained to excessively drained, shallow Goldston soils generally are on the steeper side slopes. The dark, well drained Davidson soils are in areas of intermediate crystalline rocks. The moderately well drained and somewhat poorly drained, frequently flooded Oakboro soils are on flood plains.

About half of the acreage of the soils in this map unit is used as woodland and half as cropland. A few areas are used as pasture. The slope is the main limitation affecting cropland.

The main limitations affecting urban and recreational uses are the slope in areas of the Georgeville soils; the depth to bedrock, a moderate shrink-swell potential, and the slope in areas of the Badin soils; and slow permeability, a high shrink-swell potential, the slope, and, in places, surface stones in areas of the Enon soils.

8. Badin-Kirksey-Cid-Misenheimer

Nearly level to strongly sloping, shallow to deep, well drained to somewhat poorly drained soils that have a loamy surface layer and a clayey or loamy subsoil; formed in material weathered from slate and argillite on uplands

This map unit is on gently sloping ridges, broad flats, and the head of drainageways (fig. 6). It is in the southern part of the county, in the Carolina Slate Belt.

This map unit makes up about 6 percent of the county. It is about 35 percent Badin soils, 19 percent Kirksey soils, 11 percent Cid soils, 11 percent Misenheimer soils, and 24 percent soils of minor extent.

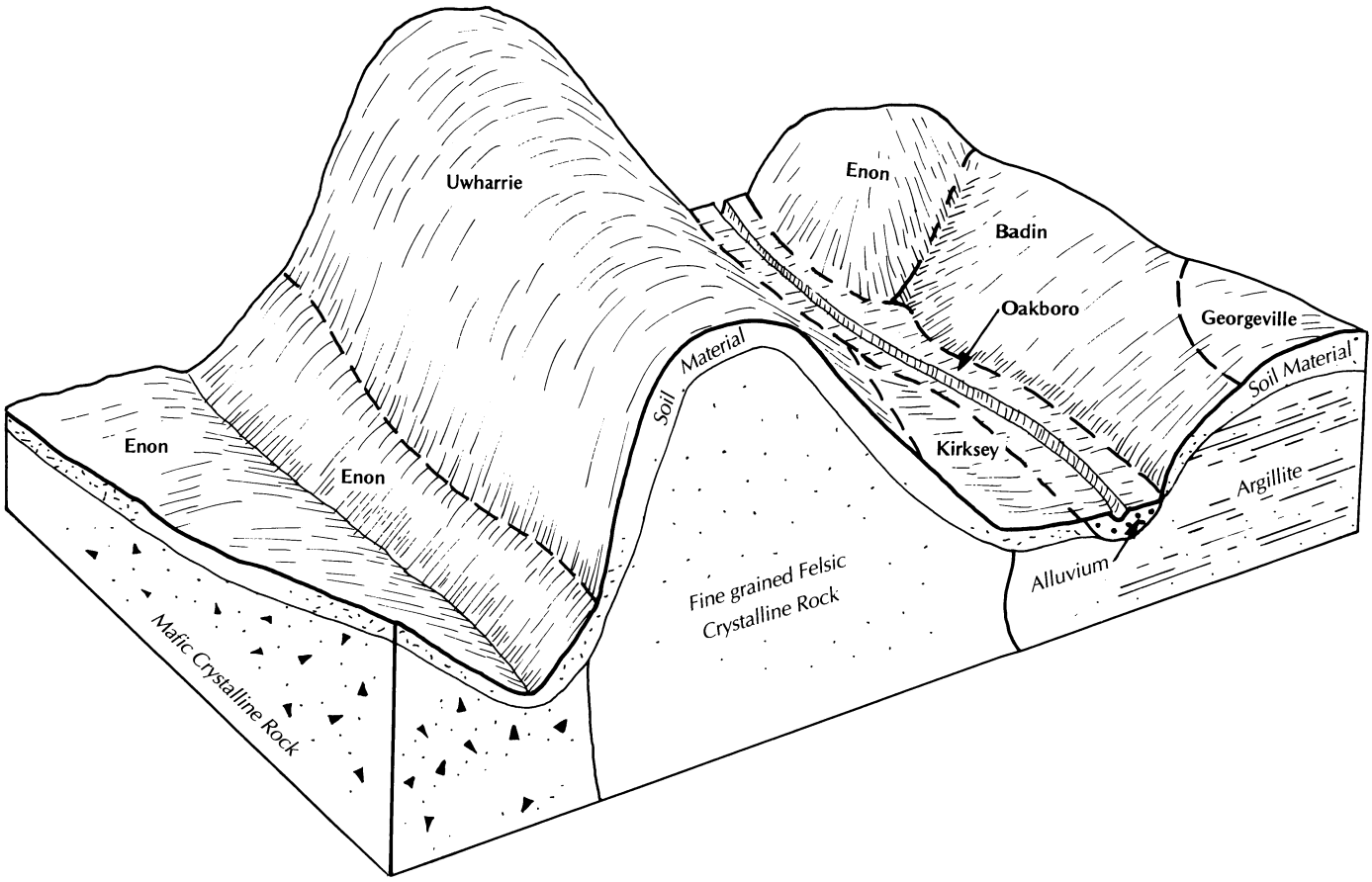

Figure 7.—The relationship of soils, parent material, and landscape in the Uwharrie-Enon map unit.

The moderately deep, well drained Badin soils are on high, broad, gently sloping ridges and strongly sloping side slopes. Typically, they have a surface layer of yellowish brown channery silt loam and a thin, predominantly yellowish red silty clay loam subsoil. Weathered bedrock is at a depth of 24 inches.

The deep, moderately well drained Kirksey soils are on low broad flats and low slopes on uplands and at the head of intermittent drainageways. Typically, they have a surface layer of grayish brown silt loam. The subsoil is predominantly silty clay loam. It is in shades of yellow, brown, and gray. Weathered bedrock is at a depth of 42 inches.

The moderately deep, moderately well drained and somewhat poorly drained Cid soils are on nearly level and gently sloping low ridges and on broad upland flats. Typically, they have a surface layer of grayish brown silt loam. The subsoil is predominantly olive yellow silty clay and channery silty clay. It is mottled with gray. Hard bedrock is at a depth of 34 inches.

The shallow, moderately well drained and somewhat poorly drained Misenheimer soils are on nearly level and gently sloping low ridges and on broad flats in the uplands. Typically, they have a surface layer of grayish brown channery silt loam. The subsoil is light yellowish brown channery silty clay loam. Weathered bedrock is at a depth of 17 inches.

The minor soils include Georgeville, Goldston, and Oakboro soils. The very deep, well drained Georgeville soils are on broad, high ridges. The shallow, well drained to excessively drained Goldston soils are on steep side slopes. The moderately well drained and somewhat poorly drained, frequently flooded Oakboro soils are on flood plains.

Most of the soils in this map unit are used as woodland, but some areas are used as cropland or pasture. Seasonal wetness in the Kirksey, Cid, and Misenheimer soils and shallowness to bedrock in the Misenheimer soils are the main limitations affecting cropland.

The main limitations affecting urban and recreational uses are the depth to bedrock and a moderate shrink-swell potential in areas of the Badin soils; the wetness in areas of the Kirksey soils; the wetness, slow permeability, the depth to bedrock, and a moderate shrink-swell potential in areas of the Cid soils; and the wetness and the depth to bedrock in areas of the Misenheimer soils.

9. Uwharrie-Enon

Gently sloping to steep, very deep, well drained soils that have a loamy and gravelly, stony, or bouldery surface layer and a clayey subsoil; formed in material weathered from fine grained felsic, intermediate, and mafic crystalline rocks on uplands

Generally, this map unit is on high ridges that have gently sloping to steep side slopes. It has many cobbles, stones, gravel, and in some places, boulders on the surface.

This map unit makes up about 8 percent of the county. It is about 43 percent Uwharrie soils, 30 percent Enon soils, and about 27 percent soils of minor extent.

The Uwharrie soils are mostly on prominent northeast-southwest trending ridges that are gently sloping and strongly sloping and have moderately steep and steep side slopes. These soils formed from fine grained intermediate and felsic crystalline rocks (fig. 7). Typically, they have a surface layer of reddish brown stony silt loam. Many boulders are on the surface. They have a red, predominantly clay and silty clay subsoil.

The Enon soils are on gently sloping ridges and strongly sloping and moderately steep side slopes. These soils formed from intermediate and mafic crystalline rocks. Typically, they have a surface layer of dark grayish brown gravelly loam or very stony loam and a subsoil of predominantly strong brown or yellowish brown clay.

The minor soils are the Badin, Georgeville, Kirksey, and Oakboro soils. The well drained, moderately deep Badin and the well drained, very deep Georgeville soils are on gently sloping ridges and strongly sloping side slopes intermingled with areas of the major soils. The moderately well drained Kirksey soils are on the lower slopes and at the head of drainageways. The moderately well drained and somewhat poorly drained, frequently flooded Oakboro soils are on flood plains.

Most of the acreage in this map unit is used as woodland and wildlife habitat. A few areas have been cleared of trees and are used as pasture. The slope and surface stones are the main limitations affecting cropland.

Stoniness and the slope are the main limitations affecting most urban and recreational uses in the Uwharrie soils. Stoniness, the slope, a high shrink-swell potential, and slow permeability are the main limitations in the Enon soils.

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 the dominant soils within the map unit for specific uses. They also can be used to plan the management needed for those uses. More information on each map unit is given under the heading "Use and Management of the Soils."

The map units on the detailed soil maps represent areas on the landscape and consist of the dominant soils for which the units are named.

Symbols identifying the soils precede the map unit names in the map unit descriptions. The descriptions include general facts about the soils and give the principal hazards and limitations to be considered in planning for specific uses.

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

Soils of one series can differ in texture of the surface layer or of the underlying material. They also can differ in slope, stoniness, salinity, wetness, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are named as phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Cecil clay loam, 2 to 8 percent slopes, eroded, is a phase of the Cecil series.

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

A *soil complex* consists of two or more contrasting soils, or miscellaneous land areas, 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. Cid-Misenheimer complex, 0 to 4 percent slopes, is an example.

An *undifferentiated group* is made up of two or more dominant soils that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils in a mapped area are not uniform. An area can be made up of only one of the major soils, or it can be made up of all of them. Poindexter and Zion sandy loams, 8 to 15 percent slopes, is an undifferentiated group in this survey area.

Most map units include small scattered areas of soils other than those for which the map unit is named. Some of these included soils have properties that differ substantially from those of the major 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 may be identified by a special symbol on the soil maps.

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

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

Several inconsistencies in joining the detailed soil map units for Davidson and Forsyth Counties occur because the coarse-textured Louisburg soils are not correlated in Davidson County.

AaA—Altavista fine sandy loam, 0 to 2 percent slopes, occasionally flooded. This moderately well drained soil is on low stream terraces along the Yadkin River and its larger tributaries. Individual areas are irregular in shape and range from 5 to about 50 acres in size.

Typically, the surface layer is dark grayish brown fine sandy loam about 9 inches thick. The subsoil is about 51 inches or more thick. The upper part is light olive brown clay loam. The next part is light olive brown

sandy clay loam that has light brownish gray, yellowish brown, and red mottles. The lower part is mottled light brownish gray, light yellowish brown, and red sandy clay loam.

The seasonal high water table is 1.5 to 2.5 feet below the surface. Permeability is moderate. The shrink-swell potential is low. Reaction ranges from very strongly acid to moderately acid. The depth to bedrock is more than 5 feet.

Included with this soil in mapping are small areas of Wickham and Wahee soils. The well drained Wickham soils are on small ridges, and the somewhat clayey, somewhat poorly drained Wahee soils are in depressional areas, adjacent to the upland slopes. Included soils make up 15 to 20 percent of this map unit.

Most areas of the Altavista soil are used for crops or pasture. The rest are used as woodland.

The principal cultivated crops are corn, soybeans, tobacco, and small grain. These crops may be damaged by the occasional flooding. A drainage system enhances crop production during wet years. Tall fescue and ladino clover are the main forage crops used for hay and pasture.

The major canopy trees are loblolly pine, shortleaf pine, sweetgum, yellow-poplar, red maple, white oak, southern red oak, northern red oak, willow oak, and American sycamore. Common understory plants are flowering dogwood, eastern redbud, and sourwood. The equipment limitation caused by seasonal wetness is a management concern. Equipment should not be operated during wet periods.

Because of the flooding, this soil is generally not suited to building site development. The flooding and the wetness are limitations affecting most recreational uses.

The capability subclass is IIw, and the woodland ordination symbol is 9A.

AaB—Altavista fine sandy loam, 2 to 6 percent slopes. This moderately well drained soil is on ridges and the lower side slopes of stream terraces along the Yadkin River and its larger tributaries. Individual areas are irregular in shape and range from 4 to about 50 acres.

Typically, the surface layer is dark grayish brown fine sandy loam about 9 inches thick. The subsoil is about 51 inches or more thick. The upper part is light olive brown clay loam. The next part is light olive brown sandy clay loam that has light brownish gray, yellowish brown, and red mottles. The lower part is mottled light brownish gray, light yellowish brown, and red sandy clay loam.

The seasonal high water table is 1.5 to 2.5 feet below the surface. Permeability is moderate. The shrink-swell potential is low. Reaction ranges from very strongly acid to moderately acid. The depth to bedrock is more than 5 feet.

Included with this soil in mapping are small areas of the well drained Wickham soils on small knolls. Also included are small areas of moderately well drained soils that have a clayey subsoil. Included soils make up 15 to 20 percent of this map unit.

Most areas of the Altavista soil are used for crops or pasture. The rest are used as woodland.

The major cultivated crops are corn, soybeans, tobacco, and small grain. Because of the slope and surface runoff, the hazard of erosion is moderate. Conservation practices are needed to control erosion and surface runoff. The seasonal wetness also is a limitation. A drainage system enhances crop production during wet years. In areas used for hay and pasture, tall fescue and ladino clover are the main forage crops.

The major canopy trees are loblolly pine, shortleaf pine, sweetgum, yellow-poplar, white oak, southern red oak, water oak, and American sycamore. Common understory plants are flowering dogwood, eastern redbud, and sourwood. The equipment limitation caused by seasonal wetness is a management concern. Equipment should not be operated during wet periods.

The wetness is the main limitation affecting building site development, and a drainage system is needed. Erosion is a moderate hazard at construction sites, and erosion-control measures should be used. Wetness also is a limitation affecting most recreational uses.

The capability subclass is IIe, and the woodland ordination symbol is 9A.

ApB—Appling sandy loam, 2 to 8 percent slopes. This well drained soil is on broad upland ridges. It is mainly in the northern part of the county. Individual areas are irregular in shape and range from 4 to about 80 acres.

Typically, the surface layer is yellowish brown sandy loam about 9 inches thick. The subsoil is about 33 inches thick. It is brownish yellow sandy clay loam in the upper part, strong brown and yellowish brown clay in the next part, and yellowish brown sandy clay and red, yellowish brown, and yellow sandy clay loam in the lower part. The underlying material to a depth of 60 inches or more is red and multicolored saprolite that is sandy loam.

Permeability is moderate. The shrink-swell potential is low. The depth to bedrock is more than 5 feet. Reaction ranges from very strongly acid to moderately acid. Erosion is a moderate hazard in bare, unprotected areas.

Included with this soil in mapping are small areas of

Cecil, Vance, and Wedowee soils. Cecil soils are redder than the Appling soil. They are on small knolls and ridgetops and generally are eroded. The slowly permeable Vance soils are intermingled with areas of the Appling soil or are in saddles and on toe slopes. Wedowee soils have a subsoil that is thinner than that of the Appling soil. They are on narrow ridges and side slopes. Included soils make up 10 to 20 percent of this map unit.

Most of the acreage of the Appling soil is used as cropland or pasture. The rest is mainly used as woodland.

The major cultivated crops are corn, tobacco, soybeans, and small grain. Because of the slope and surface runoff, erosion is a moderate hazard if the soil is used as cropland. Conservation practices are needed to help control erosion and surface runoff and to increase the content of organic matter. In areas used for hay and pasture, tall fescue and ladino clover are the main forage crops.

The major canopy trees are loblolly pine, shortleaf pine, southern red oak, Virginia pine, hickory, sweetgum, white oak, northern red oak, and yellow-poplar. Common understory plants are flowering dogwood, sourwood, American holly, eastern redcedar, eastern redbud, black cherry, sassafras, and red maple. No major limitations affect woodland use and management.

This map unit has no major limitations affecting building site development or recreational uses. However, the clayey subsoil, the moderate permeability, and the slope are limitations that affect some uses. Removing the plant cover on construction sites causes a moderate hazard of erosion unless erosion-control measures are applied.

The capability subclass is IIe, and the woodland ordination symbol is 8A.

Ar—Armenia silt loam, occasionally flooded. This nearly level, poorly drained soil is on broad flats or in depressions on uplands, at or near the head of drainageways, or on flood plains. It is mainly in the southwestern part of the county. Individual areas are oblong or long and narrow and range from 4 to about 20 acres in size.

Typically, the surface layer is very dark grayish brown silt loam about 6 inches thick. The subsoil is about 45 inches thick. The upper part is very dark grayish brown sandy clay loam. The next part is gray and olive gray clay. The lower part is mottled olive gray, yellowish brown, and black sandy clay loam. The underlying material to a depth of 60 inches or more is multicolored saprolite that has a texture of sandy loam.

The seasonal high water table is 0.5 foot to 1.5 feet below the surface. Permeability is slow. The shrink-swell potential is high. The depth to bedrock is more than 60 inches. Reaction ranges from moderately acid to mildly alkaline.

Included with this soil in mapping are small areas of Iredell, Chewacla, and Sedgefield soils. The moderately well drained and somewhat poorly drained Sedgefield and Iredell soils are on slightly elevated rims around areas of the Armenia soil. The somewhat poorly drained Chewacla soils are along drainageways in the lower areas. Included soils make up 10 to 15 percent of this map unit.

Most of the acreage of the Armenia soil is used as woodland or pasture. A few areas are used for crops.

The major canopy trees are loblolly pine, shortleaf pine, blackgum, red maple, white oak, willow oak, and sweetgum. Common understory plants are flowering dogwood, eastern redbud, American holly, and pawpaw. The seasonal wetness is the main limitation affecting woodland use and management. Management concerns are the equipment limitation and seedling mortality. Logging should be avoided when the soil is wet because it can result in compaction, the formation of deep ruts, poor surface drainage, and lower productivity.

The main cultivated crops are corn and soybeans. The wetness is a major limitation, and the flooding is a hazard. Crops are subject to flood damage, and a drainage system is needed. Because the slow permeability limits internal drainage, a surface drainage system and open ditches are needed. In areas used for hay and pasture, tall fescue and ladino clover are the main forage crops.

This map unit generally is unsuited to building site development or recreational uses because of the wetness and the flooding. The high shrink-swell potential and the slow permeability also are limitations.

The capability subclass is IIIw, and the woodland ordination symbol is 6W.

BaB—Badin channery silt loam, 2 to 8 percent slopes. This well drained soil is on broad ridges and on side slopes. It is on uplands, mainly in the southern part of the county. Individual areas are irregular in shape and range from 4 to about 150 acres in size.

Typically, the surface layer is yellowish brown channery silt loam about 6 inches thick. The subsoil is about 18 inches thick. It is strong brown channery silty clay loam in the upper part, yellowish red silty clay loam in the next part, and yellowish red channery silty clay loam in the lower part. Weathered, fractured slate bedrock is at a depth of about 24 inches. Hard, fractured slate bedrock is at a depth of about 41 inches.

Permeability and the shrink-swell potential are

moderate. The depth to weathered bedrock is 20 to 40 inches. Reaction is very strongly acid or strongly acid.

Included with this soil in mapping are small areas of Georgeville, Herndon, Goldston, and Enon soils. Georgeville and Herndon soils are deeper than the Badin soil. They are intermingled with areas of the Badin soil. They do not have a channery surface layer. The shallow Goldston soils are on knolls and short side slopes. Enon soils are yellower and less acid than the Badin soil. They have a gravelly surface layer and are in areas of mafic or intermediate rock formations. Also included are a few eroded areas of Badin soils that have a surface layer of channery silty clay loam and many areas that have a few small outcrops of bedrock. Inclusions make up 15 to 20 percent of this map unit.

Most of the acreage of the Badin soil is used for crops or pasture. The rest is mainly used as woodland.

The major cultivated crops are corn, soybeans, and small grain. Because of the slope and surface runoff, erosion is a severe hazard. This hazard, however, is reduced by the flat slate fragments on the surface, which minimize the impact of raindrops, increase infiltration, and reduce the rate of runoff. Conservation practices are needed to help control erosion and to increase the content of organic matter. In areas used for hay and pasture, tall fescue and ladino clover are the main forage crops.

The major canopy trees are loblolly pine, shortleaf pine, Virginia pine, yellow-poplar, white oak, southern red oak, northern red oak, chestnut oak, and hickory. Common understory plants are American holly, sourwood, flowering dogwood, eastern redbud, and black cherry. Because the depth to bedrock is a limitation affecting woodland use and management, the windthrow hazard is a management concern.

The depth to bedrock and the moderate shrink-swell potential are the main limitations affecting building site development and recreational uses. The moderate permeability, the clayey subsoil, and the slope also affect some uses. Removing the plant cover on construction sites causes a severe hazard of erosion unless erosion-control measures are applied. Small and large stones on the surface are a limitation affecting some recreational uses.

The capability subclass is IIIe, and the woodland ordination symbol is 8D.

BaD—Badin channery silt loam, 8 to 15 percent slopes. This well drained soil is on broad to narrow side slopes in the uplands. It is mainly in the southern part of the county. Individual areas are elongated and range from 4 to about 100 acres in size.

Typically, the surface layer is yellowish brown channery silt loam about 6 inches thick. The subsoil is about 18 inches thick. It is strong brown channery silty clay loam in the upper part, yellowish red silty clay loam in the next part, and yellowish red channery silty clay loam in the lower part. Weathered, fractured slate bedrock is at a depth of about 24 inches. Hard, fractured slate bedrock is at a depth of about 41 inches.

Permeability and the shrink-swell potential are moderate. The depth to weathered bedrock is 20 to 40 inches. Reaction is very strongly acid or strongly acid.

Included with this soil in mapping are small areas of Georgeville, Herndon, Goldston, and Enon soils. Georgeville and Herndon soils are deeper than the Badin soil. They are intermingled with areas of the Badin soil. They do not have a channery surface layer. The shallow Goldston soils are on knolls and short side slopes. Enon soils are yellower and less acid than the Badin soil. They have a gravelly surface layer and are in areas of intermediate or mafic geologic material. Also included are a few eroded areas of Badin soils that have a surface layer of channery silty clay loam and many areas that have a few small outcrops of bedrock. Inclusions make up 15 to 20 percent of this map unit.

Most of the acreage of the Badin soil is used as woodland. The rest is mainly used for crops or pasture.

The major canopy trees are loblolly pine, shortleaf pine, Virginia pine, yellow-poplar, hickory, white oak, southern red oak, chestnut oak, and northern red oak. Common understory plants are American holly, sourwood, flowering dogwood, eastern redbud, and black cherry. The depth to bedrock is a limitation affecting woodland use and management.

The major cultivated crops are corn, soybeans, and small grain. Because of the slope and surface runoff, erosion is a very severe hazard if the soil is used as cropland. This hazard, however, is reduced by the flat slate fragments on the surface, which minimize the impact of raindrops, increase the rate of water infiltration, and reduce the rate of runoff. Conservation practices are needed to help control erosion and runoff and to increase the content of organic matter. In areas used for hay and pasture, tall fescue and ladino clover are the main forage crops.

The depth to bedrock, the moderate shrink-swell potential, and the slope are the main limitations affecting building site development and recreational uses. The moderate permeability and the clayey subsoil also affect some uses. Removing the plant cover on construction sites causes a very severe hazard of erosion unless erosion-control measures are applied.

The capability subclass is IVe, and the woodland ordination symbol is 8D.

BaE—Badin channery silt loam, 15 to 30 percent slopes. This well drained soil is on broad to narrow side

slopes in the uplands. It is in the southern part of the county. Individual areas are elongated and range from 5 to about 75 acres in size.

Typically, the surface layer is yellowish brown channery silt loam about 6 inches thick. The subsoil is about 18 inches thick. It is strong brown channery silty clay loam in the upper part, yellowish red silty clay loam in the next part, and yellowish red channery silty clay loam in the lower part. Weathered, fractured slate bedrock is at a depth of about 24 inches. Hard, fractured slate bedrock is at a depth of about 41 inches.

Permeability and the shrink-swell potential are moderate. The depth to weathered bedrock is 20 to 40 inches. Reaction is very strongly acid or strongly acid.

Included with this soil in mapping are small areas of Goldston soils. These soils are shallow and are intermingled with areas of the Badin soil. Also included are small areas of soils that are deeper than the Badin soil and small areas that have stones on the surface. Inclusions make up 15 to 20 percent of this map unit.

Most of the acreage of the Badin soil is used as woodland. The rest is mainly used as pasture.

The major canopy trees are loblolly pine, shortleaf pine, Virginia pine, yellow-poplar, hickory, white oak, southern red oak, northern red oak, and chestnut oak. Common understory plants are flowering dogwood, American holly, eastern redbud, and sourwood. The slope and the depth to bedrock are the main limitations for woodland use and management. Management concerns are the hazard of erosion, the equipment limitation, and the windthrow hazard.

This soil generally is unsuited to cropland because of the slope. In areas used as pasture, tall fescue and ladino clover are the main forage crops. Because of the slope and surface runoff, the hazard of erosion is very severe if the soil is used as cropland. A protective cover of sod is needed.

This map unit generally is not used for building site development or recreational development because of the slope. Removing the plant cover on construction sites causes a very severe hazard of erosion unless erosion-control measures are applied.

The capability subclass is VIe, and the woodland ordination symbol is 8R.

CcB—Cecil sandy loam, 2 to 8 percent slopes. This well drained soil is on smooth ridges. It is on uplands in the northern and western parts of the county. Individual areas are broad and irregular in shape and range from 5 to several hundred acres in size.

Typically, the surface layer is brown sandy loam about 6 inches thick. The subsoil is about 52 inches thick. It is red clay loam in the upper part, red clay in the next part, and red clay loam in the lower part. The underlying material to a depth of 72 inches or more is red saprolite that has a texture of loam.

Permeability is moderate. The shrink-swell potential is low. The depth to bedrock is more than 5 feet. Reaction ranges from very strongly acid to moderately acid.

Included with this soil in mapping are small areas of Appling, Davidson, Mecklenburg, and Pacolet soils. These soils are intermingled with areas of the Cecil soil. Appling soils are yellower than the Cecil soil. They are in flatter areas on the landscape. Davidson soils are a darker shade of red than the Cecil soil. Mecklenburg soils are less acid than the Cecil soil. These soils are in areas that do not have intermediate or mafic geologic material. Pacolet soils have a subsoil that is thinner than that of the Cecil soil. They are on narrow ridges and side slopes. Also included are a few small eroded areas that have a surface layer of clay loam. Inclusions make up 15 to 25 percent of this map unit.

Most of the acreage of the Cecil soil is used as cropland or pasture. The rest is used as woodland.

The major cultivated crops are corn, soybeans, tobacco, and small grain. Because of the slope and surface runoff, the hazard of erosion is moderate. Conservation practices are needed to help control erosion and to increase the content of organic matter. In areas used for hay and pasture, tall fescue and ladino clover are the main forage crops.

The major canopy trees are loblolly pine, shortleaf pine, Virginia pine, southern red oak, northern red oak, white oak, hickory, and yellow-poplar. Common understory plants are flowering dogwood, sourwood, American holly, black cherry, eastern redcedar, and red maple. No major limitations affect woodland use and management.

This map unit has no major limitations affecting building site development or recreational uses. However, the clayey subsoil, the moderate permeability, and the slope are limitations that affect some uses. Removing the plant cover on construction sites causes a moderate hazard of erosion unless erosion-control measures are applied.

The capability subclass is IIe, and the woodland ordination symbol is 8A.

CcD—Cecil sandy loam, 8 to 15 percent slopes. This well drained soil is on side slopes in the uplands in the northern and western parts of the county. Individual areas are irregular in shape or elongated in varying widths and range from 5 to about 100 acres in size.

Typically, the surface layer is brown sandy loam about 6 inches thick. The subsoil is about 52 inches

thick. It is red clay loam in the upper part, red clay in the next part, and red clay loam in the lower part. The underlying material to a depth of 72 inches or more is red saprolite that has a texture of loam.

Permeability is moderate. The shrink-swell potential is low. The depth to bedrock is more than 5 feet. Reaction ranges from very strongly acid to moderately acid.

Included with this soil in mapping are small areas of Davidson, Mecklenburg, and Pacolet soils. These soils are intermingled with areas of the Cecil soil. Davidson soils are a darker shade of red than the Cecil soil. Mecklenburg soils are less acid than the Cecil soil. These soils are in areas that do not have intermediate or mafic geologic material. Pacolet soils have a subsoil that is thinner than that of the Cecil soil. They are on narrow side slopes. Also included are a few small eroded areas that have a surface layer of clay loam. Inclusions make up 20 to 25 percent of this map unit.

Most of the acreage of the Cecil soil is used as cropland or pasture. The rest is used as woodland.

The major cultivated crops are corn, soybeans, tobacco, and small grain. Because of the slope and surface runoff, the hazard of erosion is severe. Conservation practices are needed to help control erosion and runoff and to increase the content of organic matter. In areas used for hay and pasture, tall fescue and ladino clover are the main forage crops.

The major canopy trees are loblolly pine, shortleaf pine, Virginia pine, southern red oak, northern red oak, white oak, hickory, and yellow-poplar. Common understory plants are flowering dogwood, sourwood, American holly, black cherry, eastern redcedar, and red maple. No major limitations affect woodland use and management.

The slope is the main limitation affecting building site development and recreational uses. The clayey subsoil and the moderate permeability are limitations that also affect some uses. Removing the plant cover on construction sites causes a very severe hazard of erosion unless erosion-control measures are applied.

The capability subclass is IVe, and the woodland ordination symbol is 8A.

CeB2—Cecil clay loam, 2 to 8 percent slopes, eroded. This well drained soil is on ridges. It is on uplands in the northern part of the county. Individual areas are irregular in shape and range from 5 to about 100 acres in size.

The soil is moderately eroded, and in most places tillage has mixed subsoil material with the remaining original surface layer. Typically, the surface layer is reddish brown clay loam about 5 inches thick. The subsoil is about 38 inches thick. It is red clay in the upper part and red clay loam in the lower part. The underlying material to a depth of 60 inches or more is multicolored saprolite that has a texture of loam.

Permeability is moderate. The shrink-swell potential is low. The depth to bedrock is more than 5 feet. Reaction ranges from very strongly acid to moderately acid.

Included with this soil in mapping are small areas of Davidson, Mecklenburg, and Pacolet soils. Davidson soils are dark red, and Mecklenburg soils are less acid than the Cecil soil. These soils are in areas that have intermediate or mafic geologic material. Pacolet soils have a clayey subsoil that is thinner than that of the Cecil soil. They are on narrow ridges and side slopes. Also included are some small areas of less eroded Cecil soils that have a surface layer of sandy loam. Included soils make up 15 to 20 percent of this map unit.

Most of the acreage of the Cecil soil is used as cropland or pasture. The rest is used as woodland.

The major cultivated crops are corn, soybeans, and small grain. The slope is the main limitation. The hazard of erosion is severe. Maintaining good tilth is difficult because of the clay loam surface layer. A crust commonly forms as the surface layer dries after a hard rain, and clods form if the soil is worked when it is wet. The crust and the clods make seedbed preparation difficult and may affect germination and cause uneven stands and poor growth. Conservation practices are needed to help control erosion and surface runoff. Practices that increase the content of organic matter are essential to maintain tilth. In areas used for hay and pasture, tall fescue and ladino clover are the main forage crops.

The major canopy trees are loblolly pine, shortleaf pine, Virginia pine, northern red oak, southern red oak, white oak, hickory, and yellow-poplar. Common understory plants are flowering dogwood, sourwood, American holly, black cherry, eastern redcedar, and red maple. The clay loam surface layer is the main limitation affecting woodland use and management. Management concerns are the equipment limitation and seedling mortality.

This map unit has no major limitations affecting building site development or recreational uses. However, the clayey subsoil, the moderate permeability, and the slope are limitations that affect some uses. Removing the plant cover on construction sites causes a severe hazard of erosion unless erosion-control measures are applied.

The capability subclass is IIIe, and the woodland ordination symbol is 7C.

CeD2—Cecil clay loam, 8 to 15 percent slopes, eroded. This well drained soil is on side slopes in the uplands in the northern part of the county. Some of the larger units are in the area northwest of Lexington. Individual areas are irregular in shape or elongated in varying widths and range from 5 to about 75 acres in size.

The soil is moderately eroded, and in most places tillage has mixed subsoil material into the remaining original surface layer. Typically, the surface layer is reddish brown clay loam about 5 inches thick. The subsoil is about 38 inches thick. It is red clay in the upper part and red clay loam in the lower part. The underlying material to a depth of 50 inches or more is multicolored saprolite that has a texture of loam.

Permeability is moderate. The shrink-swell potential is low. The depth to bedrock is more than 5 feet. Reaction ranges from very strongly acid to moderately acid.

Included with this soil in mapping are small areas of Davidson, Mecklenburg, and Pacolet soils. Davidson soils are dark red, and Mecklenburg soils are less acid than the Cecil soil. These soils are in areas that have intermediate or mafic geologic material. Pacolet soils have a clayey subsoil that is thinner than that of the Cecil soil. They are on narrow ridges and side slopes. Also included are some small areas of less eroded Cecil soils that have a surface layer of sandy loam. Included soils make up 15 to 20 percent of this map unit.

Most of the acreage of the Cecil soil is used as woodland. The rest is used as cropland or pasture.

The major canopy trees are loblolly pine, shortleaf pine, Virginia pine, northern red oak, southern red oak, white oak, hickory, and yellow-poplar. Common understory plants are flowering dogwood, sourwood, American holly, eastern redcedar, and red maple. The clay loam surface layer is the main limitation affecting woodland use and management. Management concerns are the equipment limitation and seedling mortality.

In cultivated areas, the major crops are corn, soybeans, and small grain. The slope is the main limitation. If the soil is used as cropland, the hazard of erosion is very severe. Maintaining good tilth is difficult because of the clay loam surface layer. A crust commonly forms as the surface layer dries after a hard rain, and clods form if the soil is worked when it is wet. The crust and the clods make seedbed preparation difficult and may affect germination and cause uneven stands and poor growth. Conservation practices to help control erosion and surface runoff and increase the content of organic matter are essential to maintain productivity and tilth. In areas used for hay and pasture, tall fescue and ladino clover are the main forage crops.

The clayey subsoil, the moderate permeability, and the slope are the main limitations affecting building site development and recreational uses. Removing the plant cover on construction sites causes a very severe hazard of erosion unless erosion-control measures are applied.

The capability subclass is IVe, and the woodland ordination symbol is 7C.

CfB—Cecil-Urban land complex, 2 to 8 percent slopes. This map unit consists of intermingled areas of a well drained Cecil soil and areas of Urban land on ridges in the uplands. The Cecil soil makes up 50 to 60 percent of the map unit, and the Urban land makes up 25 to 35 percent. Most of this map unit is in or around Lexington and Thomasville. A small acreage is in other towns in the northern part of the county. Individual areas are irregular in shape and range from 5 to about 100 acres in size.

Typically, the surface layer of the Cecil soil is brown sandy loam about 6 inches thick. The subsoil is about 52 inches thick. It is red clay loam in the upper part, red clay in the next part, and red clay loam in the lower part. The underlying material to a depth of 72 inches or more is red saprolite that has a texture of loam.

Permeability is moderate in the Cecil soil. The shrink-swell potential is low. The depth to bedrock is more than 5 feet. Reaction ranges from very strongly acid to moderately acid.

The Urban land consists of areas covered by buildings, pavement, or other impervious material.

Included in mapping are small areas that have been cut, filled, or graded so that the topography and most of the natural soil properties have been altered. These areas are commonly adjacent to the Urban land. Also included are Pacolet, Appling, and Davidson soils. Pacolet soils have a subsoil that is thinner than that of the Cecil soil. Appling soils are yellower than the Cecil soil and are in the flatter areas. Davidson soils are dark red clay and are in areas of intermediate geologic formations. Included soils make up 15 to 25 percent of the map unit.

This map unit has no major limitations affecting building site development or recreational uses. However, the clayey subsoil, the slope, and the moderate permeability are limitations that affect some uses. Rapid runoff during rainstorms causes excessive flooding in low areas. Removing the plant cover and grading at construction sites cause a severe hazard of erosion unless erosion-control measures are applied. Onsite investigation is needed when the use and management of specific sites are planned.

This map unit has not been assigned a capability subclass or a woodland ordination symbol.

Ch—Chewacla loam, frequently flooded. This nearly level, somewhat poorly drained soil is on first bottoms along creeks and rivers throughout the northern, central, and western parts of the county. Some of the larger areas are along the Yadkin River, Muddy Creek, Swearing Creek, and Abbots Creek. Individual areas of this map unit range from several hundred feet to about 0.25 mile in width and from 5 to several thousand acres in size. Many of these areas continue for miles along the larger streams.

Typically, the surface layer is brown loam about 9 inches thick. The subsoil is about 43 inches thick. It is dark yellowish brown fine sandy loam in the upper part; brown, yellowish brown, and light brownish gray sandy clay loam in the next part; and yellowish brown sandy loam in the lower part. The underlying material to a depth of 62 inches or more is yellowish brown loamy sand and gravelly loamy sand.

The seasonal high water table is 0.5 foot to 1.5 feet below the surface. Permeability is moderate. The shrink-swell potential is low. The depth to bedrock is more than 60 inches. Reaction ranges from very strongly acid to slightly acid in the upper 40 inches, unless the soil is limed. Below a depth of 40 inches, it ranges from strongly acid to neutral.

Included with this soil in mapping are small areas of Congaree and Wahee soils. The well drained and moderately well drained Congaree soils are in the slightly higher positions on the landscape, closer to stream channels. The clayey Wahee soils are somewhat poorly drained. They are on flood plains at the base of the upland slopes along the Yadkin River and the larger creeks. Also included in mapping are some small areas of poorly drained, loamy soils in depressions. Included soils make up 10 to 15 percent of this map unit.

Most of the acreage of the Chewacla soil is used as woodland. The rest is mainly used as pasture or cropland.

The major canopy trees are loblolly pine, yellow-poplar, American sycamore, sweetgum, blackgum, red maple, water oak, willow oak, and eastern cottonwood. Common understory plants are black willow, hackberry, river birch, and greenbrier. The wetness is the main limitation, and the flooding is a major hazard affecting woodland use and management. The equipment limitation is a significant concern. Equipment should not be operated during wet periods.

The wetness and the flooding are the main limitations in cultivated areas. The major cultivated crops are corn, soybeans, and small grain. Crops are subject to damage, unless they are protected from flooding. A drainage system and flood prevention are needed. In areas used for hay and pasture, tall fescue and ladino clover are the main forage crops.

The soil generally is unsuited to building site development and recreational uses because of the wetness and the flooding.

The capability subclass is IVw, and the woodland ordination symbol is 9W.

CmB—Cid-Misenheimer complex, 0 to 4 percent slopes. These moderately well drained and somewhat poorly drained soils are on broad flats on uplands and on gently sloping ridges. They are too intricately mixed to separate in mapping. The Cid soil makes up about 40 percent of the complex, and the Misenheimer soil makes up about 40 percent. This map unit is in the southeastern part of the county. Individual areas are broad and irregular in shape and range from 5 to more than 400 acres in size.

Typically, the surface layer of the Cid soil is grayish brown silt loam about 6 inches thick. The subsurface layer is light yellowish brown silt loam about 6 inches thick. The subsoil is about 17 inches thick. It is brownish yellow silty clay loam in the upper part, olive yellow silty clay that has light gray mottles in the next part, and olive yellow channery silty clay that has gray mottles in the lower part. Weathered, fractured slate bedrock is at a depth of about 29 inches. Hard, fractured slate bedrock is at a depth of about 34 inches.

Typically, the surface layer of the Misenheimer soil is grayish brown channery silt loam about 2 inches thick. The subsurface layer is light gray channery silt loam about 5 inches thick. The subsoil is about 10 inches thick. It is light yellowish brown channery silty clay loam that has light gray and brownish yellow mottles. Weathered, fractured slate bedrock is at a depth of about 17 inches. Hard, fractured slate bedrock is at a depth of about 31 inches.

The perched seasonal high water table is 1.5 to 2.5 feet below the surface in the Cid soil. Permeability is slow. The shrink-swell potential is moderate. The depth to weathered, fractured bedrock and hard bedrock is 20 to 40 inches. Reaction is very strongly acid or strongly acid, unless the soil is limed.

The perched seasonal high water table is 1.0 foot to 1.5 feet below the surface in the Misenheimer soil. Permeability is moderate or moderately rapid. The shrink-swell potential is low. The depth to weathered bedrock is 10 to 20 inches, and the depth to hard bedrock is 20 to 40 inches. Reaction is very strongly acid or strongly acid, unless the soil is limed.

Included with these soils in mapping are small areas of Kirksey, Badin, and Goldston soils. The well drained Badin and the shallow, well drained to excessively

Figure 8.—A pasture of fescue in an area of Cid-Misenheimer complex, 0 to 4 percent slopes.

drained Goldston soils are on small ridges. Badin soils are redder than the Cid and Misenheimer soils. Kirksey soils are deeper than the Cid and Misenheimer soils. They are loamy and are intermingled with areas of the Cid and Misenheimer soils. Also included are a few areas that have bedrock below a depth of 40 inches. Inclusions make up about 20 percent of this map unit.

Most of the acreage in this map unit is used as woodland. The rest is mostly used as pasture. A few areas are used for crops.

The major canopy trees are shortleaf pine, loblolly pine, Virginia pine, red maple, northern red oak, southern red oak, white oak, post oak, willow oak, blackgum, hickory, and sweetgum. Common understory plants are American holly, eastern redcedar, flowering dogwood, and blackgum. The main limitations affecting woodland use and management are the seasonal wetness and the depth to bedrock. Management concerns are the equipment limitation, seedling mortality, and the windthrow hazard.

The main cultivated crops are corn, soybeans, and small grain. The wetness is the main limitation on the Cid soil, and the wetness, the shallow depth to bedrock, and droughtiness in summer are the main limitations on the Misenheimer soil. A drainage system is needed for crop production, but the depth to bedrock is a limitation in its construction. In areas used for hay and pasture, tall fescue and ladino clover are the main forage crops (fig. 8).

The main limitations affecting building site development are the wetness and the depth to bedrock. The slow permeability, a high content of clay, and the moderate shrink-swell potential in the subsoil also are limitations in areas of the Cid soil. A drainage system is needed, but the depth to bedrock is a limitation in its construction. The wetness and the high content of rock fragments on the surface are limitations affecting most recreational uses.

The Cid soil is in capability subclass IIw, and the woodland ordination symbol is 6W. The Misenheimer soil is in capability subclass IIIw, and the woodland ordination symbol is 6D.

Co—Congaree loam, occasionally flooded. This nearly level, well drained or moderately well drained soil is on flood plains. It is along the Yadkin River and a few of the larger creeks. Individual areas are long and slightly elevated along the stream channel and range from 5 to several hundred acres in size.

Typically, the surface layer is dark brown loam about 10 inches thick. The underlying material to a depth of 62 inches or more is yellowish brown and strong brown loam.

The seasonal high water table is 2.5 to 4.0 feet below the surface. Permeability is moderate. The shrink-swell potential is low. The depth to bedrock is more than 5 feet. Reaction ranges from very strongly acid to neutral.

Included with this soil in mapping are small areas of Chewacla and Altavista soils. The somewhat poorly drained Chewacla soils are in the slightly lower positions on the landscape. The moderately well drained Altavista soils are on slightly higher stream terraces and flood plains. Also included are a few areas of sandy soils that are intermingled with areas of the Congaree soil. Inclusions make up 15 to 20 percent of this map unit.

Most of the acreage of the Congaree soil is used as cropland or pasture. The rest is used as woodland.

The principal cultivated crops are corn, soybeans, tobacco, and small grain. Crops may be damaged by the occasional flooding. In areas used for hay and pasture, tall fescue and ladino clover are the main forage crops.

The major canopy trees are yellow-poplar, red maple, American sycamore, willow oak, blackgum, sweetgum, eastern cottonwood, and loblolly pine. Common understory plants are flowering dogwood, sourwood, American holly, and poison ivy. No major limitations affect woodland use and management.

This soil generally is unsuited to building site development because of the flooding. The flooding is a moderate limitation affecting most recreational uses.

The capability subclass is IIw, and the woodland ordination symbol is 10A.

DaB—Davidson loam, 2 to 8 percent slopes. This well drained soil is on broad ridges. It is on uplands, mainly in the southwestern part of the county in the vicinity of Linwood. Individual areas are irregular in shape and range from 4 to several hundred acres in size.

Typically, the surface layer is dark reddish brown loam about 7 inches thick. The subsoil is 65 inches or more thick. It is dark reddish brown and dark red clay.

Permeability is moderate. The shrink-swell potential is low. The depth to bedrock is more than 5 feet. Reaction ranges from very strongly acid to slightly acid. This soil is very sticky when wet.

Included with this soil in mapping are small areas of Cecil and Mecklenburg soils. These soils are intermingled with areas of the Davidson soil. Cecil soils have a clayey subsoil that is a lighter shade of red and thinner than that of the Davidson soil. They are in areas that have felsic geologic material. Mecklenburg soils are less acid than the Davidson soil and have a thinner clayey subsoil. They are slowly permeable. Included soils make up 10 to 15 percent of this map unit.

Most of the acreage of the Davidson soil is used as cropland or pasture. The rest is mainly used as woodland. Some areas adjacent to High Rock Lake are used for recreational purposes.

The major cultivated crops are corn, soybeans, and small grain. Because of the slope and surface runoff, the hazard of erosion is moderate. Tillage is difficult when the soil is too moist because the soil sticks to the blades of the equipment. Conservation practices are needed to help control erosion and surface runoff and to increase the content of organic matter. In areas used as pasture, tall fescue and ladino clover are the main forage crops. In areas used as hayland, the main crops are alfalfa and orchardgrass.

The major canopy trees are loblolly pine, shortleaf pine, Virginia pine, yellow-poplar, hickory, white oak, southern red oak, northern red oak, and sweetgum. Common understory plants are flowering dogwood, sourwood, eastern redbud, black cherry, and American holly. No significant limitations affect woodland use and management.

This map unit has no major limitations affecting building site development or recreational uses. However, the sticky clay subsoil, the moderate permeability, and the slope are limitations that affect some uses. Removing the plant cover on construction sites causes a moderate hazard of erosion unless erosion-control measures are applied.

The capability subclass is IIe, and the woodland ordination symbol is 9A.

DaD—Davidson loam, 8 to 15 percent slopes. This well drained soil is on side slopes in the uplands, mainly in the southwestern part of the county in the vicinity of Linwood. Individual areas are narrow bands or are irregular in shape and range from 4 to about 80 acres in size.

Typically, the surface layer is dark reddish brown

loam about 7 inches thick. The subsoil is 65 inches or more thick. It is dark reddish brown and dark red clay.

Permeability is moderate. The shrink-swell potential is low. The depth to bedrock is more than 5 feet. Reaction ranges from very strongly acid to slightly acid in the subsoil. This soil is very sticky when wet.

Included with this soil in mapping are small areas of Cecil and Mecklenburg soils. These soils are intermingled with areas of the Davidson soil. Cecil soils have a subsoil that is a lighter shade of red and thinner than that of the Davidson soil. They are in areas that have felsic geologic material. Mecklenburg soils are less acid than the Davidson soil and have a thinner clayey subsoil. They are slowly permeable. Included soils make up 10 to 15 percent of this map unit.

Most of the acreage of the Davidson soil is used as woodland. The rest is mainly used as pasture. A few areas are used for crops. Some areas adjacent to High Rock Lake are used for recreational purposes.

The major canopy trees are loblolly pine, shortleaf pine, Virginia pine, yellow-poplar, hickory, white oak, southern red oak, northern red oak, and sweetgum. Common understory plants are flowering dogwood, sourwood, eastern redbud, black cherry, and American holly. No significant limitations affect woodland use and management.

The major cultivated crops are corn, soybeans, and small grain. Because of the slope and surface runoff, erosion is a very severe hazard if the soil is used as cropland. Tillage is difficult when the soil is too moist because the soil sticks to the blades of the equipment. Conservation practices are needed to help control erosion and surface runoff and to increase the content of organic matter. In areas used as pasture, tall fescue and ladino clover are the main forage crops. In areas used as hayland, the main crops are alfalfa and orchardgrass.

The slope, the sticky clay subsoil, and the moderate permeability are the main limitations affecting building site development and recreational uses. Removing the plant cover on construction sites causes a very severe hazard of erosion unless erosion-control measures are applied.

The capability subclass is IVe, and the woodland ordination symbol is 9A.

DaE—Davidson loam, 15 to 25 percent slopes. This well drained soil is on side slopes in the uplands, mainly in the southwestern part of the county in the vicinity of Linwood. Individual areas are narrow bands and range from 4 to about 60 acres in size.

Typically, the surface layer is dark reddish brown loam about 7 inches thick. The subsoil is 65 inches or more thick. It is dark reddish brown and dark red clay.

Permeability is moderate in the clayey subsoil. The shrink-swell potential is low. The depth to bedrock is more than 5 feet. Reaction ranges from very strongly acid to slightly acid. This soil is very sticky when wet.

Included with this soil in mapping are small areas of Pacolet soils. These soils are intermingled with areas of the Davidson soil. They have a clayey subsoil that is a lighter shade of red and much thinner than that of the Davidson soil. They are in areas that have felsic geologic material. Included soils make up 10 to 15 percent of this map unit.

Most of the acreage of the Davidson soil is used as woodland. The rest is mainly used as pasture. Some small areas along the Yadkin River are used for recreational purposes.

The major canopy trees are loblolly pine, shortleaf pine, Virginia pine, yellow-poplar, hickory, white oak, southern red oak, northern red oak, and sweetgum. Common understory plants are flowering dogwood, sourwood, eastern redbud, black cherry, and American holly. The slope is the main limitation affecting woodland use and management. Management concerns are the hazard of erosion and the equipment limitation.

In areas used as pasture, tall fescue is the main forage crop. Because of the slope and surface runoff, the hazard of erosion is very severe in unprotected areas. A good growth of sod is needed to prevent excessive erosion.

The slope is the major limitation affecting building site development and recreational uses. Removing the plant cover on construction sites causes a very severe hazard of erosion unless erosion-control measures are applied.

The capability subclass is VIe, and the woodland ordination symbol is 9R.

EnB—Enon fine sandy loam, 2 to 8 percent slopes. This well drained soil is on broad to narrow ridges on the uplands. It is scattered throughout the county, with the larger areas in the northeastern part. Individual areas are irregular in shape and range from 5 to about 300 acres in size.

Typically, the surface layer is yellowish brown fine sandy loam about 8 inches thick. The subsoil is about 26 inches thick. The upper part is strong brown clay, the next part is yellowish brown clay, and the lower part is yellowish brown clay loam. The underlying material to a depth of 60 inches or more is multicolored saprolite that has textures of clay loam and sandy loam. Black concretions and streaks range from few to many throughout.

Permeability is slow. The shrink-swell potential is

high. The depth to hard bedrock is more than 5 feet. Reaction ranges from moderately acid to mildly alkaline.

Included with this soil in mapping are small areas of Mecklenburg, Poindexter, Zion, and Sedgefield soils. Mecklenburg soils are redder than the Enon soil. They are on small knolls and ridgetops. Poindexter and Zion soils have bedrock within a depth of 40 inches and are on narrow ridges. The moderately well drained and somewhat poorly drained Sedgefield soils are in the flatter areas on ridges and in areas at the base of side slopes. Also included are some small intermingled areas of Enon soils that have a gravelly surface layer and areas of moderately eroded soils that have a surface layer of clay loam. The included soils make up 10 to 20 percent of this map unit.

Most of the acreage of the Enon soil is used as woodland. The rest is mainly used as cropland or pasture.

The major canopy trees are loblolly pine, Virginia pine, shortleaf pine, southern red oak, white oak, northern red oak, hickory, sweetgum, and yellow-poplar. Common understory plants are flowering dogwood, eastern redcedar, American holly, and sourwood. No major limitations affect woodland use and management.

The main cultivated crops are corn, soybeans, small grain, and tobacco. Because of the slope and surface runoff, erosion is a severe hazard if the soil is used as cropland. Conservation practices are needed to help control erosion and runoff and to increase the content of organic matter. In areas used for hay and pasture, tall fescue and ladino clover are the main forage crops.

The clayey subsoil, the slow permeability, and the high shrink-swell potential are the main limitations affecting building site development. Foundations should be designed to resist cracking caused by shrinking and swelling of the subsoil. The slow permeability is a limitation affecting septic tank absorption fields. Removing the plant cover on construction sites causes a severe hazard of erosion unless erosion-control measures are applied. The slow permeability is a limitation affecting most recreational uses.

The capability subclass is IIIe, and the woodland ordination symbol is 7A.

EnD—Enon fine sandy loam, 8 to 15 percent slopes. This well drained soil is on narrow ridges and on side slopes. It is on uplands. It is scattered throughout the county, with the larger areas in the northeastern part. Individual areas are oblong and irregular in width and range from 5 to about 80 acres in size.

Typically, the surface layer is yellowish brown fine sandy loam about 8 inches thick. The subsoil is about 26 inches thick. The upper part is strong brown clay, the next part is yellowish brown clay, and the lower part is yellowish brown clay loam. The underlying material to a depth of 60 inches or more is multicolored saprolite that has textures of clay loam and sandy loam. Black concretions and streaks are few or common throughout.

Permeability is slow. The shrink-swell potential is high. The depth to hard bedrock is more than 5 feet. Reaction ranges from moderately acid to mildly alkaline.

Included with this soil in mapping are small areas of Mecklenburg, Poindexter, and Zion soils. Mecklenburg soils are redder than the Enon soil. They are on ridgetops and the upper parts of the slopes. Poindexter and Zion soils have bedrock within a depth of 40 inches and are on the more narrow side slopes. Also included are some small areas of Enon soils that have a gravelly surface layer and areas of moderately eroded soils that have a surface layer of clay loam. The included soils make up 15 to 25 percent of the map unit.

Most of the acreage of the Enon soil is used as woodland. The rest is mainly used as cropland or pasture.

The major canopy trees are loblolly pine, Virginia pine, shortleaf pine, white oak, northern red oak, southern red oak, hickory, sweetgum, and yellow-poplar. Common understory plants are flowering dogwood, eastern redcedar, American holly, and sourwood. No major limitations affect woodland use and management.

The main cultivated crops are corn, soybeans, tobacco, and small grain. Because of the slope and surface runoff, erosion is a very severe hazard if the soil is used as cropland. Conservation practices are needed to help control erosion and runoff and to increase the content of organic matter. In areas used for hay and pasture, tall fescue and ladino clover are the main forage crops.

The clayey subsoil, the slow permeability, the high shrink-swell potential, and the slope are the main limitations affecting building site development and recreational uses. Foundations should be designed to resist cracking caused by shrinking and swelling of the subsoil. The slow permeability is a limitation affecting septic tank absorption fields. Removing the plant cover on construction sites causes a very severe hazard of erosion unless erosion-control measures are applied.

The capability subclass is IVe, and the woodland ordination symbol is 7A.

ErB—Enon gravelly loam, 2 to 8 percent slopes. This well drained soil is on ridges in the uplands. Most of this map unit is in the southern part of the county. Individual areas are irregular in shape and range from 5 to more than 100 acres in size.

Typically, the surface layer is dark grayish brown gravelly loam about 7 inches thick. The subsoil is about 23 inches thick. It is light olive brown sandy clay loam in the upper part, yellowish brown clay in the next part, and yellowish brown sandy clay loam in the lower part. The underlying material to a depth of 60 inches or more is multicolored saprolite that has a texture of sandy loam.

Permeability is slow. The shrink-swell potential is high. The depth to hard bedrock is more than 5 feet. Reaction ranges from moderately acid to mildly alkaline.

Included with this soil in mapping are small areas of Badin, Zion, Misenheimer, and Cid soils. Badin, Misenheimer, and Cid soils are in areas of argillite or slate rock formations. Badin soils are redder than the Enon soil. They are on small knolls. Zion soils have bedrock at a depth of 20 to 40 inches. They are intermingled with areas of the Enon soil. The moderately well drained and somewhat poorly drained Misenheimer and Cid soils are in depressions and low areas. Also included are small areas of Enon soils that do not have gravel in the surface layer and a few small areas of soils that have stones and boulders on the surface. The included soils make up 15 to 20 percent of this map unit.

Most of the acreage of the Enon soil is used as woodland. The rest is mainly used as cropland or pasture. A few small areas are used for urban development.

The major canopy trees are loblolly pine, Virginia pine, shortleaf pine, southern red oak, white oak, northern red oak, hickory, sweetgum, and yellow-poplar. Common understory plants are flowering dogwood, eastern redcedar, American holly, and sourwood. No major limitations affect woodland use and management.

The main cultivated crops are corn, soybeans, and small grain. Because of the slope and surface runoff, the hazard of erosion is severe. Conservation practices are needed to help control erosion and runoff and to increase the content of organic matter. In areas used for hay and pasture, tall fescue and ladino clover are the main forage crops.

The clayey subsoil, the slow permeability, and the high shrink-swell potential are the main limitations affecting building site development. Foundations should be designed to resist cracking caused by shrinking and swelling of the subsoil. The slow permeability is a limitation affecting septic tank absorption fields. Removing the plant cover on construction sites causes a severe hazard of erosion unless erosion-control measures are applied. The slow permeability and small stones are limitations affecting most recreational uses.

The capability subclass is IIIe, and the woodland ordination symbol is 7A.

ErD—Enon gravelly loam, 8 to 15 percent slopes. This well drained soil is on side slopes in the uplands. Most of this map unit is in the southern part of the county. Individual areas are long and vary in width and range from 5 to more than 100 acres in size.

Typically, the surface layer is dark grayish brown gravelly loam about 7 inches thick. The subsoil is about 23 inches thick. It is light olive brown sandy clay loam in the upper part, yellowish brown clay in the next part, and yellowish brown sandy clay loam in the lower part. The underlying material to a depth of 60 inches or more is multicolored saprolite that has a texture of sandy loam.

Permeability is slow. The shrink-swell potential is high. The depth to bedrock is more than 5 feet. Reaction ranges from moderately acid to mildly alkaline.

Included with this soil in mapping are small areas of Badin and Zion soils. Badin soils are redder than the Enon soil. They are in areas of argillite or slate rock formations. Zion soils have bedrock at a depth of 20 to 40 inches. Also included are small areas of Enon soils that do not have gravel in the surface layer and a few small areas of soils that have stones and boulders on the surface. Included soils make up 15 to 20 percent of this map unit.

Most of the acreage of the Enon soil is used as woodland. The rest is mainly used as pasture. A few small areas are used as cropland.

The major canopy trees are loblolly pine, Virginia pine, shortleaf pine, white oak, northern red oak, southern red oak, hickory, sweetgum, and yellow-poplar. Common understory plants are flowering dogwood, eastern redcedar, American holly, and sourwood. No major limitations affect woodland use and management.

The main cultivated crops are corn, soybeans, and small grain. Because of the slope and surface runoff, erosion is a very severe hazard if the soil is used as cropland. Conservation practices are needed to help control erosion and runoff and to increase the content of organic matter. In areas used for hay and pasture, tall fescue and ladino clover are the main forage crops.

The clayey subsoil, the slow permeability, the high shrink-swell potential, and the slope are the main limitations affecting building site development. Foundations should be designed to resist cracking caused by shrinking and swelling of the subsoil. The slow permeability is a limitation affecting septic tank absorption fields. Removing the plant cover on construction sites causes a very severe hazard of erosion unless erosion-control measures are applied. The slope and small stones are the main limitations affecting most recreational uses.

The capability subclass is IVe, and the woodland ordination symbol is 7A.

EsD—Enon very stony loam, 4 to 15 percent slopes. This well drained soil is on ridges and side slopes on the uplands. Most of this map unit is in the southern part of the county. Individual areas are broad and irregular in shape and range from 5 to several hundred acres in size.

Typically, the surface layer is dark grayish brown very stony loam about 2 inches thick. The subsurface layer is yellowish brown very stony loam about 4 inches thick. The subsoil is about 17 inches thick. It is yellowish brown sandy clay loam in the upper part, strong brown clay in the next part, and yellowish brown clay in the lower part. The underlying material to a depth of 60 inches or more is multicolored saprolite that has a texture of loam. Many stones and cobbles are on the surface. Scattered boulders are about 75 feet apart.

Permeability is slow. The shrink-swell potential is high. The depth to hard bedrock is more than 5 feet. Many rocks are on and in the surface layer. Reaction ranges from moderately acid to mildly alkaline.

Included with this soil in mapping are small areas of Uwharrie, Cid, and Misenheimer soils. Uwharrie soils are redder than the Enon soil. These soils are on slightly elevated ridges in areas of intermediate and felsic geologic material. The moderately well drained and somewhat poorly drained Cid and Misenheimer soils are less stony than the Enon soil. These soils are in areas of argillite or slate rock formations in depressions and low areas. Also included are a few small areas of Enon soils that do not have stones on the surface. Included soils make up 15 to 20 percent of this map unit.

Most of the acreage of the Enon soil is used as woodland. A few small areas are used as pasture.

The major canopy trees are southern red oak, northern red oak, white oak, yellow-poplar, hickory, sweetgum, shortleaf pine, Virginia pine, and loblolly pine. Common understory plants are flowering dogwood, eastern redcedar, American holly, and sourwood. The stones on the surface are the main limitation affecting woodland use and management. Management concerns are seedling mortality and the equipment limitation.

In areas used as pasture, tall fescue is the main forage crop. The stones on the surface are the main limitation for pasture management (fig. 9).

The clayey subsoil, the slow permeability, the high shrink-swell potential, the stones on the surface, and the slope are the major limitations affecting building site development. The stones on the surface and the slope are limitations affecting most recreational uses.

The capability subclass is VIs, and the woodland ordination symbol is 7X.

EsE—Enon very stony loam, 15 to 25 percent slopes. This well drained soil is on side slopes in the uplands in the southern part of the county. Individual areas are irregular in shape and range from 5 to 100 acres in size.

Typically, the surface layer is dark grayish brown very stony loam about 2 inches thick. The subsurface layer is yellowish brown very stony loam about 4 inches thick. The subsoil is about 17 inches thick. It is yellowish brown sandy clay loam in the upper part, strong brown clay in the next part, and yellowish brown clay in the lower part. The underlying material to a depth of 60 inches or more is multicolored saprolite that has a texture of loam. Many stones and cobbles are on the surface. Scattered boulders are about 75 feet apart.

Permeability is slow. The shrink-swell potential is high. The depth to hard bedrock is more than 5 feet. Reaction ranges from moderately acid to mildly alkaline.

Included with this soil in mapping are small areas of Uwharrie soils. These soils are in intermingled areas of intermediate and felsic geologic material. They are redder than the Enon soil. Also included are a few small areas of Enon soils that do not have stones on the surface. Included soils make up 20 to 25 percent of this map unit.

Nearly all areas of the Enon soil are used as woodland. The major canopy trees are southern red oak, northern red oak, white oak, yellow-poplar, hickory, shortleaf pine, Virginia pine, and loblolly pine. Common understory plants are flowering dogwood, eastern redcedar, American holly, and sourwood. The slope and the stones on the surface are the main limitations affecting woodland use and management. Management concerns are the equipment limitation, seedling mortality, and the hazard of erosion.

This soil is generally unsuited to cropland, pasture, building site development, and recreational uses because of the slope and the stones on the surface. Wildlife habitat and game hunting are important uses of the soil.

The capability subclass is VIIs, and the woodland ordination symbol is 7X.

EuB—Enon-Urban land complex, 2 to 8 percent slopes. This map unit consists of intermingled areas of a well drained Enon soil and areas of Urban land on ridges in the uplands. The Enon soil makes up about 55 percent of the map unit, and the Urban land makes up about 30 percent. Most of this map unit is in and around Thomasville. Individual areas are irregular in shape and range from 5 to about 300 acres in size.

Figure 9.—A pasture of fescue on Enon very stony loam, 4 to 15 percent slopes. The stones on the surface are a limitation affecting pasture and other uses.

Typically, the surface layer of the Enon soil is yellowish brown fine sandy loam about 8 inches thick. The subsoil is about 26 inches thick. It is strong brown clay in the upper part, yellowish brown clay in the next part, and yellowish brown clay loam in the lower part. The underlying material to a depth of 60 inches or more is multicolored saprolite that has textures of clay loam and sandy loam.

Permeability is slow in the Enon soil. The shrink-swell potential is high. The depth to hard bedrock is more than 5 feet. Reaction ranges from moderately acid to mildly alkaline, unless the soil is limed.

The Urban land consists of areas covered by buildings, pavement, or other impervious material.

Included in mapping are small areas that have been cut, filled, or graded so that the topography and most of the natural soil properties have been altered. These areas are commonly adjacent to the Urban land. Also included are Mecklenburg, Poindexter, Zion, and Sedgefield soils. Mecklenburg soils are redder than the Enon soil. Poindexter and Zion soils have bedrock at a depth of 20 to 40 inches. Sedgefield soils are moderately well drained and somewhat poorly drained. Included soils make up about 15 percent of this map unit.

The clayey subsoil, the slow permeability, and the high shrink-swell potential are the main limitations affecting building site development. The slow

permeability is a limitation affecting septic tank absorption fields. Foundations should be designed to resist cracking caused by shrinking and swelling of the subsoil. Rapid runoff during rainstorms causes excessive flooding in low areas downstream. Removing the plant cover and grading construction sites causes a severe hazard of erosion unless erosion-control measures are applied. Onsite investigation is needed when the use and management of specific sites are planned.

This map unit has not been assigned a capability subclass or a woodland ordination symbol.

GeB—Georgeville silt loam, 2 to 8 percent slopes. This well drained soil is on upland ridges, mainly in the southern part of the county. Individual areas are broad and irregular in shape and range from 5 to about 300 acres in size.

Typically, the surface layer is strong brown silt loam about 9 inches thick. The subsoil is about 40 inches thick. It is red clay in the upper part and red silty clay loam in the lower part. The underlying material to a depth of 60 inches or more is multicolored saprolite that has a texture of silt loam.

Permeability is moderate. The shrink-swell potential is low. The depth to bedrock is more than 60 inches. Reaction ranges from very strongly acid to slightly acid.

Included with this soil in mapping are small areas of Badin soils. These soils are intermingled with areas of the Georgeville soil. They have weathered bedrock at a depth of 20 to 40 inches. They have a high content of slate fragments in the surface layer. Also included are a few eroded areas of Badin soils that have a surface layer of silty clay loam. Included soils make up 10 to 20 percent of this map unit.

Most areas of the Georgeville soil are used as cropland. A few areas are used as pasture. The rest are used as woodland.

The major cultivated crops are corn, soybeans, and small grain. Because of the slope and surface runoff, the hazard of erosion is moderate. Conservation practices are needed to help control erosion and runoff and to increase the content of organic matter (fig. 10). In areas used for hay and pasture, tall fescue and ladino clover are the main forage crops.

The major canopy trees are loblolly pine, shortleaf pine, yellow-poplar, white oak, northern red oak, southern red oak, sweetgum, and hickory. Common understory plants are flowering dogwood, American holly, eastern redbud, sourwood, and black cherry. No major limitations affect woodland use and management.

This map unit has no major limitations affecting building site development or recreational uses. However, the moderate permeability, the high content of clay in the subsoil, and the slope are limitations that affect some uses. Removing the plant cover on construction sites causes a moderate hazard of erosion unless erosion-control measures are applied.

The capability subclass is IIe, and the woodland ordination symbol is 8A.

GeD—Georgeville silt loam, 8 to 15 percent slopes. This well drained soil is on upland side slopes. It is mainly in the southern part of the county. Individual areas are long and narrow to irregular in shape and range from 5 to about 100 acres in size.

Typically, the surface layer is strong brown silt loam about 9 inches thick. The subsoil is about 40 inches thick. It is red clay in the upper part and red silty clay loam in the lower part. The underlying material to a depth of 60 inches or more is multicolored saprolite that has a texture of silt loam.

Permeability is moderate. The shrink-swell potential is low. The depth to bedrock is more than 60 inches. Reaction ranges from very strongly acid to slightly acid.

Included with this soil in mapping are small areas of Badin soils. These soils are intermingled with areas of the Georgeville soil. They have weathered bedrock at a depth of 20 to 40 inches. They have a high content of rock fragments in the surface layer. Also included are a few eroded areas of Georgeville soils that have a surface layer of silty clay loam. Included soils make up 15 to 20 percent of this map unit.

Most areas of the Georgeville soil are used as woodland. A few areas are used as pasture. The rest are used as cropland.

The major canopy trees are loblolly pine, shortleaf pine, yellow-poplar, white oak, northern red oak, southern red oak, sweetgum, and hickory. Common understory plants are flowering dogwood, American holly, eastern redbud, sourwood, and black cherry. No major limitations affect woodland use and management.

The major cultivated crops are corn, soybeans, and small grain. Because of the slope and surface runoff, erosion is a very severe hazard if the soil is used as cropland. Conservation practices are needed to help control erosion and runoff and to increase the content of organic matter. In areas used for hay and pasture, tall fescue and ladino clover are the main forage crops.

The slope is the main limitation affecting building site development and recreational uses. The moderate permeability and the clayey subsoil also are limitations affecting some uses. Removing the plant cover on construction sites causes a very severe hazard of erosion unless erosion-control measures are applied.

The capability subclass is IVe, and the woodland ordination symbol is 8A.

Figure 10.—No-till planting of soybeans in small grain stubble on Georgeville silt loam, 2 to 8 percent slopes.

GnD—Goldston very channery silt loam, 4 to 15 percent slopes. This well drained to excessively drained soil is on narrow ridges and side slopes. It is on uplands, mainly in the southern part of the county. Individual areas are irregular in shape and range from 4 to about 60 acres in size.

Typically, the surface layer is brown very channery silt loam about 7 inches thick. The subsurface layer and the subsoil are pale yellow very channery silt loam about 9 inches thick. Weathered, fractured slate bedrock is at a depth of about 16 inches. Hard bedrock is at a depth of about 22 inches.

Permeability is moderately rapid. The shrink-swell potential is low. The depth to weathered, fractured bedrock is 10 to 20 inches. The depth to hard bedrock is more than 20 inches. The soil contains more than 35 percent fragments of slate or argillite. Reaction ranges from very strongly acid to moderately acid.

Included with this soil in mapping are small areas of Badin and Misenheimer soils. These soils are intermingled with areas of the Goldston soil. The moderately deep Badin soils are redder than the Goldston soil and are in areas that have smoother topography. They have a clayey subsoil. The moderately well drained and somewhat poorly drained Misenheimer soils are in the lower, flatter areas or at the head of drainageways. Also included are a few areas of soils that have slopes of less than 4 percent and a few areas of soils that have less than 35 percent rock fragments. Small areas of rock outcrop are also included in most areas. Inclusions make up 15 to 25 percent of this map unit.

Most areas of the Goldston soil are used as woodland. The rest are mostly used as pasture. A small acreage is used as cropland.

The major canopy trees are southern red oak, white oak, post oak, blackjack oak, loblolly pine, and shortleaf pine. Common understory plants are American holly and flowering dogwood. The shallow depth to bedrock is the main limitation affecting woodland use and management. The management concerns are the windthrow hazard and seedling mortality.

The main cultivated crop is small grain. The depth to bedrock, droughtiness, the high content of rock fragments, and the slope are the main limitations. Erosion is a moderate hazard if the soil is used as cropland. Conservation practices are needed to conserve moisture, to help control erosion and surface runoff, and to increase the content of organic matter. In areas used as pasture, tall fescue and ladino clover are the main forage crops.

The depth to bedrock, the slope, and rock fragments on the surface are the main limitations affecting building site development and recreational uses.

The soil is in capability subclass IVs, and the woodland ordination symbol is 7D.

GnE—Goldston very channery silt loam, 15 to 45 percent slopes. This well drained to excessively drained soil is on upland side slopes, mainly in the southern part of the county. Individual areas are long and narrow or broad and irregular in shape and range from 5 to about 100 acres in size.

Typically, the surface layer is brown very channery silt loam about 7 inches thick. The subsurface layer and the subsoil are pale yellow very channery silt loam about 9 inches thick. Weathered, fractured slate bedrock is at a depth of about 16 inches. Hard bedrock is at a depth of about 22 inches.

Permeability is moderately rapid. The shrink-swell potential is low. The depth to weathered, fractured bedrock is 10 to 20 inches. The depth to hard bedrock is more than 20 inches. The soil contains more than 35 percent rock fragments. Reaction ranges from very strongly acid to moderately acid, unless the soil is limed.

Included with this soil in mapping are small areas of Badin and Poindexter soils. These soils are intermingled with areas of the Goldston soil. The moderately deep Badin soils are redder than the Goldston soil. They have a clayey subsoil. The moderately deep Poindexter soils have less than 35 percent rock fragments and are in areas of intermediate or mafic geologic material. Also included are a few areas of shallow soils that have less than 35 percent rock fragments and small areas of rock outcrop. Inclusions make up 15 to 25 percent of this map unit.

Most areas of the Goldston soil are used as woodland. The rest are mostly used as pasture.

The major canopy trees are southern red oak, white oak, post oak, blackjack oak, loblolly pine, and shortleaf pine. Common understory plants are American holly and flowering dogwood. The shallow depth to bedrock is the main limitation affecting woodland use and management. Management concerns are the windthrow hazard, the hazard of erosion, the equipment limitation, and seedling mortality.

The soil is generally not suited to cropland. In areas used as pasture, tall fescue and ladino clover are the main forage crops. The slope, droughtiness, and the high content of slate fragments are the main limitations. Erosion is a severe hazard in unprotected areas. A protective cover of sod is needed.

The slope, the shallow depth to bedrock, and rock fragments on the surface are the major limitations affecting building site development and recreational uses. Removing the plant cover on construction sites causes a severe hazard of erosion unless erosion-control measures are applied.

The capability subclass is VIIs, and the woodland ordination symbol is 7D.

HeB—Herndon silt loam, 2 to 8 percent slopes. This well drained soil is on broad ridges. It is on uplands, mainly in the southern part of the county. Individual areas are irregular in shape and range from 5 to about 200 acres in size.

Typically, the surface layer is light olive brown silt loam about 8 inches thick. The subsoil is about 56 inches thick. The upper part is brownish yellow silty clay loam, the next part is brownish yellow silty clay, and the lower part is yellowish red silty clay loam. The underlying material to a depth of 72 inches or more is multicolored saprolite that has a texture of silt loam.

Permeability is moderate. The shrink-swell potential is low. The depth to bedrock is more than 60 inches. Reaction ranges from very strongly acid to slightly acid.

Included with this soil in mapping are small areas of Georgeville, Badin, and Kirksey soils. These soils are intermingled with areas of the Herndon soil. Georgeville soils have a red subsoil. Badin soils have weathered bedrock at a depth of 20 to 40 inches and have a high content of rock fragments in the surface layer. Kirksey soils are moderately well drained and are in the lower areas, along intermittent drainageways, or on toe slopes. Included soils make up 15 to 25 percent of this map unit.

Most areas of the Herndon soil are used as cropland. A few areas are used as pasture. The rest are used as woodland.

The major cultivated crops are corn, soybeans, and small grain. Because of the slope and surface runoff, the hazard of erosion is moderate. Conservation practices are needed to help control erosion and runoff and to increase the content of organic matter. In areas used for hay and pasture, tall fescue and ladino clover are the main forage crops.

The major canopy trees are loblolly pine, shortleaf pine, yellow-poplar, white oak, northern red oak, southern red oak, sweetgum, and hickory. Common understory plants are flowering dogwood, American holly, eastern redbud, sourwood, and black cherry. No major limitations affect woodland use and management.

This map unit has no major limitations affecting building site development or recreational uses. However, the moderate permeability, the high content of clay in the subsoil, and the slope are limitations that affect some uses. Removing the plant cover on construction sites causes a moderate hazard of erosion unless erosion-control measures are applied.

The capability subclass is IIe, and the woodland ordination symbol is 8A.

HeD—Herndon silt loam, 8 to 15 percent slopes. This well drained soil is on broad and narrow side slopes. It is on uplands, mainly in the southern part of the county. Individual areas are long and narrow to broad and irregular in shape and range from 5 to about 50 acres in size.

Typically, the surface layer is light olive brown silt loam about 8 inches thick. The subsoil is about 56 inches thick. The upper part is brownish yellow silty clay loam, the next part is brownish yellow silty clay, and the lower part is yellowish red silty clay loam. The underlying material to a depth of 72 inches or more is multicolored saprolite that has a texture of silt loam.

Permeability is moderate. The shrink-swell potential is low. The depth to bedrock is more than 60 inches. Reaction ranges from very strongly acid to slightly acid, unless the soil is limed.

Included with this soil in mapping are small areas of Georgeville and Badin soils. These soils are intermingled with areas of the Herndon soil. Georgeville soils have a red subsoil. Badin soils have weathered bedrock at a depth of 20 to 40 inches and have a high content of rock fragments in the surface layer. Also included are a few eroded areas of Herndon soils that have a surface layer of silty clay loam. Included soils make up 15 to 20 percent of this map unit.

Most areas of the Herndon soil are used as woodland. A few areas are used as pasture. The rest are used as cropland.

The major canopy trees are loblolly pine, shortleaf pine, yellow-poplar, white oak, northern red oak, southern red oak, sweetgum, and hickory. Common understory plants are flowering dogwood, American holly, eastern redbud, sourwood, and black cherry. No major limitations affect woodland use and management.

The major cultivated crops are corn, soybeans, and small grain. Because of the slope and surface runoff, erosion is a very severe hazard if the soil is used as cropland. Conservation practices are needed to help control erosion and runoff and to increase the content of organic matter. In areas used for hay and pasture, tall fescue and ladino clover are the main forage crops.

The slope is the main limitation affecting building site development and recreational uses. The moderate permeability and the high content of clay in the subsoil also are limitations affecting some uses. Removing the plant cover on construction sites causes a very severe hazard of erosion unless erosion-control measures are applied.

The capability subclass is IVe, and the woodland ordination symbol is 8A.

IrB—Iredell loam, 1 to 6 percent slopes. This moderately well drained and somewhat poorly drained soil is on smooth ridges and gentle side slopes. It is on uplands, mostly in the southwestern part of the county in the vicinity of Linwood. Individual areas are irregular in shape and range from 5 to about 75 acres in size.

Typically, the surface layer is dark grayish brown loam about 7 inches thick. The subsoil is about 19 inches thick. It is yellowish brown clay in the upper part and olive brown clay in the lower part. The underlying material to a depth of 60 inches or more is multicolored saprolite that has a texture of fine sandy loam.

The perched seasonal water table is 1 foot to 2 feet below the surface. Permeability is slow. The shrink-swell potential is very high. The depth to bedrock is more than 60 inches. Reaction ranges from moderately acid to moderately alkaline.

Included with this soil in mapping are small areas of Mecklenburg, Enon, Zion, and Armenia soils. The well drained Mecklenburg soils are on knolls and ridges. They are redder and less plastic than the Iredell soil. The well drained Enon and Zion soils are intermingled with areas of the Iredell soil in the more sloping areas. The poorly drained Armenia soils are in a few of the lower, flatter areas. Also included are a few small areas of a soil that has weathered bedrock at a depth of 40 to 60 inches but is otherwise similar to the Iredell soil and a few areas that contain small depressions that are ponded during the winter. Inclusions make up 15 to 25 percent of this map unit.

Most of the acreage of the Iredell soil is used as cropland or pasture. The rest is used as woodland.

The main cultivated crops are corn and soybeans.

The very sticky clay subsoil, the slow permeability, the wetness, and the slope are the main limitations. In the more sloping areas, the hazard of erosion is moderate, and conservation practices are needed to help control erosion. Practices that improve drainage and tilth should also be used. In areas used for hay and pasture, tall fescue and ladino clover are the main forage crops.

The major canopy trees are loblolly pine, shortleaf pine, red maple, white oak, willow oak, blackgum, and sweetgum. Common understory plants are flowering dogwood, eastern redbud, American holly, eastern redcedar, and sourwood. The clayey subsoil is the main limitation affecting woodland use and management. Management concerns are the equipment limitation and seedling mortality. Equipment should not be operated during wet periods.

The slow permeability, the very high shrink-swell potential, the clayey subsoil, and the wetness are the major limitations affecting building site development. Footings should be placed below the clay layer or foundations should be designed to resist cracking caused by shrinking and swelling. The slow permeability and the wetness are severe limitations affecting septic tank absorption fields. Removing the plant cover on construction sites causes a moderate hazard of erosion unless erosion-control measures are applied. The wetness is the main limitation affecting most recreational uses.

The capability subclass is IIe, and the woodland ordination symbol is 6C.

KyB—Kirksey silt loam, 2 to 6 percent slopes. This moderately well drained soil is on the lower slopes of ridges in the uplands and around the head of intermittent drainageways. It is mainly in the southern part of the county. Individual areas are irregular in shape and range from 5 to several hundred acres in size.

Typically, the surface layer is grayish brown silt loam about 2 inches thick. The subsurface layer is light yellowish brown silt loam about 4 inches thick. The subsoil is about 30 inches thick. It is olive yellow silt loam in the upper part, light olive brown silty clay loam in the next part, and brownish yellow and light gray silty clay loam in the lower part. The underlying material is multicolored saprolite that has a texture of channery silt loam. Weathered, fractured slate bedrock is at a depth of about 42 inches. Hard slate bedrock is at a depth of about 48 inches.

Permeability is moderately slow. The shrink-swell potential is low. The perched seasonal water table is 1.5 to 3.0 feet below the surface. Reaction ranges from very strongly acid to slightly acid. The depth to weathered bedrock is 40 to 60 inches.

Included with this soil in mapping are small areas of Misenheimer, Cid, and Oakboro soils. The shallow Misenheimer and the moderately deep Cid soils are intermingled with areas of the Kirksey soil. Cid soils are more clayey than the Kirksey soil. Oakboro soils are on flood plains. Included soils make up 15 to 25 percent of this map unit.

Most of the acreage of the Kirksey soil is used as woodland or pasture. The rest is used as cropland.

The major canopy trees are loblolly pine, shortleaf pine, red maple, sweetgum, blackgum, yellow-poplar, willow oak, white oak, southern red oak, and northern red oak. Common understory plants are American holly, eastern redcedar, blackgum, and red maple. The seasonal wetness is the main limitation affecting woodland use and management. The equipment limitation is a management concern. Equipment should not be operated during wet periods.

The main cultivated crops are corn, soybeans, and small grain. Because of the slope and surface runoff, erosion is a moderate hazard if the soil is used as cropland. The wetness is also a main limitation. A drainage system and conservation practices that help to control erosion and surface runoff are needed. In areas used for hay or pasture, tall fescue and ladino clover are the main forage crops.

The wetness and the moderately slow permeability are the main limitations affecting building site development and recreational uses. Removing the plant cover on construction sites causes a moderate hazard of erosion unless erosion-control measures are applied.

The capability subclass is IIe, and the woodland ordination symbol is 6W.

MeB—Mecklenburg loam, 2 to 8 percent slopes. This well drained soil is on broad ridges. It is on uplands, mainly in the southwestern part of the county in the vicinity of Linwood. Individual areas are irregular in shape and range from 5 to more than 100 acres in size.

Typically, the surface layer is reddish brown loam about 8 inches thick. The subsoil is about 28 inches thick. It is yellowish red clay in the upper part and yellowish red clay loam in the lower part. The underlying material to a depth of 60 inches or more is multicolored saprolite that has a texture of sandy clay loam.

Permeability is slow. The shrink-swell potential is moderate. The depth to bedrock is more than 60 inches. Reaction ranges from moderately acid to neutral.

Included with this soil in mapping are small areas of Enon, Poindexter, Iredell, Cecil, and Davidson soils. Davidson, Enon, and Poindexter soils are intermingled

with areas of the Mecklenburg soil. Davidson soils are dark red and are more acid than the Mecklenburg soil. Enon soils are yellower than the Mecklenburg soil. Poindexter soils are loamy and moderately deep. The moderately well drained and somewhat poorly drained Iredell soils are on the flatter parts of the landscape. Cecil soils are more acid than the Mecklenburg soil. They are in areas of felsic geologic material. Also included are a few small, eroded areas of Mecklenburg soils that have a surface layer of clay loam. Included soils make up 15 to 25 percent of this map unit.

Most areas of the Mecklenburg soil are used as cropland or pasture. The rest are used as woodland.

The main cultivated crops are corn, soybeans, and small grain. Because of the slope and surface runoff, the hazard of erosion is moderate. Conservation practices are needed to help control erosion and runoff and to increase the content of organic matter. In areas used for hay and pasture, tall fescue and ladino clover are the main forage crops.

The major canopy trees are loblolly pine, shortleaf pine, Virginia pine, white oak, southern red oak, northern red oak, hickory, yellow-poplar, and sweetgum. Common understory plants are flowering dogwood, eastern redcedar, eastern redbud, sourwood, and sassafras. No major limitations affect woodland use and management.

The slow permeability and the moderate shrink-swell potential in the subsoil are the main limitations affecting building site development. The slope and the clayey subsoil also are limitations. Foundations should be designed to resist cracking caused by shrinking and swelling of the subsoil. The slow permeability is a limitation affecting septic tank absorption fields. Removing the plant cover on construction sites causes a moderate hazard of erosion unless erosion-control measures are applied. The slow permeability is a limitation affecting most recreational uses.

The capability subclass is IIe, and the woodland ordination symbol is 7A.

MeD—Mecklenburg loam, 8 to 15 percent slopes. This well drained soil is on broad and narrow side slopes, mainly in the southwestern part of the county in the vicinity of Linwood. Individual areas are irregular in shape and range from 5 to about 80 acres in size.

Typically, the surface layer is reddish brown loam about 8 inches thick. The subsoil is about 28 inches thick. It is yellowish red clay in the upper part and yellowish red clay loam in the lower part. The underlying material to a depth of 60 inches or more is multicolored saprolite that has a texture of sandy clay loam.

Permeability is slow. The shrink-swell potential is moderate. The depth to bedrock is more than 60 inches. Reaction ranges from moderately acid to neutral.

Included with this soil in mapping are small areas of Enon, Poindexter, Pacolet, and Davidson soils. Davidson, Enon, and Poindexter soils are intermingled with areas of the Mecklenburg soil. Davidson soils are dark red and are more acid than the Mecklenburg soil. Enon soils are yellower than the Mecklenburg soil. Poindexter soils are loamy and moderately deep. Pacolet soils are more acid than the Mecklenburg soil. They are in areas of felsic geologic material. Also included are a few small, eroded areas that have a surface layer of clay loam. Included soils make up 15 to 25 percent of this map unit.

Most areas of the Mecklenburg soil are used as woodland. The rest are used as cropland or pasture.

The major canopy trees are loblolly pine, shortleaf pine, Virginia pine, white oak, southern red oak, northern red oak, hickory, yellow-poplar, and sweetgum. Common understory plants are flowering dogwood, eastern redcedar, eastern redbud, sourwood, and sassafras. No major limitations affect woodland use and management.

The main cultivated crops are corn, soybeans, tobacco, and small grain. Because of the slope and surface runoff, erosion is a very severe hazard if the soil is used as cropland. Conservation practices are needed to help control erosion and runoff and to increase the content of organic matter. In areas used for hay and pasture, tall fescue and ladino clover are the main forage crops.

The slow permeability, the moderate shrink-swell potential in the subsoil, and the slope are the main limitations affecting building site development. The clayey subsoil also is a limitation affecting some uses. Foundations should be designed to resist cracking caused by shrinking and swelling of the subsoil. The slow permeability is a limitation affecting septic tank absorption fields. Removing the plant cover on construction sites causes a very severe hazard of erosion unless erosion-control measures are applied. The slope and the slow permeability are limitations affecting most recreational uses.

The capability subclass is IVe, and the woodland ordination symbol is 7A.

MeB2—Mecklenburg clay loam, 2 to 8 percent slopes, eroded. This well drained soil is on broad upland ridges. The larger areas are south and west of Lexington and in the vicinity of Linwood and Cotton Grove. Individual areas are irregular in shape and range from 5 to about 100 acres in size.

This soil is moderately eroded, and in most places tillage has mixed subsoil material into the remaining original surface layer. Typically, the surface layer is reddish brown clay loam about 5 inches thick. The subsoil is about 24 inches thick. The upper part is red clay, and the lower part is yellowish red clay loam. The underlying material to a depth of 50 inches or more is multicolored saprolite that has textures of clay loam and loam.

Permeability is slow. The shrink-swell potential is moderate. The depth to bedrock is more than 60 inches. Reaction ranges from moderately acid to neutral.

Included with this soil in mapping are small areas of Enon, Cecil, and Davidson soils. Davidson and Enon soils are intermingled with areas of the Mecklenburg soil. Davidson soils are dark red and are more acid than the Mecklenburg soil. Enon soils are yellower than the Mecklenburg soil. Cecil soils are deeper and more acid than the Mecklenburg soil. They are in areas of felsic or intermediate geologic material. Also included are a few small, slightly eroded areas of Mecklenburg soils that have a surface layer of loam. Included soils make up 15 to 20 percent of this map unit.

Most of the acreage of the Mecklenburg soil is used as cropland or pasture. The rest is used as woodland.

The major cultivated crops are corn, soybeans, and small grain. Because of the slope and surface runoff, the hazard of erosion is severe. Maintaining good tilth is difficult because of the clay loam surface layer. A crust commonly forms as the surface layer dries after a hard rain, and clods form if the soil is worked when it is wet. The crust and the clods make seedbed preparation difficult and may affect germination and cause uneven stands and poor growth. Conservation practices are needed to help control erosion and runoff. Practices that increase the content of organic matter are essential to maintain tilth. In areas used for hay and pasture, tall fescue and ladino clover are the main forage crops.

The major canopy trees are loblolly pine, shortleaf pine, Virginia pine, white oak, southern red oak, northern red oak, hickory, yellow-poplar, and sweetgum. Common understory plants are eastern redcedar, eastern redbud, sourwood, and sassafras. The clay loam surface layer is the main limitation affecting woodland use and management. Management concerns are the hazard of erosion, the equipment limitation, and seedling mortality.

The clayey subsoil, the slow permeability, and the moderate shrink-swell potential in the subsoil are the main limitations affecting building site development. The slope also is a limitation. Foundations should be designed to resist cracking caused by shrinking and swelling of the subsoil. The slow permeability is a limitation affecting septic tank absorption fields. Removing the plant cover on construction sites causes a severe hazard of erosion unless erosion-control measures are applied. The slow permeability is a limitation affecting most recreational uses.

The capability subclass is IIIe, and the woodland ordination symbol is 6C.

MeD2—Mecklenburg clay loam, 8 to 15 percent slopes, eroded. This well drained soil is on narrow side slopes in the uplands. It is mainly in small, scattered areas southeast of Linwood. Individual areas are irregular in shape and range from 4 to about 25 acres in size.

The soil is moderately eroded, and in most places tillage has mixed subsoil material into the remaining original surface layer. Typically, the surface layer is reddish brown clay loam about 5 inches thick. The subsoil is about 24 inches thick. The upper part is red clay, and the lower part is yellowish red clay loam. The underlying material to a depth of 60 inches or more is multicolored saprolite that has textures of clay loam and loam.

Permeability is slow. The shrink-swell potential is moderate. The depth to hard bedrock is more than 60 inches. Reaction ranges from moderately acid to neutral.

Included with this soil in mapping are small areas of Enon, Pacolet, and Davidson soils. Davidson and Enon soils are intermingled with areas of the Mecklenburg soil. Davidson soils are dark red and are more acid than the Mecklenburg soil. Enon soils are yellower than the Mecklenburg soil. Pacolet soils are more acid than the Mecklenburg soil. They are in areas of felsic geologic material. Also included are a few small, slightly eroded areas of Mecklenburg soils that have a surface layer of loam. Included soils make up 15 to 25 percent of this map unit.

Most areas of the Mecklenburg soil are used as woodland. The rest are used as cropland or pasture.

The major canopy trees are loblolly pine, shortleaf pine, Virginia pine, white oak, southern red oak, northern red oak, hickory, yellow-poplar, and sweetgum. Common understory plants are eastern redcedar, eastern redbud, sourwood, and sassafras. The clay loam surface layer is the main limitation affecting woodland use and management. Management concerns are the hazard of erosion, the equipment limitation, and seedling mortality.

The major cultivated crops are corn, soybeans, and small grain. Because of the slope and surface runoff, erosion is a very severe hazard if the soil is used as cropland. Maintaining good tilth is difficult because of the clay loam surface layer. A crust commonly forms as

this layer dries after a hard rain, and clods form if the soil is worked when it is wet. The crust and the clods make seedbed preparation difficult and may affect germination and cause uneven stands and poor growth. Because of the slope, the hazard of additional erosion is severe in areas used for cultivated crops. Conservation practices to help control erosion and surface runoff and to increase the content of organic matter are essential to maintain productivity and tilth. In areas used for hay and pasture, tall fescue and ladino clover are the main forage crops.

The clayey subsoil, the slow permeability, the moderate shrink-swell potential in the subsoil, and the slope are the main limitations affecting building site development. Foundations should be designed to resist cracking caused by shrinking and swelling of the subsoil. The slow permeability is a limitation affecting septic tank absorption fields. Removing the plant cover on construction sites causes a very severe hazard of erosion unless erosion-control measures are applied. The slope and the slow permeability are limitations affecting most recreational uses.

The capability subclass is IVe, and the woodland ordination symbol is 6C.

Ok—Oakboro silt loam, frequently flooded. This nearly level, moderately well drained and somewhat poorly drained soil is on flood plains along creeks and drainageways in the southern part of the county. Some of the larger areas are along Flat Swamp Creek, Lick Creek, and Cabin Creek. Individual areas range from several hundred feet to about 0.25 mile wide, and many are continuous for several miles along the larger streams. Individual areas range from 5 to several hundred acres in size.

Typically, the surface layer is brown silt loam about 6 inches thick. The subsurface layer is yellowish brown silt loam about 4 inches thick. The subsoil is about 24 inches thick. It is brownish yellow silt loam in the upper part and yellowish brown silty clay loam in the lower part. The underlying material is mottled yellowish brown and light gray clay. Hard, fractured bedrock is at a depth of about 43 inches.

The seasonal high water table is 1 foot to 2 feet below the surface. Permeability is moderate. The shrink-swell potential is low. The depth to hard bedrock is 40 to 60 inches. Reaction ranges from very strongly acid to neutral.

Included with this soil in mapping are small areas of Kirksey and Misenheimer soils on adjacent toe slopes and at the head of drainageways. These soils are not subject to flooding. Misenheimer soils are shallow. Also included are a few areas that have hard bedrock at a depth of 24 to 40 inches, a few small areas of occasionally flooded and well drained soils, and a few areas of poorly drained soils. Inclusions make up 15 to 20 percent of this map unit.

Most of the acreage of the Oakboro soil is used as woodland. The rest is used as cropland or pasture.

The major canopy trees are shortleaf pine, yellow-poplar, blackgum, American sycamore, northern red oak, sweetgum, red maple, hickory, white oak, and willow oak. Common understory plants are American holly, red maple, American hornbeam, and sourwood. The wetness is the main limitation, and the flooding is the main hazard affecting woodland use and management. The equipment limitation is a significant management concern. Equipment should not be operated during wet periods.

The wetness and the flooding are the main limitations in cultivated areas. The major cultivated crops are corn, soybeans, and small grain. Crops are subject to damage, unless they are protected from flooding. A drainage system and flood prevention are needed. In areas used for hay and pasture, tall fescue and ladino clover are the main forage crops.

The soil is generally unsuited to building site development and recreational uses because of the wetness and the flooding.

The capability subclass is IVw, and the woodland ordination symbol is 7W.

PaB—Pacolet sandy loam, 2 to 8 percent slopes. This well drained soil is on broad to narrow ridges. It is on uplands in the western and northwestern parts of the county. Individual areas are irregular in shape and range from 4 to about 100 acres in size.

Typically, the surface layer is very dark grayish brown sandy loam about 2 inches thick. The subsurface layer is yellowish brown sandy loam about 5 inches thick. The subsoil is about 30 inches thick. It is yellowish red sandy clay loam in the upper part, red sandy clay in the next part, and yellowish red sandy clay loam in the lower part. The underlying material to a depth of 60 inches or more is multicolored saprolite that has a texture of fine sandy loam.

Permeability is moderate. The shrink-swell potential is low. The depth to bedrock is more than 60 inches. Reaction ranges from very strongly acid to moderately acid.

Included with this soil in mapping are areas of Cecil, Appling, and Wedowee soils. Cecil and Appling soils have a subsoil that is thicker than that of the Pacolet soil. They are on broad, smooth ridges. Also included are small, eroded areas of Pacolet soils that have a surface layer of clay loam, a few areas of micaceous, loamy soil, and some areas that have a high content of rock fragments and feldspar crystals throughout the

profile. Inclusions make up 20 to 25 percent of this map unit.

Most of the acreage of the Pacolet soil is used as cropland or pasture. The rest is mainly used as woodland.

The major cultivated crops are tobacco, corn, soybeans, and small grain. Because of the slope and surface runoff, the hazard of erosion is moderate. Conservation practices help to control runoff and erosion and to increase the content of organic matter. In areas used for hay and pasture, tall fescue and ladino clover are the main forage crops.

The major canopy trees are loblolly pine, shortleaf pine, Virginia pine, southern red oak, northern red oak, white oak, hickory, and yellow-poplar. Common understory plants are flowering dogwood, sourwood, eastern redbud, black cherry, and sassafras. No major limitations affect woodland use and management.

This map unit has no major limitations affecting building site development or recreational uses. However, the clayey subsoil, the moderate permeability, and the slope are limitations that affect some uses. Removing the plant cover on construction sites causes a moderate hazard of erosion unless erosion-control measures are applied.

The capability subclass is IIe, and the woodland ordination symbol is 8A.

PaD—Pacolet sandy loam, 8 to 15 percent slopes. This well drained soil is on side slopes in the uplands in the western and northwestern parts of the county. Individual areas are elongated bands that vary in width and range from 5 to about 50 acres in size.

Typically, the surface layer is very dark grayish brown sandy loam about 2 inches thick. The subsurface layer is yellowish brown sandy loam about 5 inches thick. The subsoil is about 30 inches thick. It is yellowish red sandy clay loam in the upper part, red sandy clay in the next part, and yellowish red sandy clay loam in the lower part. The underlying material to a depth of 60 inches or more is multicolored saprolite that has a texture of fine sandy loam.

Permeability is moderate. The shrink-swell potential is low. The depth to bedrock is more than 60 inches. Reaction ranges from very strongly acid to moderately acid.

Included with this soil in mapping are areas of Cecil and Wedowee soils. Cecil soils have a subsoil that is thicker than that of the Pacolet soil, and Wedowee soils have a brownish or yellowish subsoil. They are intermingled with areas of the Pacolet soil. Also included are small, eroded areas of Pacolet soils that have a surface layer of clay loam, a few areas of micaceous, loamy soils, and some areas that have a high amount of coarse fragments and feldspar crystals throughout the profile. Inclusions make up 15 to 25 percent of this map unit.

Most of the acreage of the Pacolet soil is used as cropland or pasture. The rest is used as woodland.

The major cultivated crops are tobacco, corn, soybeans, and small grain. Because of the slope and surface runoff, the hazard of erosion is very severe. Conservation practices are needed to help control runoff and erosion and to increase the content of organic matter. In areas used for hay and pasture, tall fescue and ladino clover are the main forage crops.

The major canopy trees are loblolly pine, shortleaf pine, Virginia pine, southern red oak, northern red oak, white oak, hickory, and yellow-poplar. Common understory plants are flowering dogwood, sourwood, eastern redbud, black cherry, and sassafras. No significant limitations affect most woodland use and management.

The slope is the main limitation affecting building site development and recreational uses. The clayey subsoil and the moderate permeability also are limitations that affect some uses. Removing the plant cover on construction sites causes a very severe hazard of erosion unless erosion-control measures are applied.

The capability subclass is IVe, and the woodland ordination symbol is 8A.

PaE—Pacolet sandy loam, 15 to 25 percent slopes. This well drained soil is on side slopes in the uplands adjacent to flood plains or drainageways in the northern and western parts of the county. Individual areas are long and narrow and range from 6 to about 100 acres in size.

Typically, the surface layer is very dark grayish brown sandy loam about 2 inches thick. The subsurface layer is yellowish brown sandy loam about 5 inches thick. The subsoil is about 30 inches thick. It is yellowish red sandy clay loam in the upper part, red sandy clay in the next part, and yellowish red sandy clay loam in the lower part. The underlying material to a depth of 60 inches or more is multicolored saprolite that has a texture of fine sandy loam.

Permeability is moderate. The shrink-swell potential is low. The depth to bedrock is more than 60 inches. Reaction ranges from very strongly acid to moderately acid.

Included with this soil in mapping are the moderately deep Poindexter soils. These soils are intermingled with areas of the Pacolet soil. They are in areas of intermediate or mafic geologic material. Also included are a few areas of eroded Pacolet soils that have a surface layer of clay loam, a few areas of micaceous, loamy soils, and a few areas that have a high amount

of rock fragments and feldspar crystals throughout the profile. Also included are a few areas that have slopes of 25 to 45 percent. Inclusions make up 20 to 30 percent of this map unit.

Most of the acreage of the Pacolet soil is used as woodland. A few areas are used as pasture.

The major canopy trees are loblolly pine, shortleaf pine, Virginia pine, yellow-poplar, American beech, southern red oak, northern red oak, white oak, and hickory. Common understory plants are flowering dogwood, sassafras, and eastern redbud. The slope is the main limitation affecting woodland use and management. Management concerns are the hazard of erosion and the equipment limitation.

In areas used as pasture, tall fescue is the main forage crop. Because of the slope and surface runoff, the hazard of erosion is very severe in unprotected areas. A good growth of sod is needed to prevent excessive erosion.

The slope is the major limitation affecting building site development and recreational uses. Removing the plant cover at construction sites causes a very severe hazard of erosion unless erosion-control measures are applied.

The capability subclass is VIe, and the woodland ordination symbol is 8R.

PaF—Pacolet sandy loam, 25 to 45 percent slopes. This well drained soil is on side slopes in the uplands adjacent to flood plains or drainageways in the northern and western parts of the county. Individual areas are long and narrow and range from 6 to about 80 acres in size.

Typically, the surface layer is very dark grayish brown sandy loam about 2 inches thick. The subsurface layer is yellowish brown sandy loam about 5 inches thick. The subsoil is about 30 inches thick. It is yellowish red sandy clay loam in the upper part, red sandy clay in the next part, and yellowish red sandy clay loam in the lower part. The underlying material to a depth of 60 inches or more is multicolored saprolite that has a texture of fine sandy loam.

Permeability is moderate. The shrink-swell potential is low. The depth to bedrock is more than 60 inches. Reaction ranges from very strongly acid to moderately acid.

Included with this soil in mapping are the moderately deep Poindexter soils. These soils are intermingled with areas of the Pacolet soil. They are in areas of intermediate and mafic geologic material. Also included are a few areas of micaceous soils that have a loamy subsoil. Included soils make up 20 to 25 percent of this map unit.

Nearly all areas of the Pacolet soil are used as woodland. Loblolly pine, shortleaf pine, Virginia pine, yellow-poplar, American beech, southern red oak, white oak, northern red oak, and hickory are the major canopy trees. Common understory plants are flowering dogwood, sassafras, and eastern redbud. The slope is the main limitation affecting woodland use and management. The hazard of erosion and the equipment limitation are the main management concerns.

This soil is generally unsuited to cropland, pasture, building site development, or recreational uses because of the slope.

The capability subclass is VIIe, and the woodland ordination symbol is 8R.

Pt—Pits, quarries. This map unit consists of areas where the entire soil has been removed and the underlying bedrock has been excavated. Most of this quarrying is for gravel or crushed stone for use in road construction, for flagstone, or for material used in the manufacture of bricks. The largest areas include the flagstone quarry on Slate Mine Road in the southeastern corner of the county, the slate quarries off Cunningham Brick Road southwest of Thomasville, and several gravel quarries southwest of Thomasville. Individual areas are irregular in shape. These areas are about 4 to 80 acres in size. Pits that are smaller than 4 acres in size is shown with a special symbol.

These quarries range from 10 to more than 100 feet deep. The side slopes are mostly steep to vertical. Water is in the deepest levels of many of the areas.

Included in mapping are small areas of Udorthents, loamy, on spoil embankments and areas that have been graded or filled to facilitate the quarrying operations. Small, undisturbed areas of soils may be included in a few places.

These areas support very little vegetation. Onsite investigation is needed before planning the reclamation, use, or management of these areas.

This map unit has not been assigned a capability subclass or a woodland ordination symbol.

PnB—Poindexter and Zion sandy loams, 2 to 8 percent slopes. This map unit consists of areas of well drained Poindexter and Zion soils on upland ridges. It is throughout the county and is a major map unit in the northeastern part. The Poindexter and Zion soils each make up about 40 percent of the map unit. The dominant components in the mapped areas are the Poindexter soil, the Zion soil, or a mixture of both. They are too intricately mixed to separate in mapping. Individual areas are irregular in shape and range from 5 to about 250 acres in size.

Typically, the Poindexter soil has a surface layer of yellowish brown sandy loam about 4 inches thick. The

subsoil is about 17 inches thick. It is yellowish brown sandy clay loam in the upper part and brownish yellow sandy loam in the lower part. The underlying material is multicolored saprolite that has a texture of sandy loam. Weathered bedrock is at a depth of about 36 inches. Hard bedrock is at a depth of about 42 inches.

Typically, the Zion soil has a surface layer of dark brown sandy loam about 5 inches thick. The subsoil is about 18 inches thick. It is dark yellowish brown clay loam in the upper part, yellowish brown clay in the next part, and strong brown clay loam in the lower part. The underlying material is multicolored saprolite that has a texture of clay loam. Weathered bedrock is at a depth of about 33 inches. Hard bedrock is at a depth of about 39 inches.

Permeability is moderate in the Poindexter soil and moderately slow or slow in the Zion soil. The shrink-swell potential is low in the Poindexter soil and high in the Zion soil. The depth to weathered bedrock is 20 to 40 inches in the Poindexter soil. The depth to hard bedrock is 40 to 60 inches in the Poindexter soil. The depth to bedrock is 20 to 40 inches in the Zion soil. Reaction ranges from strongly acid to neutral in both soils.

Included with these soils in mapping are small areas of Enon, Vance, and Sedgefield soils. Enon soils are deeper than the Poindexter and Zion soils. Vance soils are deeper and more acid than the Poindexter and Zion soils. They are on broader ridges and in areas of felsic geologic material. The moderately well drained and somewhat poorly drained Sedgefield soils are in depressions and saddles. Also included are a few small areas of a soil that has bedrock within a depth of 20 inches. Included soils make up about 20 percent of this map unit.

Most of the acreage in this map unit is used as cropland or pasture. The rest is mainly used as woodland.

The major cultivated crops are tobacco, corn, soybeans, and small grain. Because of the slope and surface runoff, the hazard of erosion is moderate. Conservation practices are needed to help control erosion and runoff and to increase the content of organic matter. In areas used for hay and pasture, tall fescue and ladino clover are the main forage crops.

The major canopy trees are loblolly pine, shortleaf pine, Virginia pine, northern red oak, southern red oak, white oak, hickory, and sweetgum. Common understory plants are flowering dogwood, eastern redcedar, American holly, eastern redbud, black cherry, and sassafras. The depth to bedrock is a limitation affecting woodland use and management. The windthrow hazard is a management concern.

The depth to bedrock is a major limitation affecting building site development and recreational uses. The slope is a limitation that affects some uses. In areas of the Zion soil, the moderately slow or slow permeability and the high shrink-swell potential also are major limitations affecting building site development. In these areas foundations should be designed to resist cracking caused by shrinking and swelling of the subsoil. The moderately slow or slow permeability in areas of the Zion soil is a limitation affecting septic tank absorption fields. Removing the plant cover on construction sites causes a moderate hazard of erosion unless erosion-control measures are applied.

The capability subclass is IIe, and the woodland ordination symbol is 6D.

PnD—Poindexter and Zion sandy loams, 8 to 15 percent slopes. This map unit consists of areas of well drained Poindexter and Zion soils on upland ridges and side slopes. It is in scattered areas throughout the county and is a major map unit in the northeastern part. The Poindexter soil makes up about 45 percent of the map unit, and the Zion soil makes up 35 percent. The dominant components in the mapped areas are the Poindexter soil, the Zion soil, or a mixture of both. Individual areas are irregular in shape and range from 5 to about 100 acres in size.

Typically, the Poindexter soil has a surface layer of yellowish brown sandy loam about 4 inches thick. The subsoil is about 17 inches thick. It is yellowish brown sandy clay loam in the upper part and brownish yellow sandy loam in the lower part. The underlying material is multicolored saprolite that has a texture of sandy loam. Weathered bedrock is at a depth of about 36 inches. Hard bedrock is at a depth of about 42 inches.

Typically, the Zion soil has a surface layer of dark brown sandy loam about 5 inches thick. The subsoil is about 18 inches thick. It is dark yellowish brown clay loam in the upper part, yellowish brown clay in the next part, and strong brown clay loam in the lower part. The underlying material is multicolored saprolite that has a texture of clay loam. Weathered bedrock is at a depth of about 33 inches. Hard bedrock is at a depth of about 39 inches.

Permeability is moderate in the Poindexter soil and moderately slow or slow in the Zion soil. The shrink-swell potential is low in the Poindexter soil and high in the Zion soil. The depth to weathered bedrock is 20 to 40 inches in the Poindexter soil. The depth to hard bedrock is 40 to 60 inches in the Poindexter soil. The depth to bedrock is 20 to 40 inches in the Zion soil. Reaction ranges from strongly acid to neutral in both soils.

Included with these soils in mapping are small areas of Enon, Vance, and Wedowee soils. These soils are

deeper than the Poindexter and Zion soils, and they are on the smoother parts of ridges. Also included are small areas of a soil that has bedrock within a depth of 20 inches. Included soils make up about 20 percent of this map unit.

Most of the acreage in this map unit is used as woodland. The rest is mainly used as pasture. A few areas are used as cropland.

The major canopy trees are loblolly pine, shortleaf pine, Virginia pine, northern red oak, southern red oak, white oak, hickory, and sweetgum. Common understory plants are flowering dogwood, eastern redcedar, American holly, eastern redbud, black cherry, and sassafras. The depth to bedrock is a limitation affecting woodland use and management. The windthrow hazard is a management concern.

The major cultivated crops are tobacco, corn, soybeans, and small grain. Because of the slope and surface runoff, the hazard of erosion is very severe. Conservation practices are needed to help control erosion and runoff and to increase the content of organic matter. In areas used for hay and pasture, tall fescue and ladino clover are the main forage crops.

The depth to bedrock and the slope are the main limitations affecting building site development and recreational uses. In areas of the Zion soil, the moderately slow or slow permeability and the high shrink-swell potential also are major limitations affecting building site development. In these areas foundations should be designed to resist cracking caused by shrinking and swelling of the subsoil. The moderately slow or slow permeability in areas of the Zion soil is a limitation affecting septic tank absorption fields. Removing the plant cover on construction sites causes a very severe hazard of erosion unless erosion-control measures are applied.

The capability subclass is IIIe, and the woodland ordination symbol is 6D.

PnE—Poindexter and Zion sandy loams, 15 to 25 percent slopes. This map unit consists of areas of well drained Poindexter and Zion soils on side slopes. It is in scattered areas throughout the county and is a major map unit in the northeastern part. The Poindexter soil makes up about 60 percent of the map unit, and the Zion soil makes up 20 percent. The dominant components in the mapped areas are the Poindexter soil or a mixture of the Poindexter and Zion soils. Individual areas are elongated and irregular in shape and range from 5 to about 200 acres in size.

Typically, the Poindexter soil has a surface layer of yellowish brown sandy loam about 4 inches thick. The subsoil is about 17 inches thick. It is yellowish brown sandy clay loam in the upper part and brownish yellow sandy loam in the lower part. The underlying material is multicolored saprolite that has a texture of sandy loam. Weathered bedrock is at a depth of about 36 inches. Hard bedrock is at a depth of about 42 inches.

Typically, the Zion soil has a surface layer of dark brown sandy loam about 5 inches thick. The subsoil is about 18 inches thick. It is dark yellowish brown clay loam in the upper part, yellowish brown clay in the next part, and strong brown clay loam in the lower part. The underlying material is multicolored saprolite that has a texture of clay loam. Weathered bedrock is at a depth of about 33 inches. Hard bedrock is at a depth of about 39 inches.

Permeability is moderate in the Poindexter soil and moderately slow or slow in the Zion soil. The shrink-swell potential is low in the Poindexter soil and high in the Zion soil. The depth to weathered bedrock is 20 to 40 inches in the Poindexter soil. The depth to hard bedrock is 40 to 60 inches in the Poindexter soil. The depth to bedrock is 20 to 40 inches in the Zion soil. Reaction ranges from strongly acid to neutral in both soils.

Included with these soils in mapping are a few small areas of Pacolet soils. These soils are deeper and redder than the Poindexter and Zion soils. They are mostly in the western part of the county, in areas of felsic geologic material. Also included are small areas of soils that have bedrock within 20 inches of the surface. Included soils make up about 20 percent of this map unit.

Most of the acreage in this map unit is used as woodland. A few areas are used as pasture.

The major canopy trees are loblolly pine, shortleaf pine, Virginia pine, northern red oak, southern red oak, white oak, hickory, and sweetgum. Common understory plants are flowering dogwood, eastern redcedar, American holly, eastern redbud, black cherry, and sassafras. The slope and the depth to bedrock are the main limitations affecting woodland use and management. The hazard of erosion, the equipment limitation, and the windthrow hazard are management concerns.

In areas used as pasture, tall fescue and ladino clover are the main forage crops. Because of the slope and surface runoff, the hazard of erosion is very severe. A good growth of sod is needed to prevent excessive erosion.

The slope and the depth to bedrock are the major limitations affecting building site development and recreational uses. The moderately slow or slow permeability and the high shrink-swell potential also are limitations in areas of the Zion soil. If development occurs, removing the plant cover at construction sites

causes a very severe hazard of erosion unless erosion-control measures are applied.

The capability subclass is IVe, and the woodland ordination symbol is 6R.

PnF—Poindexter and Zion sandy loams, 25 to 45 percent slopes. This map unit consists of areas of well drained Poindexter and Zion soils on steep side slopes. It is in scattered areas throughout the county and is a major map unit in the northeastern part. The Poindexter soil makes up about 65 percent of the map unit, and the Zion soil makes up 20 percent. The dominant components in the mapped areas are the Poindexter soil or a mixture of Poindexter and Zion soils. Individual areas are long and narrow and range from 5 to about 100 acres in size.

Typically, the Poindexter soil has a surface layer of yellowish brown sandy loam about 4 inches thick. The subsoil is about 17 inches thick. It is yellowish brown sandy clay loam in the upper part and brownish yellow sandy loam in the lower part. The underlying material is multicolored saprolite that has a texture of sandy loam. Weathered bedrock is at a depth of about 36 inches. Hard bedrock is at a depth of about 42 inches.

Typically, the Zion soil has a surface layer of dark brown sandy loam about 5 inches thick. The subsoil is about 18 inches thick. It is dark yellowish brown clay loam in the upper part, yellowish brown clay in the next part, and strong brown clay loam in the lower part. The underlying material is multicolored saprolite that has a texture of clay loam. Weathered bedrock is at a depth of about 33 inches. Hard bedrock is at a depth of about 39 inches.

Permeability is moderate in the Poindexter soil and moderately slow or slow in the Zion soil. The shrink-swell potential is low in the Poindexter soil and high in the Zion soil. The depth to weathered bedrock is 20 to 40 inches in the Poindexter soil. The depth to hard bedrock is 40 to 60 inches in the Poindexter soil. The depth to bedrock is 20 to 40 inches in the Zion soil. Reaction ranges from strongly acid to neutral in both soils.

Included with these soils in mapping are a few small areas of Pacolet soils. These soils are deeper and redder than the Poindexter and Zion soils. They are mostly in the western part of the county, in areas of felsic geologic material. Also included are small areas of a soil that has bedrock within a depth of 20 inches. Included soils make up about 15 percent of the map unit.

Nearly all areas of this map unit are used as woodland. Loblolly pine, shortleaf pine, Virginia pine, northern red oak, southern red oak, white oak, hickory, and sweetgum are the major canopy trees. Common understory plants are flowering dogwood, eastern redcedar, American holly, eastern redbud, black cherry, and sassafras. The slope and the depth to bedrock are the main limitations affecting woodland use and management. Management concerns are the hazard of erosion, the equipment limitation, and the windthrow hazard.

This map unit generally is unsuited to cropland, pasture, building site development, and recreational uses because of the slope.

The capability subclass is VIIe, and the woodland ordination symbol is 6R.

PuD—Poindexter-Zion-Urban land complex, 2 to 15 percent slopes. This map unit consists of intermingled areas of well drained Poindexter and Zion soils and areas of Urban land on upland ridges and side slopes. The Poindexter and Zion soils make up about 60 percent of the map unit, and the Urban land makes up 25 percent. Most of this map unit is along the northeastern edge of the county and in the vicinity of Thomasville. Individual areas are irregular in shape and range from 5 to about 40 acres in size.

Typically, the surface layer of the Poindexter soil is yellowish brown sandy loam about 4 inches thick. The subsoil is about 17 inches thick. It is yellowish brown sandy clay loam in the upper part and brownish yellow sandy loam in the lower part. The underlying material is multicolored saprolite that has a texture of sandy loam. Weathered bedrock is at a depth of about 36 inches. Hard bedrock is at a depth of about 42 inches.

Typically, the surface layer of the Zion soil is dark brown sandy loam about 5 inches thick. The subsoil is about 18 inches thick. It is dark yellowish brown clay loam in the upper part, yellowish brown clay in the next part, and strong brown clay loam in the lower part. The underlying material is multicolored saprolite that has a texture of clay loam. Weathered bedrock is at a depth of about 33 inches. Hard bedrock is at a depth of about 39 inches.

Permeability is moderate in the Poindexter soil and moderately slow or slow in the Zion soil. The shrink-swell potential is low in the Poindexter soil and high in the Zion soil. The depth to weathered bedrock is 20 to 40 inches in the Poindexter soil. The depth to hard bedrock is 40 to 60 inches in the Poindexter soil. The depth to bedrock is 20 to 40 inches in the Zion soil. Reaction ranges from strongly acid to neutral in both soils.

The Urban land consists of areas covered by buildings, pavement, or other impervious material.

Included in mapping are small areas that have been cut, filled, or graded so that the topography and most of the natural soil properties have been altered. These

areas are commonly adjacent to the Urban land. Also included are the very deep Mecklenburg, Enon, Vance, and Wedowee soils. Vance and Wedowee soils are more acid than the Poindexter and Zion soils. These soils are in areas of felsic geologic material. Included soils make up 15 to 25 percent of the map unit.

The depth to bedrock and the slope are the main limitations affecting building site development. In areas of the Zion soil, the moderately slow or slow permeability and the high shrink-swell potential also are limitations that affect some uses. The moderately slow or slow permeability is a limitation affecting septic tank absorption fields. Rapid runoff during rainstorms causes excessive flooding in low areas downstream. Removing the plant cover and grading at construction sites causes a severe or very severe hazard of erosion unless erosion-control measures are applied. Onsite investigation is needed when the use and management of specific sites are planned.

This complex has not been assigned a capability subclass or a woodland ordination symbol.

SfB—Sedgefield sandy loam, 2 to 8 percent slopes. This moderately well drained and somewhat poorly drained soil is on uplands on ridges, in depressions, and on gently sloping side slopes at the head of drainageways. The larger areas are in the northeastern part of the county. Individual areas are elongated or irregular in shape and range from 5 to about 150 acres in size.

Typically, the surface layer is brown sandy loam about 9 inches thick. The subsurface layer is light yellowish brown sandy loam about 3 inches thick. The subsoil is about 22 inches thick. It is brownish yellow sandy clay loam in the upper part, yellowish brown sandy clay in the next part, and yellowish brown sandy clay loam in the lower part. Light brownish gray mottles are throughout the subsoil. The underlying material to a depth of 60 inches or more is yellowish brown, brownish gray, or pale yellow saprolite that has a texture of sandy loam.

The perched seasonal high water table is 1 foot to 1.5 feet below the surface. Permeability is slow in the subsoil. The shrink-swell potential is high. The depth to bedrock is more than 60 inches. Reaction ranges from strongly acid to slightly acid in the upper part of the soil and from moderately acid to mildly alkaline in the lower part.

Included with this soil in mapping are small areas of Enon, Poindexter, and Zion soils. The well drained Enon soils are intermingled with areas of the Sedgefield soil on ridges. The well drained Poindexter and Zion soils have bedrock at a depth of 20 to 40 inches and are on narrow ridges and the upper side slopes. Included soils make up 15 to 25 percent of this map unit.

Most areas of the Sedgefield soil are used for crops or pasture. The rest are mainly used as woodland.

The major cultivated crops are corn, soybeans, tobacco, and small grain. The slow permeability, the wetness, and the slope are the main limitations. In the more sloping areas, the hazard of erosion is moderate and conservation practices are needed to help control erosion. Practices that improve drainage are needed in the flatter areas. In areas used for hay and pasture, tall fescue and ladino clover are the main forage crops.

The major canopy trees are northern red oak, southern red oak, white oak, sweetgum, blackgum, red maple, yellow-poplar, shortleaf pine, loblolly pine, willow oak, and Virginia pine. Common understory plants are sourwood, flowering dogwood, American holly, and eastern redcedar. The seasonal wetness is the main limitation affecting woodland use and management. The equipment limitation is a management concern.

The slow permeability, the wetness, and the moderate shrink-swell potential are the main limitations affecting building site development. The slow permeability and the wetness are severe limitations affecting septic tank absorption fields. Removing the plant cover on construction sites causes a moderate hazard of erosion unless erosion-control measures are applied. The wetness is a limitation affecting most recreational uses.

The capability subclass is IIe, and the woodland ordination symbol is 8W.

Ud—Udorthents, loamy. This map unit consists of areas where the natural soils have been altered by cutting, filling, and shaping. The surface layer is loamy soil material that varies in composition, depth, slope, and its ability to grow plants. Borrow pits, cut and fill land, and sanitary landfills make up most of this map unit. Undisturbed natural soils are included in some small areas. Individual areas range from 4 to more than 100 acres in size.

Borrow pits are areas where all of the original soil and much of the underlying material have been removed for use as fill material or construction aggregate. Cuts are 3 to 25 feet deep. Steep side slopes are on one or more sides. The surface is generally uneven, and in many areas bedrock is exposed. These areas support poor plant growth, and most are naturally reseeded in wild grasses, weeds, shortleaf pine, and Virginia pine. Erosion is a severe hazard in unstabilized areas. Major reclamation is generally necessary to prepare these areas for the production of plants or for development for other purposes.

Cut and fill land consists of areas where the soil has been altered by grading to achieve a particular land conformation. In cut areas, more than 20 inches of soil have been removed, and in fill areas, more than 20 inches of fill material have been placed over the natural soil. Most of these areas are in school yards that have athletic fields, major highway interchanges, or industrial sites. Several large areas are used for agricultural purposes. Most of these areas are stabilized with grass or are used as cropland. Buildings and pavement cover as much as 15 percent of some areas.

Sanitary landfills are areas where the soil is excavated, the area backfilled with alternate layers of solid refuse and soil material, and then covered with 2 to 3 feet of soil. After the final covering and grading, these areas are gently sloping. They are seeded to grass or planted in trees. They are unsuitable for most building site development because of the possibility of subsidence and the danger of methane gas from the decomposition of refuse. They are designated as "landfill" on the soil map.

Many areas of this map unit are subject to accelerated erosion, and conservation practices are needed to control erosion.

Onsite investigation is needed when the reclamation, use, and management in most areas of this map unit are planned.

This map unit has not been assigned a capability subclass or a woodland ordination symbol.

Ur—Urban land. This map unit consists of areas where more than 85 percent of the surface is covered by buildings, pavement, or other impervious material. The remaining land surface is small lawns or shrub gardens near buildings, sidewalks, and parking lots. Most areas are in or near the business districts of Lexington and Thomasville. Other areas are in smaller towns or are isolated industrial sites. The areas range from 5 to about 500 acres in size.

Because of the extensive impervious material, Urban land has a very high volume of surface runoff, which causes excessive flooding in low areas downstream.

Examination and identification of the soils or soil materials in this map unit are impractical. Careful onsite investigation is needed to determine the suitability for any proposed use.

This map unit has not been assigned a capability subclass or a woodland ordination symbol.

UwD—Uwharrie stony silt loam, 4 to 15 percent slopes, very bouldery. This well drained soil is on ridges and side slopes in the uplands. It is in the southern part of the county. Most areas are on the tops and the upper slopes of high ridges and on the broader low ridges and side slopes. The largest areas are on High Rock Mountain, Grist Mountain, Three Hat Mountain, Bald Mountain, and other less prominent ridges in the Uwharrie mountain chain. Individual areas are irregular in shape and range from 10 to several hundred acres in size.

Typically, the surface layer is reddish brown stony silt loam about 4 inches thick. The subsoil is about 66 inches thick. It is yellowish red silty clay loam in the upper part, red clay in the next part, and red silty clay in the lower part. The underlying material to a depth of 99 inches or more is multicolored saprolite that has a texture of silty clay loam. Many boulders are on the surface. They are about 12 to 15 feet apart.

Permeability and the shrink-swell potential are moderate. The depth to hard bedrock is more than 60 inches. Reaction ranges from very strongly acid to moderately acid.

Included with this soil in mapping are areas of Davidson, Georgeville, Badin, and Enon soils. These soils are intermingled with areas of the Uwharrie soil. Davidson, Georgeville, and Badin soils do not have stones in the surface layer. Badin and Georgeville soils are in areas of argillite or slate geologic formations. Badin soils also have a channery surface layer and weathered bedrock at a depth of 20 to 40 inches. Enon soils are in areas of dominantly mafic geologic material. Included soils make up 15 to 20 percent of this map unit.

Most areas of the Uwharrie soil are used as woodland. The major canopy trees are black oak, chestnut oak, white oak, northern red oak, southern red oak, hickory, yellow-poplar, and shortleaf pine. Common understory plants are sourwood, American holly, red maple, eastern redbud, and eastern redcedar. The boulders and stones on the surface are the main limitation affecting woodland use and management. The equipment limitation is a management concern.

This soil generally is unsuited to cropland. A few areas are used as pasture. The main forage crops are tall fescue and ladino clover. The boulders and stones on the surface are the main limitations.

The main limitations affecting building site development are the boulders and stones on the surface, the slope, the moderate shrink-swell potential, and the clayey subsoil. The boulders on the surface are the main limitation affecting recreational uses, but game hunting and hiking are important uses of this map unit.

The capability subclass is VIs, and the woodland ordination symbol is 5X.

UwF—Uwharrie stony silt loam, 15 to 45 percent slopes, very bouldery. This well drained soil is on narrow ridgetops and on side slopes. It is on uplands in

the southern part of the county. Most areas are on the side slopes of high ridges, including High Rock Mountain, Grist Mountain, Three Hat Mountain, Bald Mountain, and other prominent ridges in the Uwharrie mountain chain. Individual areas are irregular in shape and range from 10 to about 500 acres in size.

Typically, the surface layer is reddish brown stony silt loam about 4 inches thick. The subsoil is about 66 inches thick. It is yellowish red silty clay loam in the upper part, red clay in the next part, and red silty clay in the lower part. The underlying material to a depth of 99 inches or more is multicolored saprolite that has a texture of silty clay loam. Many boulders are on the surface. They are about 12 to 15 feet apart.

Permeability and the shrink-swell potential are moderate. The depth to hard bedrock is more than 60 inches. Reaction ranges from very strongly acid to moderately acid.

Included with this soil in mapping are areas of Davidson, Badin, and Enon soils. These soils are intermingled with areas of the Uwharrie soil. Davidson soils are in the less sloping areas and do not have a stony surface layer. Badin soils are in areas of argillite or slate geologic formations. They have a channery surface layer and have weathered bedrock at a depth of 20 to 40 inches. Enon soils are in areas of dominantly mafic geologic material. Included soils make up 15 to 20 percent of this map unit.

Most areas of the Uwharrie soil are used as woodland. The major canopy trees are black oak, chestnut oak, white oak, northern red oak, southern red oak, hickory, yellow-poplar, and shortleaf pine. Common understory plants are sourwood, American holly, red maple, eastern redbud, and eastern redcedar. The slope and the boulders and stones on the surface are the main limitations affecting woodland use and management. The equipment limitation and the hazard of erosion are the main management concerns.

This soil is generally unsuited to cropland, pasture, building site development, and recreational uses because of the slope and the boulders and stones on the surface. It is important for use as wildlife habitat and for game hunting.

The capability subclass is VIIs, and the woodland ordination symbol is 5R.

VaB—Vance sandy loam, 2 to 8 percent slopes. This well drained soil is on broad ridges. It is on uplands in the northern part of the county. Some of the larger areas are in the vicinity of Welcome. Individual areas are irregular in shape and range from 4 to about 200 acres in size.

Typically, the surface layer is yellowish brown sandy loam about 9 inches thick. The subsoil is about 24 inches thick. It is yellowish brown clay in the upper part and mottled yellowish brown, red, and olive yellow sandy clay loam in the lower part. The underlying material to a depth of 60 inches or more is multicolored saprolite that has a texture of loam.

Permeability is slow. The shrink-swell potential is moderate. The depth to bedrock is more than 60 inches. Reaction ranges from very strongly acid to moderately acid.

Included with this soil in mapping are small areas of Appling, Cecil, Wedowee, and Enon soils. Appling, Cecil, and Wedowee soils are more permeable and less plastic than the Vance soil. Appling and Cecil soils are intermingled with areas of the Vance soil. Wedowee soils are on narrow ridges. Enon soils are less acid than the Vance soil. These soils are in areas of intermediate and mafic geologic material. Also included are small areas of clayey, moderately well drained soils in flat spots and low areas. Included soils make up 20 to 30 percent of this map unit.

Most of the acreage of the Vance soil is used as cropland or pasture. The rest is used as woodland.

The main cultivated crops are corn, soybeans, tobacco, and small grain. Because of the slope and surface runoff, the hazard of erosion is severe. Conservation practices are needed to help control erosion and runoff and to increase the content of organic matter. In areas used for hay and pasture, tall fescue and ladino clover are the main forage crops.

The major canopy trees are loblolly pine, shortleaf pine, Virginia pine, southern red oak, northern red oak, white oak, hickory, yellow-poplar, and sweetgum. Common understory plants are flowering dogwood, sourwood, American holly, eastern redcedar, greenbrier, red maple, blackjack oak, and sassafras. No major limitations affect woodland use and management.

The clayey subsoil, the slow permeability, and the moderate shrink-swell potential are the main limitations affecting building site development. The slope also is a limitation for some uses. Foundations should be designed to resist cracking caused by shrinking and swelling of the subsoil. The slow permeability is a limitation affecting septic tank absorption fields. Removing the plant cover on construction sites causes a severe hazard of erosion unless erosion-control measures are applied. The slow permeability is a limitation affecting most recreational uses.

The capability subclass is IIIe, and the woodland ordination symbol is 7A.

VaD—Vance sandy loam, 8 to 15 percent slopes. This well drained soil is on narrow ridges and side slopes. It is on uplands in the northern part of the county. Some of the larger areas are in the vicinity of

Welcome. Individual areas are elongated in irregular widths and range from 5 to about 30 acres in size.

Typically, the surface layer is yellowish brown sandy loam about 9 inches thick. The subsoil is about 24 inches thick. It is yellowish brown clay in the upper part and yellowish brown sandy clay loam in the lower part. The underlying material to a depth of 60 inches or more is multicolored saprolite that has a texture of loam.

Permeability is slow. The shrink-swell potential is moderate. The depth to bedrock is more than 60 inches. Reaction ranges from very strongly acid to moderately acid.

Included with this soil in mapping are small areas of Pacolet, Wedowee, and Enon soils. Pacolet soils are redder and more permeable than the Vance soil. These soils are on the ridgetops and the upper parts of side slopes. Wedowee soils are more permeable than the Vance soil. These soils are intermingled with areas of the Vance soil. Enon soils are less acid than the Vance soil. These soils are intermingled with areas of the Vance soil in areas of intermediate and mafic geologic material. Also included are moderately eroded areas of Vance soils that have a surface layer of sandy clay loam. Included soils make up 20 to 30 percent of this map unit.

Most of the acreage of the Vance soil is used as woodland. The rest is used mainly as pasture.

The major canopy trees are loblolly pine, shortleaf pine, Virginia pine, southern red oak, northern red oak, white oak, hickory, yellow-poplar, and sweetgum. Common understory plants are flowering dogwood, sourwood, American holly, eastern redcedar, greenbrier, red maple, blackjack oak, and sassafras. No major limitations affect woodland use and management.

In areas used for hay and pasture, tall fescue and ladino clover are the main forage crops. Because of the slope and surface runoff, the hazard of erosion is very severe in unprotected areas. A permanent cover of sod is needed.

The clayey subsoil, the slow permeability, the moderate shrink-swell potential, and the slope are the main limitations affecting building site development and recreational uses. Foundations should be designed to resist cracking caused by shrinking and swelling of the subsoil. The slow permeability is a limitation affecting septic tank absorption fields. Removing the plant cover on construction sites causes a very severe hazard of erosion unless erosion-control measures are applied.

The capability subclass is VIe, and the woodland ordination symbol is 7A.

Wa—Wahee loam, occasionally flooded. This nearly level, somewhat poorly drained soil is on low stream terraces along the Yadkin River and other large creeks. Individual areas are irregular in shape and range from 5 to about 60 acres in size.

Typically, the surface layer is grayish brown loam about 5 inches thick. The subsoil is about 41 inches thick. It is light yellowish brown sandy clay loam and clay loam that has gray mottles in the upper part, light olive gray and gray clay in the next part, and gray clay loam in the lower part. The underlying material to a depth of 60 inches or more is light olive gray silty clay loam.

The seasonal high water table is 0.5 foot to 1.5 feet below the surface. Permeability is slow. The shrink-swell potential is moderate. The depth to bedrock is more than 60 inches. Reaction ranges from very strongly acid to moderately acid in the surface layer and from extremely acid to strongly acid in the lower layers.

Included with this soil in mapping are small areas of Altavista and Chewacla soils. The moderately well drained Altavista soils are loamy throughout the subsoil and are in the slightly higher positions on the landscape. Chewacla soils are loamy throughout the subsoil and are on small flood plains along the streams. Also included are a few areas of poorly drained, clayey soils. Included soils make up 25 to 30 percent of this map unit.

Most of the acreage of the Wahee soil is used as woodland. A few areas have been cleared of trees and are used for crops or pasture.

The major canopy trees are blackgum, sweetgum, willow oak, red maple, yellow-poplar, water oak, pin oak, swamp chestnut oak, southern red oak, loblolly pine, and shortleaf pine. Common understory plants are black willow, hackberry, river birch, and greenbrier. The seasonal wetness is the main limitation affecting woodland use and management. Equipment should not be operated during wet periods.

The main cultivated crops are corn, soybeans, and small grain. The wetness is the main limitation, and the flooding is the main hazard. Crops are subject to occasional flood damage, and a drainage system is needed. In areas used for hay and pasture, tall fescue and ladino clover are the main forage crops.

The soil generally is unsuited to building site development and recreational uses because of the wetness and the flooding.

The capability subclass is IIw, and the woodland ordination symbol is 9W.

WeB—Wedowee sandy loam, 2 to 8 percent slopes. This well drained soil is on moderately broad to narrow ridges. It is on uplands in the northern part of the county. Some of the larger areas are around Arcadia and northeast of Welcome. Individual areas are

irregular in shape and range from 5 to several hundred acres in size.

Typically, the surface layer is yellowish brown sandy loam about 9 inches thick. The subsoil is about 23 inches thick. It is strong brown sandy clay in the upper part and yellowish red sandy clay loam in the lower part. The underlying material to a depth of 52 inches or more is multicolored saprolite that has a texture of sandy loam.

Permeability and the shrink-swell potential are moderate. The depth to bedrock is more than 60 inches. Reaction ranges from very strongly acid to slightly acid.

Included with this soil in mapping are small areas of the slowly permeable Vance soils. These soils are intermingled with the flatter areas of the Wedowee soil or are on toe slopes. Also included are some areas of Wedowee soils that have a gravelly surface layer and some areas of moderately eroded soils that have a surface layer of sandy clay loam. Included soils make up 20 to 30 percent of this map unit.

Most of the acreage of the Wedowee soil is used as cropland. The rest is used as pasture or woodland.

The major cultivated crops are corn, soybeans, tobacco, and small grain. Because of the slope and surface runoff, the hazard of erosion is moderate. Conservation practices are needed to help control erosion and runoff and to increase the content of organic matter. In areas used for hay and pasture, tall fescue and ladino clover are the main forage crops.

The major canopy trees are loblolly pine, shortleaf pine, Virginia pine, northern red oak, southern red oak, white oak, yellow-poplar, sweetgum, and hickory. Common understory plants are flowering dogwood, sourwood, American holly, eastern redcedar, and red maple. No major limitations affect woodland use and management.

The clayey subsoil, the moderate permeability, the moderate shrink-swell potential, and the slope are the main limitations affecting building site development and recreational uses. Removing the plant cover on construction sites causes a moderate hazard of erosion unless erosion-control measures are applied.

The capability subclass is IIe, and the woodland ordination symbol is 8A.

WeD—Wedowee sandy loam, 8 to 15 percent slopes. This well drained soil is on narrow side slopes in the northern part of the county. Some of the larger areas are around Arcadia and northeast of Welcome. Individual areas are elongated in irregular widths and range from 5 to about 50 acres in size.

Typically, the surface layer is yellowish brown sandy loam about 9 inches thick. The subsoil is about 23 inches thick. It is strong brown sandy clay in the upper part and yellowish red sandy clay loam in the lower part. The underlying material to a depth of 60 inches or more is multicolored saprolite that has a texture of sandy loam.

Permeability and the shrink-swell potential are moderate. The depth to bedrock is more than 60 inches. Reaction ranges from very strongly acid to slightly acid.

Included with this soil in mapping are small areas of Vance soils. These soils are intermingled with areas of the Wedowee soil. They are slowly permeable and are on the lower slopes or on toe slopes. Also included are some areas of Wedowee soils that have a gravelly surface layer and some areas of moderately eroded soils that have a surface layer of sandy clay loam. Included soils make up 20 to 30 percent of this map unit.

Most of the acreage of the Wedowee soil is used as woodland. The rest is used as cropland or pasture.

The major canopy trees are loblolly pine, shortleaf pine, Virginia pine, northern red oak, southern red oak, white oak, yellow-poplar, sweetgum, and hickory. Common understory plants are flowering dogwood, sourwood, American holly, eastern redcedar, and red maple. No major limitations affect woodland use and management.

The principal cultivated crops are corn, tobacco, soybeans, and small grain. Because of the slope and surface runoff, erosion is a very severe hazard if the soil is used as cropland. Conservation practices are needed to help control erosion and runoff and to increase the content of organic matter. In areas used for hay and pasture, tall fescue and ladino clover are the main forage crops.

The clayey subsoil, the moderate permeability, the moderate shrink-swell potential, and the slope are the main limitations affecting building site development and recreational uses. Removing the plant cover on construction sites causes a very severe hazard of erosion unless erosion-control measures are applied.

The capability subclass is IVe, and the woodland ordination symbol is 8A.

WkB—Wickham fine sandy loam, 2 to 8 percent slopes. This well drained soil is on low ridges and in broad, gently sloping areas on terraces of the larger streams. The largest areas are along the Yadkin River in the northwestern part of the county. Individual areas are elongated and irregular in shape and range from 5 to about 100 acres in size.

Typically, the surface layer is dark brown fine sandy loam about 7 inches thick. The subsoil is about 53

inches or more thick. It is brown sandy clay loam in the upper part and yellowish red clay loam in the lower part.

Permeability is moderate. The shrink-swell potential is low. The depth to bedrock is more than 60 inches. Reaction ranges from very strongly acid to slightly acid.

Included with this soil in mapping are a few small areas of the moderately well drained Altavista soils. These soils are intermingled with areas of the Wickham soil. They are on low flats or along the base of ridges. Included soils make up 15 to 20 percent of this map unit.

Most of the acreage of the Wickham soil is used as cropland or pasture. The rest is mainly used as woodland.

The major cultivated crops are corn, tobacco, soybeans, and small grain. Because of the slope and surface runoff, the hazard of erosion is moderate. Conservation practices are needed to help control erosion and runoff and to increase the content of organic matter. In areas used for hay and pasture, tall fescue and ladino clover are the main forage crops.

The major canopy trees are loblolly pine, shortleaf pine, northern red oak, water oak, southern red oak, white oak, hickory, sweetgum, red maple, and yellow-poplar. Common understory plants are flowering dogwood, sourwood, American holly, eastern redbud, and red maple. No major limitations affect woodland use and management.

This map unit has no major limitations affecting building site development and recreational uses. However, the slope is a limitation affecting some uses. Removing the plant cover on construction sites causes a moderate hazard of erosion unless erosion-control measures are applied.

The capability subclass is IIe, and the woodland ordination symbol is 9A.

Prime Farmland

In this section, prime farmland is defined and the soils in Davidson County that are considered prime farmland are listed. About 43 percent, or 156,196 acres, of the county is prime farmland.

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

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

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

Prime farmland soils usually receive an adequate and dependable supply of moisture from precipitation or irrigation. The temperature and growing season are favorable. The acidity or alkalinity level of the soils is acceptable. The soils have few or no rocks and are permeable to water and air. They are not excessively erodible or saturated with water for long periods and are not frequently flooded during the growing season. The slope ranges mainly from 0 to 8 percent.

The map units in Davidson County that are considered prime farmland are listed in table 5. 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." This list does not constitute a recommendation for a particular land use.

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 table 5. Onsite evaluation is necessary to determine whether or not limitations have been overcome by corrective measures.

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 to prevent construction failures caused by unfavorable soil properties.

Generally, the soils in Davidson County that are well suited to crops are also well suited to urban uses. The data concerning specific soils in the county can be used in planning future land use patterns. The potential for farming should be considered relative to any soil limitations and the potential for nonfarm development.

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

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm 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

David B. Key, district conservationist, and Bobby G. Brock, conservation agronomist, Soil Conservation Service, and William G. Holtzmann, Davidson County Director, North Carolina Cooperative Extension 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 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" and in the tables. Specific information can be obtained from the local office of the Soil Conservation Service or the North Carolina Cooperative Extension Service.

In 1978 about 122,000 acres in Davidson County was used as cropland, and in 1982 about 80,000 acres was used as cropland. The major crops were corn on 17,000 acres; hay on 12,000 acres; small grain, including wheat, barley, and oats, on 10,000 acres; soybeans on 9,000 acres; and tobacco, the major cash crop, on 1,800 acres. Also, grain sorghum was grown on 1,800 acres, and orchards and truck crops were on about 500 acres. Of the remaining cropland, 20,000 acres was used as pasture and 7,900 acres was idle land.

Cropland Management

Although the soils vary in their suitability for specific crops and require different kinds of management, some management practices are needed on all of the soils in Davidson County to maximize production, protect the soil, and maintain productivity.

Erosion is a major concern on all of the soils on uplands that have a slope of more than 2 percent when cropped or cleared for any purpose because the rate of runoff is high on bare, unprotected soil surfaces. Uncontrolled runoff is the primary cause of soil erosion

in Davidson County. The hazard of erosion generally increases as the slope increases.

Loss of the surface layer through water erosion is damaging for three reasons. First, productivity is reduced by the loss of the most fertile layer of soil, in which organic matter and nutrients are the most concentrated and most crop roots grow. Second, tilth and porosity are destroyed as the clay from the subsoil is incorporated into the plow layer. The soil structure is lost, enabling intense rains to form a surface crust that is hard when dry and nearly impervious to infiltration by water and air. This crust reduces the rate of water infiltration and increases the rate of runoff and erosion. Clods form if the soil is plowed while it is wet, making seedbed preparation difficult. Crusting and clodding affects seed germination, causing poor growth and uneven stands. Third, erosion is damaging to the environment because sediments enter streams and clog channels and reservoirs.

The lack of available water in the soil is the factor that most often limits crop yields. The volume of soil available for rooting and soil texture have a great influence on the amount of water held. If resource management systems are properly used, the loss of soil and water can be controlled.

Erosion control systems reduce the erosive capacity of rainfall by slowing runoff and by increasing infiltration. These systems are designed to hold erosion losses to amounts that do not reduce the productivity of the soil. They can be made up of structural or vegetative measures, or a combination of both.

Diversions and terraces help to control erosion by intercepting surface runoff and safely routing this water to suitable outlets, such as grassed waterways. Grassed waterways are shaped channels generally constructed in natural draws. They are seeded in permanent sod, such as tall fescue, thus providing a safe outlet for water carried by terraces or diversions. Field borders and filter strips, also seeded in permanent sod, filter sediment-laden runoff from the field. These measures are practical and highly effective on most of the deep or very deep soils on uplands, such as Cecil, Appling, Davidson, Georgeville, Herndon, and Mecklenburg soils.

Contour farming and stripcropping (fig. 11) are most effective on soils that have uniform slopes, but these practices can be adapted to soils that have shorter, more irregular slopes and to moderately deep or shallow soils, such as Badin, Misenheimer, Poindexter, and Zion soils. Conservation tillage systems, including minimum tillage and no-till, are effective in controlling erosion on all of the soils in the county. They can be used alone or with any of the measures mentioned above.

Regular additions of crop residue, animal manure, green cover crops, and other organic material can improve soil structure and tilth and control crusting and clodding. Crop rotations that include grasses and legumes also are excellent for controlling erosion, conserving water, and improving tilth.

Fall plowing is generally not a good practice on the soils in the county because surface crusting during the winter increases runoff and the hazard of erosion. Although freezing and thawing can temporarily improve soil structure, they cannot substitute for long-term structure improvements to tilth and structure caused by regular additions of organic material and by erosion control.

Information concerning the design and application of erosion control systems and other special management systems suitable to each soil can be obtained from the local office of the Soil Conservation Service.

The soils and the climate of the county are adapted to many specialty crops that are not grown locally at this time. The latest information and recommendations concerning these crops can be obtained from the local offices of the Soil Conservation Service and the Cooperative Extension Service.

Pasture Management

Tall fescue is the major grass grown in Davidson County for pasture and hayland. Other plants that are better adapted to summer weather include perennial grasses, such as hybrid bermudas, common bermuda, and switchgrass, and legumes, such as alfalfa and sericea lespedeza. Livestock producers need to plant the species that is best adapted to the soil. Using the adapted species and good management techniques, such as soil fertility tests, proper annual applications of fertilizer, weed control, and rotational grazing, result in better returns from pasture and hayland.

The deep, well drained soils are suitable for all of the major grasses and legumes grown in the county. Fescue, ladino clover, and common bermuda produce 4 to 9 animal unit months of grazing on these soils each year. Hybrid bermuda and switchgrass can produce an average of 10 animal unit months of grazing on these soils. An animal unit month is the amount of feed or forage required to feed an animal unit for one month.

A well rounded pasture and hayland management program includes warm-season grasses, such as bermuda, and cool-season grasses or grass-legume mixtures. Proper fencing for rotation of grazing stock and an intensive fertilizer management program can produce pasture capable of supporting grazing from March through November. Alfalfa, sericea lespedeza, red clover, orchardgrass, and hybrid bermuda can then be used during the winter for hay. These combinations

Figure 11.—Stripcropped tobacco, small grain, and fescue on Pacolet sandy loam, 2 to 8 percent slopes.

provide a successful pasture and hayland program for livestock producers. Using perennials in forage programs is normally preferred because they produce better erosion benefits at lower costs.

Drainage

Drainage is a management need on some of the acreage used for crops and pasture in Davidson County. Wetness is a major limitation on about 48,500 acres in the county. Some of the soils are somewhat poorly drained or poorly drained and require a drainage system before locally grown crops can be economically produced. These soils include Chewacla, Oakboro, Wahee, and Armenia soils. Soils that are moderately well drained require drainage for some crops. These soils include Altavista, Iredell, Kirksey, Cid, Misenheimer, and Sedgefield soils.

The design of the drainage system varies with the kind of soil. A subsurface tile drainage system is effective on soils that have a loamy subsoil that is sufficiently permeable to allow adequate movement of water to the tile line. These soils include Altavista, Chewacla, Kirksey, and Oakboro soils.

Soils that have a clayey subsoil and slow permeability require surface ditches to remove excess water. Tillage patterns sometimes aggravate drainage problems by creating low areas and by blocking surface drainage. Ridge plowing or bedding that permits plant roots to grow above the water level is beneficial for the production of some crops. Grassed waterways and surface shaping can be used to maintain surface drainage. A tile drainage system is difficult to install on soils that have a slowly permeable, clayey subsoil; thus, open ditches are used to remove the water and lower

the water table. These soils include Armenia, Iredell, Sedgefield, and Wahee soils.

Occasional or frequent flooding also is a management problem on nearly 29,000 acres in the county, including areas of Altavista soils that have 0 to 2 percent slopes and Armenia, Chewacla, Congaree, Oakboro, and Wahee soils. Crop production can be improved by providing a drainage system, such as open ditches or subsurface tile, to remove excess surface and subsurface water.

The design of both surface and subsurface drainage systems varies with the kind of soil. Both systems may be needed in areas where poorly drained or somewhat poorly drained soils are used for intensive row cropping. Surface drainage becomes critical for crop production in areas that are briefly flooded. Drains need to be spaced more closely in slowly permeable soils than in the more permeable soils.

Information concerning the design and applicability of erosion control and drainage practices for each soil type can be obtained from the local office of the Soil Conservation Service and from the office of the Davidson Soil and Water Conservation District.

Chemical Weed Control

The use of herbicides for weed control is a common practice on the cropland in Davidson County. It decreases the need for tillage and is an integral part of modern farming. Selected soil properties, such as content of organic matter and texture of the surface layer, affect the rate of herbicide application. Estimates of both of these properties were determined for the soils in the county. Table 15 shows a general range of organic matter content in the surface layer of the soils. The texture of the surface layer is shown in the USDA texture column in table 14.

In some areas the content of organic matter projected for the different soils is outside the range shown in the table. The content can be higher in soils that have received high amounts of animal or manmade waste. Soils that have recently been brought into cultivation may have a higher content of organic matter in the surface layer than similar soils that have been cultivated for a long time. Conservation tillage can increase the content of organic matter in the surface layer. A lower content of organic matter is common where the surface layer has been partly or completely removed by erosion or land smoothing. Current soil tests should be used for specific organic matter determinations.

Soil Fertility

The soils in Davidson County generally are low or medium in natural fertility. Most are naturally acid. Additions of lime and fertilizer are needed for the production of most kinds of crops.

Liming requirements are a major concern on cropland. The acidity level in the soil affects the availability of many nutrients to plants and the activity of beneficial bacteria. Lime also neutralizes exchangeable aluminum in the soil and thus counteracts the adverse effects of high levels of aluminum on many crops. Liming adds calcium (from calcitic lime) or calcium and magnesium (from dolomitic lime) to the soil.

A soil test is a guide to what amount and kind of lime should be used. The desired pH levels may differ, depending on the soil properties and the crop to be grown.

Nitrogen fertilizer is required for most crops. It is generally not required, however, for clover, in some rotations of soybeans, or for alfalfa that is established. A reliable soil test is not available for predicting nitrogen requirements. Appropriate rates of nitrogen application are described in the section "Yields per Acre."

Soil tests can indicate the need for phosphorus and potassium fertilizer. They are needed because phosphorus and potassium tend to build up in the soil.

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 6. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors. The land capability classification of each map unit also is shown in the table.

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 also are 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.

A high level of management includes maintaining proper soil reaction and fertility levels as indicated by standard soil tests. The application rate of nitrogen for corn on soils that have a yield potential of 125 to 150 bushels per acre should be 140 to 160 pounds per

acre. If the yield potential for corn is 100 bushels per acre or less, a rate of 100 to 120 pounds of nitrogen per acre should be used. The application of nitrogen in excess of that required for potential yields generally is not recommended. The excess nitrogen fertilizer that is not utilized by a crop is an unnecessary expense and causes a hazard of water pollution. If corn is grown after the harvest of soybeans, nitrogen rates can be reduced by about 20 to 30 pounds per acre.

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 6 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 North Carolina Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for use as cropland *(15)*. 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 they have other limitations, impractical to remove, that limit their use.

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

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

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

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

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

The capability classification of each map unit is given in the section "Detailed Soil Map Units" and in table 6.

Woodland Management and Productivity

Edwin J. Young, forester, Soil Conservation Service, helped prepare this section.

Woodland managers in Davidson County are faced with the challenge of producing greater yields from smaller areas. Meeting this challenge requires intensive management and silvicultural practices. Many modern silvicultural techniques resemble those long practiced in agriculture. They include establishing, weeding, and thinning a desirable young stand; propagating the more productive species and genetic varieties; providing short rotations and complete fiber utilization; controlling insects, diseases, and weeds; and improving tree growth by applications of fertilizer and the installation of a drainage system. Even though timber crops require decades to grow, the goal of intensive management is similar to the goal of intensive agriculture. This goal is to produce the greatest yield of the most valuable crop as quickly as possible.

Commercial forests cover 165,658 acres, or about 47

percent of the land area of Davidson County *(18)*. Commercial forest is land that is producing or is capable of producing crops of industrial wood and that has not been withdrawn from timber production. Loblolly pine is the most important timber species in the county because it grows fast, is adapted to the soil and climate, brings the highest average sale value per acre, and is easy to establish and manage.

For purposes of forest inventory, the four predominant forest types identified in Davidson County are as described in the following paragraphs *(12, 18)*.

Loblolly-shortleaf pine. This forest type covers 30,355 acres. Loblolly pine and shortleaf pine make up more than 50 percent of this forest type. Associated species are red oak, white oak, gum, hickory, and yellow-poplar.

Oak-pine. This forest type covers 29,585 acres. Hardwoods make up more than 50 percent of the stand, but pines make up 25 to 50 percent in association with upland oaks, gum, hickory, and yellow-poplar. If this forest type is left undisturbed, it develops into a forest of predominantly oak and other upland hardwoods. The understory in both the loblolly-shortleaf pine and oak-pine forest types generally consists of hardwood seedlings and saplings because they are more tolerant of shade than pine. Hardwoods compete so vigorously with pines for light and moisture in a shaded understory that few pine seedlings are able to survive. When mature stands of pine are cut, the dense understory of young hardwoods becomes dominant.

Oak-hickory. This forest type covers 96,175 acres. Upland oaks and hickory make up more than 50 percent of the stand. Common associated species include elm, red maple, and yellow-poplar.

Elm-ash-cottonwood. This forest type covers 9,543 acres. It consists of forests in which elm, ash, cottonwood, or a combination of these species make up most of the stocking. Common associated species include willow, sycamore, beech, and maple.

One of the first steps in planning intensive woodland management is to determine the potential productivity of the soil for several alternative tree species. The most productive and valued trees are then selected for each soil type. Site and yield information enables a forest manager to estimate future wood supplies. These estimates are the basis of realistic decisions concerning expenses and profits associated with intensive woodland management, land acquisition, or industrial investments.

The potential productivity of woodland depends on physiography, soil properties, climate, and the effects of past management. Specific soil properties and site characteristics, including soil depth, texture, structure, and depth to the water table, affect forest productivity primarily by influencing available water capacity, aeration, and root development. The net effects of the interaction of these soil properties and site characteristics determine the potential site productivity.

Other site factors are also important. The gradient and length of slopes affect water movement and availability. In mountainous areas, elevation and aspect affect the amount of sunlight a site receives and the rate of evaporation. Sites on south-facing slopes are warmer and drier than those on north-facing slopes. The best sites are generally on north- and east-facing slopes and in gently sloping, concave areas. The amount of rainfall and length of growing season influence site productivity.

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

Table 7 lists the *ordination symbol* for each soil. The first part of the ordination symbol, a number, indicates the potential productivity of a soil for the indicator species in cubic meters per hectare per year. The larger the number, the greater the potential productivity. Potential productivity is based on the site index and the point where mean annual increment is the greatest.

The second part of the ordination symbol, a letter, indicates the major kind of soil limitation affecting use and management. The letter *R* indicates a soil that has a significant limitation because of the slope. The letter *X* indicates that a soil has restrictions because of stones or rocks on the surface. The letter *W* indicates a soil in which excessive water, either seasonal or year-round, causes a significant limitation. The letter *T* indicates a soil that has, within the root zone, excessive alkalinity or acidity, sodium salts, or other toxic substances that limit the development of desirable trees. The letter *D* indicates a soil that has a limitation because of a restricted rooting depth, such as a shallow soil that is underlain by hard bedrock, a hardpan, or other layers that restrict roots. The letter *C* indicates a soil that has a limitation because of the kind or amount of clay in the upper part of the profile. The letter *S* indicates a dry, sandy soil. The letter *F* indicates a soil that has a large

amount of coarse fragments. The letter *A* indicates a soil having no significant limitations that affect forest use and management. If a soil has more than one limitation, the priority is as follows: R, X, W, T, D, C, S, and F.

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

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

Ratings of *windthrow hazard* indicate the likelihood that trees will be uprooted by the wind. A restricted rooting depth is the main reason for windthrow. The rooting depth can be restricted by a high water table, a fragipan, by bedrock or by a combination of such factors as soil wetness, texture, structure, and depth. The risk is *slight* if strong winds break trees but do not uproot them; *moderate* if strong winds blow a few trees over and break many trees; 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.

The *potential productivity* of *common trees* on a soil is expressed as a *site index* and a *volume* number. The predominant common trees are listed in table 7 in the order of their observed occurrence. Additional species that commonly occur on the soils may be listed in the detailed soil map unit descriptions. 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.

For soils that are commonly used for timber production, the yield is predicted in cubic feet per acre per year. It is predicted at the point where mean annual increment culminates. The productivity of the soils in this survey is based mainly on loblolly pine *(6)*. Productivity is also based on sweetgum, shortleaf pine, yellow-poplar, and black oak *(3, 4, 10)*.

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 (50 years in this survey).

This index applies to fully stocked, even-aged, unmanaged stands. Productivity of a site can be improved through management practices, such as bedding, ditching, managing water, applying fertilizer, and planting genetically improved species.

The *volume* is the yield likely to be produced by the most important trees, expressed in cubic feet per acre per year.

Trees to plant are those that are used for reforestation or, under suitable conditions, natural regeneration. They are suited to the soils and can produce a commercial wood crop. The desired product, topographic position (such as a low, wet area), and personal preference are three factors among many that can influence the choice of trees for use in reforestation. If hardwoods are desired on a forest site, acceptable species should naturally reproduce from seeds and sprouts. Special site preparation techniques may be required.

Recreation

Davidson County is in a rapidly developing area of the state close to major population centers. It has an abundance of natural recreational areas, including part of the Uwharrie National Forest. High Rock Lake, which has 15,000 acres of water, provides boating, swimming, fishing, and water sports and is served by numerous public and private marinas, launching sites, and camp sites.

New public and private recreational facilities continue to be developed as the population increases. Knowledge of the soils and their properties is needed in planning and developing these facilities.

In table 8, the soils of the survey area are rated according to the limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation also are 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 gentle slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing campsites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes, stones, or boulders that increase the cost of shaping sites or of building access roads and parking areas.

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is free of stones and boulders, is firm after rains, and is not dusty when dry. If grading is needed, the depth of the soil over bedrock should be considered.

Paths and trails for hiking and horseback riding should require little or no cutting and filling. The best soils are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once a year during the period of use. They have moderate slopes and few or no stones or boulders on the surface.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. The best soils for use as golf fairways are firm when wet, are not dusty when dry, and are not subject to prolonged flooding during the period of use. They have moderate slopes and no stones or boulders on the surface. The suitability of the soil for tees or greens is not considered in rating the soils.

Wildlife Habitat

John P. Edwards, biologist, Soil Conservation Service, and Terry Sharpe, district biologist, North Carolina Wildlife Resources Commission, helped prepare this section.

Wildlife is an important resource in Davidson County. The variety in landforms and vegetation, the mixed patterns of land use, and the abundance of well distributed sources of water provide habitat for many different species.

The soils in all areas of the county are used for farming. Most of the farms are characterized by relatively small fields intermingled with larger wooded areas. The woods, the field borders, and the numerous abandoned fields provide good habitat for many species of small birds and animals. Cropped fields provide additional food in season. The most prevalent small game species are gray squirrel, cottontail rabbit, fox, raccoon, muskrat, opossum, bobwhite quail, and mourning dove. A variety of songbirds and nongame animals also inhabit the area.

The many streams and ponds, and High Rock Lake in particular, provide habitat for waterfowl and other wildlife that require an aquatic environment. Wood ducks are especially attracted to these sites year-round. A variety of migratory waterfowl, mainly mallard ducks and black ducks, spend the winter in the area. Soil properties should be considered before planning the construction of water impoundments.

White-tailed deer inhabit most areas of the county. They are abundant, however, only in the southern part of the county and in the western part along the Yadkin River where large areas of open woods adjacent to brushy areas and fields provide adequate range. Hunting is excellent during the season.

Wildlife is related to the soils through an indirect relationship with plants. Wildlife species are associated with those plant communities that provide food and cover. These plant communities, in turn, are directly related to particular kinds of soils.

Improving the habitat can increase the abundance of wildlife in the county. The need for wildlife habitat should always be considered in planning land use patterns in any area. Wildlife habitat can be created or improved by encouraging native food and cover plants, by maintaining corridors of mature hardwoods when converting lands to pine forest or to cropland or when clearcutting, and by planting appropriate vegetation for food near areas of cover.

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 ratings in table 9 are intended to be used as a guide and are not site specific. Onsite investigation is needed for individual management plans.

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, 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 fescue, lovegrass, bromegrass, clover, lespedeza, 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, and pokeberry.

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 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, slope, and surface stoniness. Examples of wetland plants are smartweed, wild millet, cattail, 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, 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, mourning dove, meadowlark, field sparrow, cottontail rabbit, 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, ruffed grouse, woodcock, thrushes, woodpeckers, squirrels, gray fox, raccoon, and white-tailed 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 kind of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and 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 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, and shrinking and swelling can cause the movement of footings. Depth to a high water table, depth to bedrock, large stones, and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 or 6 feet are not considered.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or stabilized soil material; and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. Depth to bedrock, 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, 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, and the available water capacity in the upper 40 inches 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. Soil tests are essential to determine liming and fertilizer needs. Help in making soil tests or in deciding what soil additive, if any, should be used can be obtained from the office of the Davidson Soil and Water Conservation District or the local office of the North Carolina Cooperative Extension Service.

Sanitary Facilities

Table 11 shows the degree and the kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfill. 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 that good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, depth to a high water table, depth to bedrock, and flooding affect absorption of the effluent. Large stones and bedrock 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. The Davidson County Health Department should be contacted for specific information and guidance regarding the design and installation of septic tank absorption fields.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. The animal waste lagoons commonly used in farming operations are not considered in the ratings. They are generally deeper than the lagoons referred to in the table and rely on anaerobic bacteria to decompose waste materials. Onsite investigation is recommended for anaerobic lagoons that will be more than 6 feet deep.

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, 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 or bedrock can cause construction problems, and large stones can hinder compaction of the lagoon floor.

Sanitary landfills are areas where solid waste is disposed of by burying it in soil. There are two types of landfill—trench and area. In a trench landfill, the waste is placed in a trench. It is spread, compacted, and covered daily with a thin layer of soil excavated at the site. In an area landfill, the waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site.

Both types of landfill must be able to bear heavy vehicular traffic. Both types involve a risk of ground-water pollution. Ease of excavation and revegetation should be considered.

The ratings in table 11 are based on soil properties, site features, and observed performance of the soils. Permeability, depth to bedrock, depth to a water table, slope, and flooding affect both types of landfill. Texture, stones and boulders, and soil reaction affect trench type landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material may be 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 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, depth to 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* have more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have a moderate shrink-swell potential, slopes of 15 to 25 percent, or many stones. Depth to the water table is 1 to 3 feet. Soils rated *poor* have a plasticity index of more than 10, a high shrink-swell potential, many stones, or slopes of more than 25 percent. They are wet and have a water table at a depth of less than 1 foot. These soils 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 highly weathered slate, gneiss, or schist, 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, depth to a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, depth to a water table, rock fragments, depth to 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 naturally fertile or respond well to fertilizer and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, soils that have an appreciable amount of gravel or stones, 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 or stones, 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 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 the restrictive features that affect each soil for drainage, irrigation, terraces and diversions, and grassed waterways.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area. Ponds that are less than about 2 acres in size are not shown on the soil maps because of the scale of mapping.

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

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders. Depth to 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 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, and susceptibility to flooding. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity. 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. The performance of a system is affected by the availability of suitable irrigation water, the depth of the root zone, and soil reaction.

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

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 affect the construction of grassed waterways. A hazard of soil blowing, low available water capacity, restricted rooting depth, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features, listed in tables, are explained on the following pages.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed *(17)*. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics. These results are reported in table 17.

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

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

Engineering Index Properties

Table 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, by weight, of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is as much as 15 percent, by volume, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the "Glossary."

Classification of the soils is determined according to the Unified soil classification system *(2)* and the system adopted by the American Association of State Highway and Transportation Officials *(1)*.

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, SC-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 17.

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.

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, or component, consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated content of clay of each major soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They determine the ability of the soil to adsorb cations and to retain moisture. They influence the shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3-bar moisture tension. Weight is determined after drying the soil at 105 degrees C. In this table, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability refers to the ability of a soil to transmit water or air. The estimates indicate the rate of movement of water through the soil when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage in each major soil layer is stated in inches of water per inch of soil. The capacity varies, depending on soil properties that affect the retention of water and the depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time. It is the difference between the amount of soil water at field moisture capacity and the amount at wilting point.

Soil reaction is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; and *high*, more than 6 percent. *Very high*, more than 9 percent, is sometimes used.

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE)

to predict the average annual rate of soil loss by sheet and rill erosion. Losses are expressed in tons per acre per year. These estimates are based primarily on percentage of silt, sand, and organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.02 to 0.69. The higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur over a sustained period without affecting crop productivity. The rate is expressed in tons per acre per year.

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 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 or very 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 to very 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.

The Iredell soil listed in table 16 is assigned to two hydrologic groups. The first letter is for drained areas and the second is for undrained areas.

Flooding, the temporary covering of the surface by flowing water, is caused by overflowing streams or by runoff from adjacent slopes. 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 to occur.

Frequency, duration, and probable dates of occurrence are estimated. Frequency generally is expressed as *none, rare, occasional,* or *frequent. None* means that flooding is not probable. *Rare* means that flooding is unlikely but possible under unusual weather conditions (the chance of flooding is nearly 0 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 on flooding 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

highest. 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. "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 specified as either soft or hard. If the rock is soft or fractured, excavations can be made with trenching machines, backhoes, or small rippers. If the rock is hard or massive, blasting or special equipment generally is needed for excavation.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors creates a severely corrosive environment. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low*, *moderate*, or *high*, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion is also expressed as *low*, *moderate*, or *high*. It is based on soil texture, acidity, and the amount of sulfates in the saturation extract.

Engineering Index Test Data

Table 17 shows laboratory test data for several pedons sampled at carefully selected sites in the survey area. The pedons are typical of the series and are described in the section "Soil Series and Their Morphology." The soil samples were tested by the North Carolina Department of Transportation and Highway Safety, Materials and Test Unit, Raleigh, North Carolina.

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) *(1, 2)*.

The tests and methods are Unified classification—D 2487 (ASTM); AASHTO classification—M 145 (AASHTO), D 3282 (ASTM); Mechanical analysis—T 88 (AASHTO), D 422 (ASTM), D 2217 (ASTM); Liquid limit—T 89 (AASHTO), D 4318 (ASTM); Plasticity index—T 90 (AASHTO), D 4318 (ASTM); and Moisture density—T 99 (AASHTO), D 698 (ASTM).

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories *(16)*. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or on laboratory measurements. Table 18 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Eleven soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Ultisol.

SUBORDER. Each order is divided into suborders, primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Udult (*Ud*, meaning humid climate, plus *ult*, from Ultisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; 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 Kanhapludults (*Kanhapl*, meaning low activity clay and minimal horizonation, plus *udults*, the suborder of the Ultisols that occurs in a humid climate).

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 Kanhapludults.

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 clayey, kaolinitic, thermic Typic Kanhapludults.

SERIES. The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. There can be some variation in the texture of the surface layer or of the underlying material 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. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The location of the typical pedon is described and shown on the detailed maps by a special symbol. The detailed description of each soil horizon follows standards in the "Soil Survey Manual" *(14)*. Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" *(16)*. 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."

Altavista Series

The Altavista series consists of very deep, moderately well drained, moderately permeable soils

that formed in alluvium. These soils are fine-loamy, mixed, thermic Aquic Hapludults. They are on flood plains and stream terraces. Slope ranges from 0 to 6 percent.

Typical pedon of Altavista fine sandy loam, 2 to 6 percent slopes, 1.8 miles south of Arcadia on North Carolina Highway 150, northwest 2 miles on State Road 1485, west 0.2 mile on a field road, and 210 feet north of the road, in a field:

Ap—0 to 9 inches; dark grayish brown (2.5Y 4/2) fine sandy loam; moderate fine granular structure; friable; common fine roots; moderately acid; abrupt smooth boundary.

Bt1—9 to 24 inches; light olive brown (2.5Y 5/4) clay loam; moderate fine subangular blocky structure; friable; few fine roots; common fine pores; few fine flakes of mica; strongly acid; gradual smooth boundary.

Bt2—24 to 30 inches; light olive brown (2.5Y 5/4) sandy clay loam; common coarse prominent yellowish brown (10YR 5/6) and common medium faint light brownish gray (2.5Y 6/2) mottles; weak fine subangular blocky structure; friable; common fine pores; few fine flakes of mica; strongly acid; gradual wavy boundary.

Bt3—30 to 47 inches; light olive brown (2.5Y 5/4) sandy clay loam; common medium distinct light brownish gray (2.5Y 6/2) and common medium prominent yellowish brown (10YR 5/6) and red (2.5YR 4/6) mottles; weak fine subangular blocky structure; friable; few fine pores; few fine flakes of mica; few thin lenses of clay loam in lower part; strongly acid; gradual wavy boundary.

BC—47 to 60 inches; mottled light brownish gray (2.5Y 6/2), light yellowish brown (10YR 6/4), and red (2.5YR 4/6) sandy clay loam; few thin lenses of clay and sandy clay; massive; firm; few fine flakes of mica; strongly acid.

The solum is 30 to more than 60 inches thick. The depth to bedrock is more than 5 feet. Reaction is very strongly acid to moderately acid unless the soils are limed. In most pedons, the horizons below the surface layer have few or common flakes of mica.

The A or Ap horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 1 to 4. The E horizon, if it occurs, has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 3 to 8. It is sandy loam or fine sandy loam.

The BA or BE horizon, if it occurs, and the Bt horizon have hue of 7.5YR to 2.5Y, value of 5 to 7, and chroma of 3 to 8. Mottles that have chroma of 2 or less are in the upper 24 inches of the Bt horizon. The Btg horizon, if it occurs, is below a depth of 30 inches. It has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 or 2. The BA or BE horizon, if it occurs, is fine sandy loam, sandy loam, or loam. The Bt horizon and the Btg horizon, if it occurs, are loam, clay loam, or sandy clay loam.

The BC horizon is similar in color to the Bt horizon or is mottled, including shades of gray. Some pedons have a BCg horizon that is similar in color to the Btg horizon. They are sandy loam, fine sandy loam, loam, or sandy clay loam.

The C horizon, if it occurs, has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 3 to 8, or it is mottled. Some pedons have a Cg horizon that is similar in color to the BCg horizon. The C horizon and the Cg horizon, if it occurs, are stratified alluvium that varies in texture.

Appling Series

The Appling series consists of very deep, well drained, moderately permeable soils that formed in material weathered from felsic crystalline rocks. These soils are clayey, kaolinitic, thermic Typic Kanhapludults. They are on broad upland ridges. Slope ranges from 2 to 8 percent.

Typical pedon of Appling sandy loam, 2 to 8 percent slopes, 0.25 mile north of Welcome on U.S. Highway 52, east 0.25 mile on State Road 1821, and 90 feet north of the road, in a pine forest:

Ap—0 to 9 inches; yellowish brown (10YR 5/4) sandy loam; weak medium granular structure; friable; common fine roots; few fine flakes of mica; moderately acid; clear smooth boundary.

BA—9 to 12 inches; brownish yellow (10YR 6/6) sandy clay loam; weak fine subangular blocky structure; friable; few fine roots; few fine flakes of mica; common fine pores; strongly acid; gradual wavy boundary.

Bt1—12 to 20 inches; strong brown (7.5YR 5/6) clay; common fine prominent red (2.5YR 4/8) mottles; moderate medium subangular blocky structure; firm; common faint clay films on faces of peds; few fine roots; common fine pores; few fine flakes of mica; strongly acid; gradual wavy boundary.

Bt2—20 to 25 inches; yellowish brown (10YR 5/6) clay; common medium prominent red (2.5YR 4/8) and common fine faint brownish yellow (10YR 6/6) mottles; moderate medium subangular blocky structure; firm; common faint clay films on faces of peds; few fine roots; few fine pores; few fine flakes of mica; strongly acid; gradual wavy boundary.

Bt3—25 to 33 inches; yellowish brown (10YR 5/4) sandy clay; many medium prominent red (2.5YR 4/8) and common prominent faint yellow (10YR 7/6) mottles; weak fine subangular blocky structure; firm; few faint clay films on faces of peds; few fine roots;

few fine flakes of mica; few fine grains of feldspar; strongly acid; gradual wavy boundary.

BC—33 to 42 inches; mottled red (2.5YR 4/8), yellowish brown (10YR 5/4), and yellow (10YR 7/6) sandy clay loam; weak medium subangular blocky structure; friable; few fine roots; common fine flakes of mica; common fine grains of feldspar; common pockets of saprolite that has a texture of sandy loam; common pockets of clay; strongly acid; gradual wavy boundary.

C1—42 to 54 inches; red (2.5YR 5/8) saprolite that has a texture of sandy loam; massive; friable; common fine flakes of mica; common fine grains of feldspar; strongly acid; gradual wavy boundary.

C2—54 to 60 inches; multicolored saprolite that has a texture of sandy loam; massive; friable; common fine flakes of mica; common fine grains of feldspar; strongly acid.

The solum is 40 to more than 60 inches thick. The depth to bedrock is more than 5 feet. Reaction is very strongly acid to moderately acid. The A and Bt horizons have few or common flakes of mica, and the BC and C horizons have common or many flakes of mica.

The A or Ap horizon has hue of 10YR or 7.5YR, value of 3 to 5, and chroma of 2 to 4. In pedons that have value of 3, it is 2 to 5 inches thick.

The E horizon, if it occurs, has hue of 7.5YR to 2.5Y, value of 5 to 7, and chroma of 3 to 8. It is sandy loam or coarse sandy loam.

The BA or BE horizon, if it occurs, has hue of 5YR to 10YR, value of 5 or 6, and chroma of 4 to 8. It is sandy clay loam or clay loam.

The Bt horizon has hue of 5YR to 10YR, value of 4 to 6, and chroma of 4 to 8. It has mottles in shades of red, brown, or yellow in the middle or lower parts. It is sandy clay, clay loam, or clay. It contains 35 to 60 percent clay. It extends to a depth of 30 to 60 inches.

The BC horizon is mottled or has hue of 2.5YR to 2.5Y, value of 4 to 7, and chroma of 4 to 8. In pedons that have a dominant matrix color it has few to many mottles in shades of red, yellow, or brown. It is sandy clay loam or clay loam.

The C horizon is similar in color to the BC horizon or is multicolored. It is loamy saprolite weathered from felsic crystalline rock.

Armenia Series

The Armenia series consists of very deep, poorly drained, slowly permeable soils that formed in material weathered from mafic crystalline rocks. These soils are fine, montmorillonitic, thermic Typic Argiaquolls. They are on small flood plains, at the head of streams, and on flats and in depressions on uplands. Slope ranges from 0 to 2 percent.

Typical pedon of Armenia silt loam, occasionally flooded, 0.8 mile south of Linwood on State Road 1104, west under a power line to the second small tower, and 200 feet south, in a wooded area:

Oe—2 inches to 0; partly decomposed hardwood leaf litter.

A—0 to 6 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; moderate medium granular structure; friable; many fine and medium roots; few black concretions; neutral; clear wavy boundary.

BA—6 to 11 inches; very dark grayish brown (10YR 3/2) sandy clay loam, grayish brown (10YR 5/2) dry; weak medium subangular blocky structure; friable; many medium roots; common fine pores; common black concretions; slightly acid; gradual wavy boundary.

Btg1—11 to 19 inches; gray (10YR 5/1) clay; many fine prominent yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; very firm, sticky and plastic; common fine roots; common fine pores; common distinct clay films on faces of peds; few black concretions; neutral; gradual wavy boundary.

Btg2—19 to 27 inches; gray (5Y 5/1) clay; many fine prominent brown (7.5YR 4/4) mottles; moderate medium subangular blocky structure; very firm, very sticky and very plastic; few fine roots; few fine pores; common distinct clay films on faces of peds; few black concretions; neutral; gradual wavy boundary.

Btg3—27 to 34 inches; gray (5Y 5/1) clay; common fine prominent yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; very firm, very sticky and very plastic; few fine roots; common distinct clay films on faces of peds; common black concretions; few rounded quartz gravel; neutral; gradual wavy boundary.

Btg4—34 to 43 inches; olive gray (5Y 5/2) clay; few fine prominent yellowish brown (10YR 5/6) and few fine distinct olive (5Y 5/4) mottles; massive; very firm, very sticky and very plastic; few fine roots; few black concretions; few rounded quartz gravel; neutral; gradual wavy boundary.

BC—43 to 51 inches; mottled olive gray (5Y 5/2), light yellowish brown (2.5Y 6/4), yellowish brown (10YR 5/6), and black (10YR 2/1) sandy clay loam; massive; firm, slightly sticky and slightly plastic; few fine roots; few black concretions; neutral; gradual wavy boundary.

C—51 to 60 inches; multicolored saprolite that has a texture of sandy loam; massive; friable; few fine flakes of mica; neutral.

The solum is 30 to more than 60 inches thick. The depth to bedrock is more than 60 inches. The content of dark concretions is few or common throughout. The A or Ap horizon is moderately acid to neutral. The BA, Btg, BC, and C horizons are slightly acid to mildly alkaline.

The A or Ap horizon has hue of 10YR or 2.5Y, value of 2 or 3, and chroma of 1 to 3. In some pedons recent deposition of thin layers of material has value of 4.

The BA horizon has hue of 10YR to 5Y, value of 2 to 5, and chroma of 1 to 4. It is sandy clay loam or clay loam.

The Btg horizon has hue of 10YR to 5Y, value of 3 to 6, and chroma of 2 or less, or it is neutral in hue and has value of 3 to 6. It commonly is mottled in shades of brown, yellow, or olive. It is clay, sandy clay, silty clay, or clay loam.

The BC horizon has matrix colors in hue of 7.5YR to 5Y, value of 2 to 7, and chroma of 3 to 8 or is mottled in these colors and in shades of gray or black. The BCg horizon, if it occurs, has chroma of 2 or less. The BC horizon and the BCg horizon, if it occurs, are clay loam or sandy clay loam.

The C horizon is loamy saprolite weathered from mafic crystalline rock.

Badin Series

The Badin series consists of moderately deep, well drained, moderately permeable soils that formed in material weathered from fine grained rock, such as argillite or slate, of the Carolina Slate Belt. These soils are on upland ridges and side slopes. They are clayey, kaolinitic, thermic Typic Hapludults. Slope ranges from 2 to 30 percent.

Typical pedon of Badin channery silt loam, 2 to 8 percent slopes, 6 miles east of Southmont on North Carolina Highway 8, north 2 miles on State Road 2310, west 0.3 mile on State Road 2314, and 30 feet south of the road, in a pine plantation:

Ap—0 to 6 inches; yellowish brown (10YR 5/4) channery silt loam; moderate fine granular structure; friable; common fine and medium roots; about 30 percent, by volume, slate channers; strongly acid; clear smooth boundary.

BA—6 to 9 inches; strong brown (7.5YR 5/8) channery silty clay loam; moderate fine subangular blocky structure; friable; few fine and medium roots; common fine pores; about 20 percent, by volume, slate channers; very strongly acid; gradual wavy boundary.

Bt—9 to 20 inches; yellowish red (5YR 5/8) silty clay loam; moderate fine subangular blocky structure; firm; few fine roots; few fine pores; about 14 percent, by volume, slate channers; common distinct clay films on faces of peds; very strongly acid; clear wavy boundary.

BC—20 to 24 inches; yellowish red (5YR 5/8) channery silty clay loam; weak fine subangular blocky structure; friable; few fine and medium roots; about 30 percent, by volume, slate channers; very strongly acid; abrupt irregular boundary.

Cr—24 to 41 inches; multicolored, weathered and fractured slate bedrock; common seams of silt loam in fractures; few fine roots in seams; clear irregular boundary.

R—41 inches; hard, fractured slate bedrock.

The thickness of the solum and the depth to weathered, fractured bedrock is 20 to 40 inches. The depth to hard bedrock is more than 40 inches. Reaction is very strongly acid or strongly acid.

The A or Ap horizon has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 2 to 6. The E horizon, if it occurs, has hue of 7.5YR or 10YR, value of 5 to 7, and chroma of 2 to 4. It is channery silt loam or channery loam.

The BA horizon or the BE horizon, if it occurs, have hue of 5YR or 7.5YR, value of 4 to 6, and chroma of 4 to 8. They are channery silt loam or channery silty clay loam.

The Bt horizon has hue of 2.5YR to 7.5YR, value of 4 to 6, and chroma of 6 to 8. It is silty clay, silty clay loam, channery silty clay, or channery silty clay loam.

The BC horizon has colors similar to those of the Bt horizon or is mottled in those colors. It is channery silty clay loam, channery silt loam, very channery silt loam, or very channery silty clay loam.

The Cr horizon is multicolored, weathered and fractured bedrock that can be dug with difficulty using hand tools. The R horizon is hard, fractured slate, argillite, or other fine grained rocks of the Carolina Slate Belt.

Cecil Series

The Cecil series consists of very deep, well drained, moderately permeable soils that formed in material weathered from felsic crystalline rocks. These soils are clayey, kaolinitic, thermic Typic Kanhapludults. They are on broad upland ridges and side slopes. Slope ranges from 2 to 15 percent.

Typical pedon of Cecil sandy loam, 2 to 8 percent

slopes, 1.3 miles north of U.S. Highway 29 at Lexington on U.S. Highway 52, east 0.25 mile along a petroleum pipeline, and 30 feet north, in a pasture:

Ap—0 to 6 inches; brown (7.5YR 5/4) sandy loam; moderate fine granular structure; friable; many fine roots; few fine flakes of mica; moderately acid; clear smooth boundary.
BA—6 to 9 inches; red (2.5YR 4/6) clay loam; moderate medium subangular blocky structure; friable; common fine roots; common fine pores; few fine flakes of mica; strongly acid; gradual wavy boundary.
Bt1—9 to 23 inches; red (2.5YR 4/6) clay; moderate fine subangular blocky structure; firm; common fine roots; common fine pores; common distinct clay films on faces of peds; few fine flakes of mica; strongly acid; gradual wavy boundary.
Bt2—23 to 42 inches; red (2.5YR 4/6) clay; few medium prominent brownish yellow (10YR 6/6) mottles; moderate fine subangular blocky structure; firm; few fine roots; few fine pores; common distinct clay films on faces of peds; few fine flakes of mica; strongly acid; gradual wavy boundary.
Bt3—42 to 50 inches; red (2.5YR 4/6) clay; weak fine subangular blocky structure; firm; few fine pores; common fine flakes of mica; strongly acid; gradual wavy boundary.
BC—50 to 58 inches; red (2.5YR 4/6) clay loam; weak fine subangular blocky structure; friable; common fine flakes of mica; very strongly acid; gradual wavy boundary.
C—58 to 72 inches; red (2.5YR 4/6) saprolite that has a texture of loam; common fine and medium prominent yellow (10YR 7/6) mottles; common fine flakes of mica; very strongly acid.

The solum is 40 to more than 60 inches thick. The depth to bedrock is more than 5 feet. The A or Ap horizon is very strongly acid to moderately acid. The BA, Bt, BC, and C horizons are very strongly acid or strongly acid. In most pedons, the A and Bt horizons have few or common flakes of mica, and the BC and C horizons have few to many flakes of mica.

The A or Ap horizon has hue of 2.5YR to 10YR, value of 3 to 5, and chroma of 2 to 8. In pedons that have value of 3, it is less than 6 inches thick. It is sandy loam or clay loam. The E horizon, if it occurs, has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 3 to 8. It is sandy loam, fine sandy loam, or loam.

The BA or BE horizon, if it occurs, has hue of 2.5YR or 5YR, value of 4 to 6, and chroma of 4 to 8. It is sandy clay loam, loam, or clay loam.

The Bt horizon typically has hue of 10R or 2.5YR, value of 4 or 5, and chroma of 6 to 8. It is clay loam or clay. It contains 35 to 70 percent clay and less than 30 percent silt. It extends to a depth of 30 to 60 inches.

The BC horizon has hue of 10R to 5YR, value of 4 to 6, and chroma of 4 to 8. In some pedons it has few or common mottles in shades of yellow or brown. It is clay loam or sandy clay loam.

The C horizon is red or multicolored, loamy saprolite weathered from felsic crystalline rock.

Chewacla Series

The Chewacla series consists of very deep, somewhat poorly drained, moderately permeable soils that formed in recent alluvium. These soils are fine-loamy, mixed, thermic Fluvaquentic Dystrochrepts. They are on flood plains. Slope ranges from 0 to 2 percent.

Typical pedon of Chewacla loam, frequently flooded, 1.7 miles east of the Yadkin River bridge on U.S. Highway 64, east 0.25 mile on State Road 1434, north 650 feet on a private drive, and 100 feet east, in a field:

Ap—0 to 9 inches; brown (10YR 4/3) loam; moderate fine granular structure; friable; common fine roots; common fine flakes of mica; moderately acid; clear smooth boundary.
BA—9 to 15 inches; dark yellowish brown (10YR 4/4) fine sandy loam; moderate medium granular structure; friable; common fine roots; common fine pores; common fine flakes of mica; moderately acid; clear wavy boundary.
Bw1—15 to 32 inches; brown (10YR 5/3) sandy clay loam; many medium distinct grayish brown (2.5Y 5/2) and common fine prominent yellowish red (5YR 4/6) mottles; weak medium subangular blocky structure; friable; few fine roots; common fine pores; few fine flakes of mica; few quartz gravel; slightly acid; gradual wavy boundary.
Bw2—32 to 42 inches; yellowish brown (10YR 5/6) sandy clay loam; common fine prominent light brownish gray (2.5Y 6/2) and yellowish red (5YR 5/8) mottles; weak medium subangular blocky structure; friable; few fine pores; few fine flakes of mica; slightly acid; gradual wavy boundary.
Bg—42 to 47 inches; light brownish gray (2.5Y 6/2) sandy clay loam; many medium prominent strong brown (7.5YR 5/6) mottles; weak fine subangular blocky structure; friable; few fine pores; common fine flakes of mica; few fine dark organic stains; slightly acid; gradual smooth boundary.
BC—47 to 52 inches; yellowish brown (10YR 5/4) sandy loam; common fine distinct light brownish gray (2.5Y 6/2) mottles; massive; friable; common fine flakes of mica; neutral; gradual wavy boundary.

C1—52 to 58 inches; yellowish brown (10YR 5/4) loamy sand; massive; very friable; common fine flakes of mica; neutral; gradual wavy boundary.
C2—58 to 62 inches; yellowish brown (10YR 5/4) gravelly loamy sand; single grained; loose; few fine flakes of mica; about 20 percent, by volume, rounded gravel; neutral.

The solum is 16 to more than 60 inches thick. The depth to bedrock is more than 60 inches. The content of mica flakes is few or common throughout. Reaction is very strongly acid to slightly acid to a depth of 40 inches and strongly acid to neutral below a depth of 40 inches. In some pedons dark concretions are few or common.

The A or Ap horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 1 to 4. In pedons that have value of 3 and chroma of 1 to 3, it is less than 7 inches thick.

The BA and Bw horizons have hue of 7.5YR to 2.5Y, value of 4 to 7, and chroma of 3 to 8. Mottles that have chroma of 2 or less are within a depth of 24 inches. The BA and Bw horizons are sandy loam, fine sandy loam, loam, sandy clay loam, or clay loam. In some pedons the BA horizon and parts of the Bw horizon are silt loam or silty clay loam. In many pedons a Bg horizon is below the BA and Bw horizons. It has hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 2 or less. The BC and BCg horizons, if they occur, are similar in color and texture to those in the Bw and Bg horizons, respectively.

The C or Cg horizon, if it occurs, is similar in color to those in the BC and BCg horizons, respectively. It is loamy within a depth of 40 inches and ranges from gravelly sand to clay below a depth of 40 inches.

Cid Series

The Cid series consists of moderately deep, moderately well drained and somewhat poorly drained, slowly permeable soils that formed in material weathered from slate, argillite, and other fine grained rocks of the Carolina Slate Belt. These soils are clayey, mixed, thermic Aquic Hapludults. They are on broad upland flats and gently sloping ridges. Slope ranges from 0 to 4 percent.

Typical pedon of Cid silt loam, in an area of Cid-Misenheimer complex, 0 to 4 percent slopes; 4.2 miles west of Denton on Flat Swamp Road, 0.5 mile north on North Carolina Highway 8, north 1.3 miles on State Road 2310 (Shiptontown Road), and 100 feet west, in a pine forest:

A—0 to 6 inches; grayish brown (10YR 5/2) silt loam; moderate medium granular structure; very friable; many fine and medium roots; about 5 percent, by volume, slate channers; very strongly acid; clear wavy boundary.
E—6 to 12 inches; light yellowish brown (2.5Y 6/4) silt loam; few fine prominent brownish yellow (10YR 6/6) mottles; moderate medium granular structure; friable; common fine and medium roots; common fine pores; about 5 percent, by volume, slate channers; very strongly acid; gradual wavy boundary.
Bt1—12 to 19 inches; brownish yellow (10YR 6/6) silty clay loam; common medium prominent pale yellow (2.5Y 7/4) mottles; moderate medium subangular blocky structure; friable; few faint clay films on faces of peds; few fine roots; common fine pores; very strongly acid; gradual wavy boundary.
Bt2—19 to 26 inches; olive yellow (2.5Y 6/6) silty clay; common medium faint brownish yellow (10YR 6/6) and common medium prominent light gray (10YR 7/1) mottles; moderate medium subangular blocky structure; firm; few medium roots; common fine pores; common distinct clay films on faces of peds; about 5 percent, by volume, slate channers; very strongly acid; gradual wavy boundary.
BC—26 to 29 inches; olive yellow (2.5Y 6/6) channery silty clay; common medium prominent gray (10YR 6/1) mottles; weak medium subangular blocky structure; firm; few medium roots; about 25 percent, by volume, slate channers; very strongly acid; gradual wavy boundary.
Cr—29 to 34 inches; multicolored, weathered and fractured slate bedrock that can be dug with difficulty using a spade; thin seams of light gray (10YR 6/1) silt loam in fractures; about 75 percent, by volume, slate fragments.
R—34 inches; hard, fractured slate bedrock.

The thickness of the solum and the depth to hard bedrock are 20 to 40 inches. Reaction is very strongly acid or strongly acid unless the soils are limed. The content of rock fragments is 0 to 15 percent in the A and Bt horizons and 5 to 30 percent in the BC horizon.

The A or Ap horizon has hue of 10YR to 5Y, value of 4 to 7, and chroma of 1 to 4. The E horizon has hue of 10YR to 5Y, value of 6 or 7, and chroma of 2 to 4. It is silt loam, loam, very fine sandy loam, or the channery analogs of those textures.

The BA or BE horizon, if it occurs, has hue of 10YR to 5Y, value of 5 to 7, and chroma of 3 to 8. It is silt loam or silty clay loam.

The Bt and BC horizons have hue of 10YR to 5Y, value of 5 to 7, and chroma of 3 to 8 or are mottled in those colors. Mottles that have chroma of 2 or less are within the upper 24 inches of the Bt horizon. The Bt

horizon is silty clay loam, silty clay, or clay, and the BC horizon is silty clay, silty clay loam, channery silty clay, or channery silty clay loam.

The Cr horizon is weathered, fractured bedrock that can be dug with difficulty using a spade. The R horizon is hard, fractured slate, argillite, or other fine grained rocks of the Carolina Slate Belt.

Congaree Series

The Congaree series consists of very deep, well drained and moderately well drained, moderately permeable soils that formed in recent alluvium. These soils are fine-loamy, mixed, nonacid, thermic Typic Udifluvents. They are on flood plains. Slope ranges from 0 to 4 percent.

Typical pedon of Congaree loam, occasionally flooded, 2 miles south of Arcadia on North Carolina Highway 150, 2.4 miles northwest on State Road 1485 (Old Mill Road), 0.3 mile west on a field road, and 150 feet southeast of the road, in a field:

Ap—0 to 10 inches; dark brown (10YR 4/3) loam; moderate fine granular structure; friable; common fine roots; few fine flakes of mica; moderately acid; abrupt smooth boundary.

C1—10 to 14 inches; yellowish brown (10YR 5/4) loam; massive; friable; common fine roots; common fine pores; common fine flakes of mica; slightly acid; gradual wavy boundary.

C2—14 to 32 inches; strong brown (7.5YR 5/6) loam; massive; friable; few fine roots; common fine pores; common fine flakes of mica; neutral; diffuse wavy boundary.

C3—32 to 46 inches; yellowish brown (10YR 5/6) loam; massive; friable; few fine pores; many fine flakes of mica; neutral; gradual wavy boundary.

C4—46 to 62 inches; strong brown (7.5YR 5/6) loam; massive; friable; many fine flakes of mica; neutral.

The depth to bedrock is more than 5 feet. Reaction is very strongly acid to neutral. Fine flakes of mica range from few to many throughout.

The A or Ap horizon has hue of 5YR to 10YR, value of 3 to 5, and chroma of 2 to 6. In pedons that have value of 3, it is 3 to 5 inches thick.

The C horizon to a depth of 20 inches or more has hue of 5YR to 10YR, value of 4 or 5, and chroma of 3 to 6. In some pedons it has mottles in shades of brown or yellow. Below a depth of 20 inches, it has colors similar to those in the upper part, except that in some pedons it has mottles that have chroma of 2 or less. The C horizon is dominantly loam, fine sandy loam, or sandy clay loam. In many pedons it has strata of sandier or more clayey material.

Davidson Series

The Davidson series consists of very deep, well drained, moderately permeable soils that formed in material weathered from intermediate and mafic rocks that are high in content of ferromagnesian minerals. These soils are clayey, kaolinitic, thermic Rhodic Kandiudults. They are on upland ridges and side slopes. Slope ranges from 2 to 25 percent.

Typical pedon of Davidson loam, 2 to 8 percent slopes, 4 miles south of Lexington on North Carolina Highway 8, west 2.2 miles on State Road 1130, south 0.3 mile on a farm road to a fork, and 30 feet south of the road, in a field:

Ap—0 to 7 inches; dark reddish brown (2.5YR 2/4) loam; weak fine granular structure; friable; common fine roots; few fine black concretions; slightly acid; clear smooth boundary.

Bt1—7 to 18 inches; dark reddish brown (2.5YR 3/4) clay; weak fine subangular blocky structure; firm, very sticky and plastic; common fine roots; common fine pores; common distinct clay films on faces of peds; few fine black concretions; strongly acid; gradual wavy boundary.

Bt2—18 to 72 inches; dark red (2.5YR 3/6) clay; weak fine subangular blocky structure; firm, very sticky and plastic; few fine roots in the upper part; few fine pores; common distinct clay films on faces of peds; few fine black concretions; strongly acid.

The solum is 60 to more than 100 inches thick. The depth to bedrock is more than 5 feet. Reaction is very strongly acid to slightly acid. In the upper part of most pedons, black concretions are few or common.

The A or Ap horizon has hue of 10R to 5YR, value of 2 or 3, and chroma of 2 to 4.

The Bt horizon has hue of 10R or 2.5YR. In some pedons it has value of 4 below the upper 40 inches.

Enon Series

The Enon series consists of very deep, well drained, slowly permeable soils that formed in material weathered from mafic or intermediate crystalline rocks. These soils are fine, mixed, thermic Ultic Hapludalfs. They are on upland ridges and side slopes. Slope ranges from 2 to 25 percent.

Typical pedon of Enon fine sandy loam, 2 to 8 percent slopes, 0.9 mile east of U.S. Highway 29 on State Road 1844 (Old Greensboro Road), 0.8 mile north on State Road 1843 (Everhart Road), 1,200 feet west at Buena Vista home, and 1,200 feet north, in a pasture:

Ap—0 to 8 inches; yellowish brown (10YR 5/4) fine sandy loam; moderate medium granular structure;

friable; many fine roots; few fine black concretions; neutral; clear smooth boundary.

Bt1—8 to 19 inches; strong brown (7.5YR 5/6) clay; moderate medium angular blocky structure; firm, sticky and plastic; common fine roots; common fine pores; common distinct clay films on faces of peds; few fine black concretions; slightly acid; gradual wavy boundary.

Bt2—19 to 24 inches; strong brown (7.5YR 5/6) clay; common medium prominent yellowish brown (10YR 5/4) and common fine prominent pale brown (10YR 6/3) mottles; moderate medium angular blocky structure; firm, sticky and plastic; common fine roots; few fine pores; common distinct clay films on faces of peds; few fine black concretions; slightly acid; gradual wavy boundary.

Bt3—24 to 29 inches; yellowish brown (10YR 5/8) clay; common fine distinct pale brown (10YR 6/3) mottles and few fine prominent light brownish gray (2.5Y 6/2) mottles along old root channels; weak medium subangular blocky structure; firm, sticky and plastic; few fine roots; few fine pores; common distinct clay films on faces of peds; few fine black concretions; common medium pockets of black minerals; slightly acid; gradual wavy boundary.

BC—29 to 34 inches; yellowish brown (10YR 5/6) clay loam; weak fine subangular blocky structure; firm, slightly sticky and slightly plastic; few fine roots; common black concretions and many pockets of black minerals; common small pockets of clay loam saprolite; neutral; gradual wavy boundary.

C1—34 to 47 inches; multicolored saprolite that has a texture of clay loam; massive; friable; few fine flakes of mica; many black minerals; neutral; gradual wavy boundary.

C2—47 to 60 inches; multicolored saprolite that has a texture of sandy loam; massive; friable; many black and yellow minerals; neutral.

The solum is 20 to 44 inches thick. The depth to bedrock is more than 5 feet. The A or Ap horizon is moderately acid to neutral. The Bt, BC, and C horizons are slightly acid to mildly alkaline. Manganese concretions are few or common in some horizons of most pedons. The content of coarse fragments in the surface layer is 0 to 15 percent in the fine sandy loam phase, 15 to 35 percent in the gravelly loam phase, and 35 to 60 percent in the very stony loam phase.

The A or Ap horizon has hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 2 to 4. It is fine sandy loam, gravelly loam, or very stony loam.

The E horizon, if it occurs, has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 2 to 4. It is loam, fine sandy loam, or the gravelly or stony analogs of those textures.

The BA or BE horizon, if it occurs, has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 8. It is clay loam, sandy clay loam, or the gravelly analogs of those textures.

The Bt horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 8. In most pedons it has mottles in shades of brown and yellow. In some pedons it has mottles in shades of gray, not indicative of wetness, below the upper 10 inches. It is clay or clay loam.

The BC horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 8. It is loam, sandy clay loam, or clay loam.

The C horizon is loamy saprolite weathered from mafic or intermediate crystalline rock.

Georgeville Series

The Georgeville series consists of very deep, well drained, moderately permeable soils that formed in material weathered from fine grained rocks, such as argillite and slate, of the Carolina Slate Belt. These soils are clayey, kaolinitic, thermic Typic Hapludults. They are on upland ridges and side slopes. Slope ranges from 2 to 15 percent.

Typical pedon of Georgeville silt loam, 2 to 8 percent slopes, 4 miles southeast of Southmont on North Carolina Highway 8, north 0.65 mile on State Road 2299, and 300 feet east of the road, in a field:

Ap—0 to 9 inches; strong brown (7.5YR 5/4) silt loam; moderate medium granular structure; friable; common fine roots; slightly acid; clear smooth boundary.

Bt1—9 to 28 inches; red (2.5YR 4/8) clay; moderate fine subangular blocky structure; firm; few fine roots; common fine pores; common distinct clay films on faces of peds; strongly acid; gradual wavy boundary.

Bt2—28 to 39 inches; red (2.5YR 4/6) clay; common medium distinct brownish yellow (10YR 6/8) mottles; moderate fine subangular blocky structure; firm; common distinct clay films on faces of peds; strongly acid; gradual wavy boundary.

BC—39 to 49 inches; red (2.5YR 4/8) silty clay loam; common fine distinct brownish yellow (10YR 6/8) mottles; weak medium subangular blocky structure; firm; 25 percent, by volume, pockets of silt loam saprolite; strongly acid; gradual wavy boundary.

C—49 to 60 inches; multicolored saprolite that has a texture of silt loam; platy, rock-controlled structure; friable; few pockets of silty clay; strongly acid.

The solum is 40 to more than 60 inches thick. The depth to bedrock is more than 60 inches. Reaction is very strongly acid to slightly acid in the A or Ap horizon and very strongly acid or strongly acid in the lower horizons.

The A or Ap horizon has hue of 5YR to 2.5Y, value of 4 or 5, and chroma of 4 to 8.

The BA horizon, if it occurs, has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 to 8. It is silty clay loam or clay loam.

The Bt horizon typically has hue of 10R or 2.5YR, value of 4 or 5, and chroma of 6 to 8. In some pedons it has hue of 5YR in the upper part. It commonly is clay or silty clay, but in some pedons it is clay loam or silty clay loam.

The BC horizon has hue of 10R to 5YR, value of 4 or 5, and chroma of 6 to 8. It commonly has mottles in shades of yellow or brown. It is silt loam, loam, silty clay loam, or clay loam.

The C horizon is similar in color to the BC horizon or is multicolored. It is loamy saprolite weathered from fine grained rocks, such as argillite and slate, of the Carolina Slate Belt.

Goldston Series

The Goldston series consists of shallow, well drained to excessively drained, moderately rapidly permeable soils that formed in material weathered from fine grained rocks, such as argillite and slate, of the Carolina Slate Belt. These soils are loamy-skeletal, siliceous, thermic, shallow Typic Dystrochrepts. They are on upland ridges and side slopes. Slope ranges from 4 to 45 percent.

Typical pedon of Goldston very channery silt loam, 4 to 15 percent slopes, 5 miles south of Lexington on old U.S. Highway 64, east 1.5 miles on State Road 2259, north 0.4 mile on State Road 2260, and 200 feet east of the road, in a field:

Ap—0 to 7 inches; brown (10YR 5/3) very channery silt loam; moderate fine granular structure; very friable; many fine roots; about 40 percent, by volume, slate channers; moderately acid; abrupt smooth boundary.

E—7 to 10 inches; pale yellow (2.5Y 7/4) very channery silt loam; moderate fine granular structure; friable; few fine roots; common fine pores; about 50 percent, by volume, slate channers; strongly acid; clear wavy boundary.

Bw—10 to 16 inches; pale yellow (2.5Y 7/4) very channery silt loam; common fine distinct brownish yellow (10YR 6/6) mottles; weak fine subangular blocky structure; friable; few fine roots; common fine pores; about 55 percent, by volume, slate channers; very strongly acid; clear wavy boundary.

Cr—16 to 22 inches; multicolored, weathered and fractured slate bedrock that can be dug with difficulty using hand tools; few seams of silt loam in fractures; gradual irregular boundary.

R—22 inches; hard, fractured slate bedrock.

The solum is 10 to 20 inches thick. The depth to hard bedrock is 20 to more than 40 inches. The soil averages more than 35 percent coarse fragments of slate or argillite throughout. Reaction is very strongly acid to moderately acid in the A, Ap, and E horizons and very strongly acid in the lower horizons.

The A or Ap horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 to 4. The E horizon has hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 2 to 6.

The Bw horizon has hue of 7.5YR to 2.5Y, value of 5 to 7, and chroma of 3 to 8. In some pedons it has mottles in shades of brown, yellow, or red.

The Cr horizon is weathered, fractured bedrock that can be dug with difficulty using hand tools. The R horizon is hard, fractured slate, argillite, or other fine grained rocks of the Carolina Slate Belt.

Herndon Series

The Herndon series consists of very deep, well drained, moderately permeable soils that formed in material weathered from fine grained rocks, such as argillite and slate, of the Carolina Slate Belt. These soils are clayey, kaolinitic, thermic Typic Hapludults. They are on broad upland ridges and side slopes. Slope ranges from 2 to 15 percent.

Typical pedon of Herndon silt loam, 2 to 8 percent slopes, 3.7 miles southeast of Southmont on North Carolina Highway 8, south 0.3 mile on State Road 2307, and 300 feet east of the educational building at Mt. View Church, in a field:

Ap—0 to 8 inches; light olive brown (2.5Y 5/4) silt loam; moderate fine granular structure; friable; many fine roots; few angular quartz pebbles; slightly acid; clear smooth boundary.

Bt1—8 to 22 inches; brownish yellow (10YR 6/6) silty clay loam; moderate fine subangular blocky structure; friable; common fine roots; many fine and medium pores; common distinct clay films on faces of peds; few angular quartz pebbles; strongly acid; gradual wavy boundary.

Bt2—22 to 31 inches; brownish yellow (10YR 6/6) silty clay; common fine prominent red (2.5YR 5/8) and few fine distinct light yellowish brown (2.5Y 6/4) mottles; moderate fine subangular blocky structure; firm; few fine roots; common fine pores; common

distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt3—31 to 42 inches; brownish yellow (10YR 6/6) silty clay; common medium prominent red (2.5YR 4/8) and common medium distinct light yellowish brown (2.5Y 6/4) mottles; weak fine subangular blocky structure; firm; few fine pores; very strongly acid; gradual wavy boundary.

BC—42 to 64 inches; yellowish red (5YR 4/8) silty clay loam; common medium prominent olive yellow (2.5Y 6/6) mottles; weak medium subangular blocky structure; firm; common pockets of silt loam saprolite; very strongly acid; gradual wavy boundary.

C—64 to 72 inches; multicolored saprolite that has a texture of silt loam; platy, rock-controlled structure; common pockets of silty clay loam; very strongly acid.

The solum is 40 to more than 60 inches thick. The depth to bedrock is more than 60 inches. Reaction is very strongly acid to slightly acid in the A or Ap horizon and very strongly acid or strongly acid in the lower horizons.

The A or Ap horizon has hue of 7.5YR to 5Y, value of 3 to 6, and chroma of 2 to 6. In pedons that have value of 3 it is less than 6 inches thick.

The BA horizon, if it occurs, has hue of 7.5YR or 10YR, value of 5 to 7, and chroma of 4 to 8. It is silt loam, loam, or silty clay loam.

The Bt horizon has hue of 5YR to 10YR, value of 4 to 7, and chroma of 4 to 8. In most pedons it has mottles in shades of brown or red. It is silty clay loam, silty clay, or clay.

The BC horizon has colors similar to those of the Bt horizon. It is silt loam, loam, silty clay loam, or clay loam.

The C horizon is loamy saprolite weathered from fine grained rocks, such as argillite and slate, of the Carolina Slate Belt.

Iredell Series

The Iredell series consists of very deep, moderately well drained and somewhat poorly drained, slowly permeable soils that formed in material weathered from mafic crystalline rock that is high in content of ferromagnesian minerals. These soils are fine, montmorillonitic, thermic Typic Hapludalfs. They are on broad upland ridges and gently sloping side slopes. Slope ranges from 1 to 6 percent.

Typical pedon of Iredell loam, 1 to 6 percent slopes, 1 mile south of the Linwood exit of U.S. Highway 29 on State Road 1224, 0.15 mile south on State Road 1104, west 0.35 mile on a paved street, 300 feet east on a paved street, and 40 feet south of the street, in a field:

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) loam; moderate fine and medium granular structure; friable; many fine roots; common fine black concretions; neutral; gradual smooth boundary.

Bt1—7 to 16 inches; yellowish brown (10YR 5/4) clay; moderate fine angular blocky structure; very firm, very sticky and very plastic; many fine roots; few fine pores; many distinct clay films on faces of peds; few fine black concretions; neutral; gradual wavy boundary.

Bt2—16 to 21 inches; olive brown (2.5Y 4/4) clay; moderate fine angular blocky structure; very firm, very sticky and very plastic; common fine roots; few fine pores; common distinct clay films on faces of peds; common fine black concretions; neutral; gradual wavy boundary.

Bt3—21 to 26 inches; olive brown (2.5Y 4/4) clay; weak fine angular blocky structure; very firm, sticky and plastic; common fine roots; few fine pores; common distinct clay films on faces of peds; few fine black concretions; many lenses of black, yellow, and green minerals; mildly alkaline; gradual wavy boundary.

C—26 to 60 inches; multicolored saprolite that has a texture of fine sandy loam; massive; friable; few fine black concretions; many black, yellow, and brown minerals; moderately alkaline.

The solum is 20 to 40 inches thick. The depth to bedrock is more than 60 inches. Reaction is slightly acid or neutral in the A or Ap horizon, moderately acid to mildly alkaline in the Bt and BC horizons, and neutral to moderately alkaline in the C horizon. Most pedons have few to many dark concretions throughout.

The A or Ap horizon has hue of 10YR to 5Y, value of 4 or 5, and chroma of 2 to 4.

The Bt horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 3 to 6. In some pedons mottles that have chroma of 2 or less are below the upper 10 inches.

The BC horizon, if it occurs, is commonly mottled in hue of 10YR to 5Y, value of 4 to 8, and chroma of 1 to 6. It is loam, sandy clay loam, or clay loam.

The C horizon is loamy saprolite weathered from mafic crystalline rock that is high in content of ferromagnesian minerals.

Kirksey Series

The Kirksey series consists of deep, moderately well drained, moderately slowly permeable soils that formed in material weathered from fine grained rocks, such as

argillite and slate, of the Carolina Slate Belt. These soils are fine-silty, siliceous, thermic Aquic Hapludults. They are on low broad flats and the lower slopes on uplands and at the head of drainageways. Slope ranges from 2 to 6 percent.

Typical pedon of Kirksey silt loam, 2 to 6 percent slopes, 2.2 miles south of U.S. Highway 64 on North Carolina Highway 109 and 100 feet northeast of the highway, in a wooded area:

A—0 to 2 inches; grayish brown (10YR 5/2) silt loam; moderate fine granular structure; very friable; many fine and medium roots; very strongly acid; abrupt wavy boundary.

E—2 to 6 inches; light yellowish brown (2.5Y 6/4) silt loam; common medium faint pale yellow (2.5Y 7/4) mottles; moderate fine granular structure; friable; common fine and medium roots; many fine pores; very strongly acid; clear wavy boundary.

Bt1—6 to 19 inches; olive yellow (2.5Y 6/6) silt loam; many medium faint pale yellow (2.5Y 7/4) mottles; moderate fine subangular blocky structure; friable; few fine and medium roots; common fine pores; common distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt2—19 to 27 inches; light olive brown (2.5Y 5/6) silty clay loam; common fine prominent light gray (10YR 6/1) and light gray (2.5Y 7/2) mottles; weak fine subangular blocky structure; firm; few medium roots; common fine pores; common distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

BC—27 to 36 inches; mottled brownish yellow (10YR 6/8) and light gray (2.5Y 7/1) silty clay loam; platy, rock-controlled structure parting to weak fine subangular blocky; firm; few fine roots; about 7 percent, by volume, slate channers; very strongly acid; clear wavy boundary.

C—36 to 42 inches; multicolored saprolite that has a texture of channery silt loam; platy, rock-controlled structure; friable; about 25 percent, by volume, slate channers; very strongly acid; clear wavy boundary.

Cr—42 to 48 inches; multicolored, weathered and fractured slate bedrock; can be dug with difficulty using a spade.

R—48 inches; hard, fractured slate bedrock.

The solum is 20 to 40 inches thick. The depth to bedrock ranges from 40 to 60 inches. Reaction is very strongly acid to slightly acid in the A or Ap horizon and very strongly acid or strongly acid in the lower horizons.

The A or Ap horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 to 4. The E horizon has hue of 10YR or 2.5Y, value of 6 or 7, and chroma of 3 to 6. It is very fine sandy loam, silt loam, or loam.

The BA horizon, if it occurs, has hue of 10YR to 2.5Y, value of 5 to 7, and chroma of 4 to 8. In most pedons it has few or common mottles in shades of yellow, brown, or red. It is silt loam, loam, or very fine sandy loam.

The Bt horizon has hue of 7.5YR to 2.5Y, value of 5 to 7, and chroma of 3 to 8. It has few to many mottles in shades of yellow, brown, red, or gray. Mottles that have chroma of 1 or 2 are within the upper 24 inches of the Bt horizon. It is silty clay loam, silt loam, or clay loam.

The BC horizon commonly is mottled in hue of 5YR to 5Y, value of 5 to 8, and chroma of 1 to 8. It is loam, clay loam, silty clay loam, or silt loam.

The C horizon is multicolored, loamy saprolite weathered from fine grained rocks, such as argillite and slate.

The Cr horizon is weathered, fractured bedrock that can be dug with difficulty using a spade. The R horizon is hard, fractured slate, argillite, or other fine grained rocks of the Carolina Slate Belt.

Mecklenburg Series

The Mecklenburg series consists of very deep, well drained, slowly permeable soils that formed in material weathered from intermediate and mafic crystalline rocks. These soils are fine, mixed, thermic Ultic Hapludalfs. They are on upland ridges and side slopes. Slope ranges from 2 to 15 percent.

Typical pedon of Mecklenburg loam, 2 to 8 percent slopes, 0.7 mile west of Linwood on State Road 1134 and 20 feet north of a bend in the road, in a pasture:

Ap—0 to 8 inches; reddish brown (5YR 4/4) loam; moderate medium granular structure; friable; many fine roots; common fine black concretions; slightly acid; clear smooth boundary.

Bt1—8 to 17 inches; yellowish red (5YR 4/6) clay; moderate medium subangular blocky structure; firm, sticky and plastic; common fine roots; common fine pores; common fine black concretions; common distinct clay films on faces of peds; slightly acid; gradual wavy boundary.

Bt2—17 to 25 inches; yellowish red (5YR 4/8) clay; common fine prominent brownish yellow (10YR 6/6) mottles; moderate medium subangular blocky structure; firm, sticky and plastic; few fine roots; few fine pores; common fine black concretions; common distinct clay films on faces of peds; slightly acid; gradual wavy boundary.

BC—25 to 36 inches; yellowish red (5YR 4/8) clay loam; common medium prominent reddish yellow (7.5YR 6/6) and common fine prominent yellowish brown (10YR 5/4) mottles; weak medium

subangular blocky structure; firm, sticky and plastic; few fine black concretions; common fine lenses of gray clay weathered from rock; slightly acid; gradual wavy boundary.

C—36 to 60 inches; multicolored saprolite that has a texture of sandy clay loam; many black and gray minerals; slightly acid.

The solum is 20 to 40 inches thick. The depth to bedrock is more than 60 inches. Reaction is moderately acid to neutral. The content of black manganese concretions ranges from few to many throughout.

The A or Ap horizon has hue of 2.5YR to 7.5YR, value of 3 to 6, and chroma of 2 to 6. It is less than 6 inches thick where moist value is less than 4. It is loam in areas that have not been significantly eroded and is clay loam in eroded areas.

The BA horizon, if it occurs, has hue of 2.5YR or 5YR, value of 3 to 6, and chroma of 4 to 8. It is loam, sandy clay loam, or clay loam.

The Bt horizon has hue of 2.5YR or 5YR. In the upper part, value is 3 to 6 and chroma is 4 to 8. In the lower part, value is 4 to 6 and chroma is 4 to 8. In most pedons the lower part of this horizon has few or common mottles in shades of brown, yellow, or red.

The BC horizon has hue of 2.5YR to 7.5YR, value of 4 to 7, and chroma of 4 to 8 and is commonly mottled in those colors. It is loam, sandy clay loam, or clay loam. Pockets of saprolite are few or common.

The C horizon is loamy saprolite weathered from intermediate or mafic crystalline rock.

Misenheimer Series

The Misenheimer series consists of shallow, moderately well drained and somewhat poorly drained, moderately permeable or moderately rapidly permeable soils that formed in material weathered from fine grained rocks, such as argillite or slate, of the Carolina Slate Belt. These soils are loamy, siliceous, thermic, shallow Aquic Dystrochrepts. They are on broad upland flats and gently sloping ridges. Slope ranges from 0 to 4 percent.

Typical pedon of Misenheimer channery silt loam, in an area of Cid-Misenheimer complex, 0 to 4 percent slopes; 6 miles south of Southmont on North Carolina Highway 8 and 125 feet north of the highway, in a wooded area:

A—0 to 2 inches; grayish brown (2.5Y 5/2) channery silt loam; moderate medium granular structure; friable; many fine and medium roots; about 20 percent, by volume, slate channers; very strongly acid; clear wavy boundary.

E—2 to 7 inches; light gray (2.5Y 7/2) channery silt loam; moderate medium granular structure; friable; common fine and medium roots; about 15 percent, by volume, slate channers; very strongly acid; clear wavy boundary.

Bw—7 to 17 inches; light yellowish brown (2.5Y 6/4) channery silty clay loam; common medium prominent light gray (5Y 6/1) and common fine distinct brownish yellow (10YR 6/6) mottles; weak fine subangular blocky structure; friable; common fine and medium roots; common fine pores; about 30 percent, by volume, slate channers; very strongly acid; clear wavy boundary.

Cr—17 to 31 inches; multicolored, weathered and fractured slate bedrock; common seams of gray (10YR 6/1) silt loam in fractures; about 75 percent, by volume, slate fragments; can be dug with difficulty using a spade.

R—31 inches; hard, fractured slate bedrock.

The solum is 10 to 20 inches thick. The depth to hard bedrock is 20 to more than 40 inches. Reaction is very strongly acid or strongly acid unless the soils are limed.

The A or Ap horizon has hue of 10YR to 5Y, value of 4 to 7, and chroma of 1 to 4. The E horizon, if it occurs, has hue of 10YR to 5Y, value of 5 to 7, and chroma of 2 to 4. It is channery loam or channery silt loam. The content of slate fragments ranges from 15 to 35 percent, by volume.

The Bw horizon has hue of 10YR to 5Y, value of 5 to 7, and chroma of 4 to 6. It is channery loam, channery silt loam, or channery silty clay loam. The content of slate fragments ranges from 15 to 35 percent, by volume. Mottles that have chroma of 2 or less are throughout the horizon.

The C horizon, if it occurs, is slate or argillite saprolite that has a texture of channery silt loam or very channery silt loam. The content of slate ranges from 25 to 60 percent.

The Cr horizon is weathered, fractured bedrock with nearly level bedding planes. It contains 60 percent or more slate fragments. The R horizon is hard, fractured slate, argillite, or other fine grained rocks of the Carolina Slate Belt.

Oakboro Series

The Oakboro series consists of deep, moderately well drained and somewhat poorly drained, moderately permeable soils that formed in recent alluvium weathered from slate and other fine grained metamorphic rocks. These soils are fine-loamy, mixed, thermic Fluvaquentic Dystrochrepts. They are on flood plains. Slope ranges from 0 to 2 percent.

Typical pedon of Oakboro silt loam, frequently flooded, 4 miles east of Interstate Highway 85 on U.S. Highway 64, south 1.4 miles on State Road 2262, about 650 feet northwest of the road, and 300 feet north of a stream channel, in a pasture:

Ap—0 to 6 inches; brown (10YR 5/3) silt loam; moderate fine granular structure; friable; many fine roots; neutral; clear smooth boundary.
E—6 to 10 inches; yellowish brown (10YR 5/4) silt loam; common fine distinct light yellowish brown (2.5Y 6/4) mottles; weak fine subangular blocky structure; friable; common fine roots; common fine pores; slightly acid; gradual wavy boundary.
Bw1—10 to 20 inches; brownish yellow (10YR 6/6) silt loam; common medium prominent light gray (10YR 7/1) mottles; weak medium subangular blocky structure; friable; few fine roots; common fine pores; slightly acid; gradual wavy boundary.
Bw2—20 to 34 inches; yellowish brown (10YR 5/6) silty clay loam; many fine prominent light gray (10YR 7/1) mottles; weak medium subangular blocky structure; firm; few fine pores; strongly acid; gradual wavy boundary.
C—34 to 43 inches; mottled yellowish brown (10YR 5/6) and light gray (10YR 7/1) clay; massive; firm; strongly acid; abrupt wavy boundary.
R—43 inches; hard, fractured slate bedrock.

The solum is 20 to 50 inches thick. The depth to hard bedrock is 40 to 60 inches. Reaction is very strongly acid to neutral. Dark concretions of iron and manganese oxide are common in pedons where streams dissect areas of basic rock.

The A or Ap horizon has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 2 to 4. The E horizon has hue of 10YR or 2.5Y, value of 5 to 8, and chroma of 3 to 6. It is silt loam or loam.

The BE horizon, if it occurs, has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 4 to 8. It is silt loam or loam.

The Bw horizon has hue of 7.5YR to 2.5Y, value of 5 to 7, and chroma of 3 to 8. Mottles that have chroma of 2 or less are within 24 inches of the surface. The Bg horizon, if it occurs, has a matrix with chroma of 2 or less. The Bw and Bg horizons are dominantly silt loam, loam, or silty clay loam.

The C horizon varies in color and texture. In many pedons thin layers of silty clay and clay are directly above the R horizon.

The Cr horizon, if it occurs, is weathered bedrock that can be dug with difficulty using hand tools. It is less than 12 inches thick. The R horizon is hard, fractured slate, argillite, or other fine grained rock.

Pacolet Series

The Pacolet series consists of very deep, well drained, moderately permeable soils that formed in material weathered from felsic crystalline rocks. These soils are clayey, kaolinitic, thermic Typic Kanhapludults. They are on upland ridges and side slopes. Slope ranges from 2 to 45 percent.

Typical pedon of Pacolet sandy loam, 25 to 45 percent slopes, 0.3 mile north of the Yadkin River bridge on old U.S. Highway 29 on State Road 1138 and 300 feet west of the road, on an east slope in a wooded area above the river:

Oe—2 inches to 0; decomposed and undecomposed hardwood litter.
A—0 to 2 inches; very dark grayish brown (10YR 3/2) sandy loam; weak fine granular structure; very friable; many fine and medium roots; few fine flakes of mica; moderately acid; clear wavy boundary.
E—2 to 7 inches; yellowish brown (10YR 5/4) sandy loam; weak fine granular structure; friable; many fine and medium roots; few fine flakes of mica; moderately acid; gradual wavy boundary.
BE—7 to 11 inches; yellowish red (5YR 5/8) sandy clay loam; weak fine subangular blocky structure; friable; common fine and medium roots; common fine pores; few fine flakes of mica; moderately acid; clear wavy boundary.
Bt—11 to 24 inches; red (2.5YR 5/8) sandy clay; moderate fine subangular blocky structure; firm, slightly sticky; common fine and medium roots; common fine pores; common faint clay films on faces of peds; few fine grains of feldspar and flakes of mica; strongly acid; gradual wavy boundary.
BC—24 to 37 inches; yellowish red (5YR 5/8) sandy clay loam; weak fine subangular blocky structure; friable; few fine and medium roots; few fine and medium pores; few fine flakes of mica and grains of feldspar; strongly acid; gradual wavy boundary.
C—37 to 60 inches; multicolored saprolite that has a texture of fine sandy loam; common grains of feldspar and fine flakes of mica; strongly acid.

The solum is 20 to 40 inches thick. The depth to hard bedrock is more than 60 inches. Reaction is very strongly acid to moderately acid. The content of mica flakes commonly is few or common.

The A or Ap horizon has hue of 5YR to 10YR, value of 3 to 5, and chroma of 1 to 8. The E horizon has hue of 5YR to 10YR, value of 4 to 6, and chroma of 3 to 8.

The BA or BE horizon, if it occurs, has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 3 to 8. It is clay loam, sandy clay loam, or loam.

The Bt horizon has hue of 10R or 2.5YR, value of 4

or 5, and chroma of 6 to 8. In the upper part of some pedons and in the lower part of most pedons it has mottles in shades of yellow or brown. It is clay, sandy clay, or clay loam. It contains 35 to 65 percent clay and extends to a depth of 18 to 30 inches.

The BC horizon has hue of 10R to 5YR, value of 4 or 5, and chroma of 6 to 8. In some pedons it is mottled in shades of red, yellow, or brown. It is sandy clay loam, clay loam, or loam.

The C horizon is loamy saprolite weathered from felsic crystalline rocks.

Poindexter Series

The Poindexter series consists of moderately deep, well drained, moderately permeable soils that formed in material weathered from mafic or intermediate crystalline rocks. These soils are fine-loamy, mixed, thermic Typic Hapludalfs. They are on upland ridges and side slopes. Slope ranges from 4 to 45 percent.

Typical pedon of Poindexter sandy loam, in an area of Poindexter and Zion sandy loams, 15 to 25 percent slopes; 1.2 miles northwest of U.S. Highway 29 at Thomasville on State Road 1972, north and west 1.6 miles on State Roads 1790 and 1785, and 50 feet north of the road, in a field:

Ap—0 to 4 inches; yellowish brown (10YR 5/4) sandy loam; weak medium granular structure; friable; common fine roots; slightly acid; clear smooth boundary.

Bt—4 to 13 inches; yellowish brown (10YR 5/6) sandy clay loam; common fine faint yellow (10YR 7/6) and few medium faint yellowish brown (10YR 5/8) mottles; weak medium subangular blocky structure; firm, slightly sticky and slightly plastic; few fine roots; common fine pores; few faint clay films on faces of peds; few fine flakes of mica; strongly acid; gradual wavy boundary.

BC—13 to 21 inches; brownish yellow (10YR 6/6) sandy loam; common fine distinct reddish yellow (7.5YR 6/8) mottles; weak medium subangular blocky structure; friable; few fine roots; few fine flakes of mica; few small pockets of saprolite that have a texture of sandy loam; moderately acid; gradual wavy boundary.

C—21 to 36 inches; multicolored saprolite that has a texture of sandy loam; massive; few fine flakes of mica; neutral; clear wavy boundary.

Cr—36 to 42 inches; weathered, multicolored bedrock that can be dug with difficulty using hand tools.

R—42 inches; hard, mafic bedrock.

The solum is 14 to 36 inches thick. The depth to weathered bedrock is 20 to 40 inches. Hard bedrock is 40 to 60 inches below the surface. Reaction is strongly acid to neutral.

The A or Ap horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 2 to 4.

The Bt horizon has hue of 5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 8. It is sandy clay loam, clay loam, or loam. Some pedons have thin or discontinuous layers of clay in the Bt horizon.

The BC horizon is similar in color to the Bt horizon. It is sandy loam, fine sandy loam, or loam.

The C horizon is loamy saprolite weathered from mafic or intermediate crystalline rocks.

The Cr horizon is weathered bedrock that can be dug with difficulty using hand tools. The R horizon is hard, mafic or intermediate crystalline bedrock.

Sedgefield Series

The Sedgefield series consists of very deep, moderately well drained and somewhat poorly drained, slowly permeable soils that formed in material weathered from intermediate crystalline rocks. These soils are fine, mixed, thermic Aquultic Hapludalfs. They are on nearly level or gently sloping upland ridges and at the head of drainageways. Slope ranges from 2 to 8 percent.

Typical pedon of Sedgefield sandy loam, 2 to 8 percent slopes, 3.0 miles north of U.S. Highway 29 on Old Greensboro Road, 0.15 mile east on a private road north of the Hasty water tank, and 130 feet north of the road, in a field:

Ap—0 to 9 inches; brown (10YR 5/3) sandy loam; weak medium granular structure; very friable; common fine roots; slightly acid; abrupt smooth boundary.

E—9 to 12 inches; light yellowish brown (2.5Y 6/4) sandy loam; weak medium granular structure; friable; few fine roots; moderately acid; gradual wavy boundary.

BE—12 to 16 inches; brownish yellow (10YR 6/6) sandy clay loam; few medium faint very pale brown (10YR 7/4) and few fine prominent light brownish gray (2.5Y 6/2) mottles; weak fine subangular blocky structure; firm; few fine roots; many fine pores; slightly acid; gradual wavy boundary.

Bt—16 to 30 inches; yellowish brown (10YR 5/6) sandy clay; common medium distinct light brownish gray (10YR 6/2) and common medium faint yellowish brown (10YR 5/4) mottles; moderate medium subangular blocky structure; firm, sticky and plastic; few fine pores; common grains of feldspar; few fine flakes of mica; slightly acid; gradual wavy boundary.

BC—30 to 34 inches; yellowish brown (10YR 5/4) sandy clay loam; few medium distinct light brownish gray (10YR 6/2) and common fine faint yellowish brown

(10YR 5/6) mottles; massive; friable; common grains of feldspar; few fine flakes of mica; few fine black minerals; neutral; gradual wavy boundary.

C1—34 to 40 inches; mottled yellowish brown (10YR 5/6) and light brownish gray (10YR 6/2) saprolite that has a texture of sandy loam; many grains of feldspar and black minerals; massive; very friable; neutral; gradual wavy boundary.

C2—40 to 60 inches; pale yellow (2.5Y 7/4) saprolite that has a texture of sandy loam; massive; very friable; many grains of feldspar and black minerals; mildly alkaline.

The solum is 20 to 40 inches thick. The depth to bedrock is more than 60 inches. The A and Bt horizons are strongly acid to slightly acid unless the soils are limed. The BC and C horizons are moderately acid to mildly alkaline.

The A or Ap horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 to 4. The E horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 2 to 4. It is loamy sand, sandy loam, or fine sandy loam.

The BE or BA horizon, if it occurs, has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 3 to 8. It is sandy loam or sandy clay loam.

The Bt horizon has hue of 7.5YR to 5Y, value of 5 or 6, and chroma of 4 to 8. It has few or common mottles with chroma of 2 or less in the upper 10 inches. It is clay loam, sandy clay, or clay that has a content of silt of less than 30 percent.

The BC horizon has hue of 7.5YR to 5Y, value of 5 to 7, and chroma of 3 to 8. Some pedons have a BCg horizon that has hue of 7.5YR to 5Y, value of 5 to 7, and chroma of 1 or 2. The BC and the BCg horizon, if it occurs, are sandy loam, sandy clay loam, clay loam, or loam.

The C horizon varies in color and is loamy saprolite weathered from mafic and intermediate crystalline rocks.

Udorthents

The Udorthents consists of areas where the soils have been altered by earthmoving operations and where the natural soil profiles have been removed or mixed. The soils are too variable to classify them accurately below the great group. The areas are mostly well drained. The excavated areas are mainly borrow pits from which the soil has been removed and used as construction material or areas where ridges have been lowered to form a more uniform landscape. In most areas, the exposed underlying material of the excavated soil is loam, sandy loam, or sandy clay loam. The fill areas are sites where 20 inches or more of loamy earthy fill material is placed over the natural soil to raise the surface level of a low area or to achieve a particular surface conformation. Slopes are mostly nearly level to strongly sloping, but a few small areas are moderately steep or steep.

A typical pedon is not given for these soils because of their variability. In fill areas more than 20 inches of material have been added. In some places as much as 30 feet of fill material have been added. Landfills have layers of non-soil material covered by loamy soil material.

Udorthents have colors in shades of red, brown, or yellow, or they are multicolored. The texture varies, but typically it is loamy. Reaction typically ranges from very strongly acid to slightly acid.

Uwharrie Series

The Uwharrie series consists of very deep, well drained, moderately permeable, very bouldery soils that formed in material weathered from fine grained intermediate and felsic crystalline and pyroclastic rocks. These soils are clayey, mixed, thermic Typic Hapludults. They are on upland ridges and side slopes. Slope ranges from 4 to 45 percent.

Typical pedon of Uwharrie stony silt loam, 4 to 15 percent slopes, very bouldery, 3.1 miles east of the Yadkin River on North Carolina Highway 49 to the entrance road to Uwharrie National Forest, 600 feet northeast along North Carolina Highway 49 to the National Forest boundary, 800 feet east along the boundary line, and 25 feet south, in a wooded area:

A—0 to 4 inches; reddish brown (5YR 4/4) stony silt loam; weak fine granular structure; friable; common fine and medium roots; about 20 percent, by volume, angular stones and cobbles on the surface; stones average about 8 feet apart, and boulders 2 to 8 feet long average 1 to 4 feet apart; very strongly acid; abrupt smooth boundary.

BA—4 to 8 inches; yellowish red (5YR 5/8) silty clay loam; few fine distinct red (2.5YR 4/6) mottles; weak fine subangular blocky structure; friable; few medium and coarse roots; few faint clay films on faces of peds; few fine pores; very strongly acid; clear smooth boundary.

Bt1—8 to 28 inches; red (2.5YR 4/8) clay; moderate medium subangular and angular blocky structure; friable; few medium and coarse roots; common distinct clay films on faces of peds; common fine pores; very strongly acid; gradual smooth boundary.

Bt2—28 to 36 inches; red (2.5YR 4/6) clay; common fine prominent yellow (10YR 7/6) mottles; moderate medium subangular blocky structure; friable; few fine roots; common distinct clay films on faces of

peds; common fine pores; very strongly acid; gradual smooth boundary.

BC—36 to 70 inches; red (2.5YR 4/8) silty clay; common medium prominent pinkish gray (7.5YR 7/2) and yellow (10YR 7/6) and few fine prominent strong brown (7.5YR 5/6) mottles; weak coarse subangular blocky structure; friable; very strongly acid; gradual smooth boundary.

C—70 to 99 inches; multicolored saprolite that has a texture of silty clay loam; massive; firm; very strongly acid.

The solum is 40 to more than 60 inches thick. The depth to bedrock is more than 60 inches. Reaction is very strongly acid to moderately acid. The content of rock fragments that are dominantly of stone size ranges from 15 to 35 percent, by volume, in the A and E horizons. Also, many boulders on the surface are as close as 12 to 15 feet apart in many places.

The A horizon has hue of 5YR to 10YR, value of 4 to 6, and chroma of 2 to 6. The E horizon, if it occurs, has hue of 5YR to 10YR, value of 4 to 6, and chroma of 3 to 8. It is stony loam, stony silt loam, very stony loam, or very stony silt loam.

The BA or BE horizon, if it occurs, has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 to 8. It is silt loam, silty clay loam, or clay loam.

The Bt horizon has hue of 10R to 5YR, value of 4 or 5, and chroma of 6 to 8. In most pedons it has mottles in shades of brown or yellow. It is dominantly clay, but it ranges to silty clay or clay loam.

The BC horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 to 8. It has mottles in shades of gray, brown, or yellow. It is silt loam, silty clay loam, clay loam, or silty clay.

The C horizon is loamy saprolite weathered from fine grained intermediate and felsic crystalline rocks.

Vance Series

The Vance series consists of very deep, well drained, slowly permeable soils that formed in material weathered from felsic crystalline rocks. These soils are clayey, mixed, thermic Typic Hapludults. They are on upland ridges and side slopes. Slope ranges from 2 to 15 percent.

Typical pedon of Vance sandy loam, 2 to 8 percent slopes, 2.3 miles north of U.S. Highway 29 on U.S. Highway 52, west and north 2.5 miles on State Road 1457, and 25 feet west of the road, in a field midway between Will Lanier Road and Beulah Church Cemetery:

Ap—0 to 9 inches; yellowish brown (10YR 5/4) sandy loam; weak medium granular structure; very friable; common fine roots; moderately acid; clear smooth boundary.

Bt1—9 to 14 inches; yellowish brown (10YR 5/6) clay; few fine prominent red (2.5YR 4/8) mottles; moderate coarse prismatic structure parting to moderate medium subangular blocky; very firm, sticky and plastic; few fine roots; few fine pores; common distinct clay films on faces of peds; few fine flakes of mica; strongly acid; gradual wavy boundary.

Bt2—14 to 25 inches; yellowish brown (10YR 5/6) clay; common medium prominent red (2.5YR 4/6) mottles; weak coarse prismatic structure parting to weak medium subangular blocky; very firm, sticky and plastic; many fine roots along surfaces of prisms; few fine roots in peds; few fine flakes of mica; few fine grains of feldspar; strongly acid; gradual wavy boundary.

Bt3—25 to 30 inches; yellowish brown (10YR 5/6) clay; common medium prominent red (2.5YR 4/6) and common medium faint brownish yellow (10YR 6/6) mottles; weak medium subangular blocky structure; very firm, sticky; few fine pores; common faint clay films on faces of peds; few fine flakes of mica; common fine grains of feldspar; few small pockets of sandy clay loam saprolite; strongly acid; gradual wavy boundary.

BC—30 to 33 inches; mottled yellowish brown (10YR 5/4), red (2.5YR 4/6), and olive yellow (2.5Y 6/6) sandy clay loam; massive; firm; few fine flakes of mica; many pockets of loam saprolite; few small pockets of clay; strongly acid; gradual wavy boundary.

C1—33 to 45 inches; multicolored saprolite that has a texture of loam; massive; friable; few small pockets of sandy clay loam; common flakes of mica; strongly acid; gradual wavy boundary.

C2—45 to 60 inches; multicolored saprolite that has a texture of loam; massive; friable; common flakes of mica; strongly acid.

The solum is 24 to 40 inches thick. The depth to bedrock is more than 60 inches. Reaction is very strongly acid to moderately acid.

The A or Ap horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 to 4.

The BA horizon, if it occurs, has hue of 10YR, value of 4 to 6, and chroma of 4 to 8. It is clay loam or sandy clay loam.

The Bt horizon has hue of 5YR to 10YR, value of 4 to 6, and chroma of 6 to 8. In most pedons it has mottles in shades of red, brown, and yellow. It is clay loam, sandy clay, or clay, and the content of silt is less than 30 percent.

The BC horizon has hue of 5YR to 10YR, value of 4 to 6, and chroma of 4 to 8 or is mottled in shades of red, yellow, or brown. It is sandy clay loam, clay loam, or sandy clay.

The C horizon is loamy saprolite weathered from felsic crystalline rock.

Wahee Series

The Wahee series consists of very deep, somewhat poorly drained, slowly permeable soils that formed in alluvium. These soils are clayey, mixed, thermic Aeric Endoaquults. They are on flood plains. Slope ranges from 0 to 2 percent.

Typical pedon of Wahee loam, occasionally flooded, 1.8 miles south of Arcadia on North Carolina Highway 150, northwest 1.8 miles on State Road 1485, 800 feet north along a power line, and 425 feet north, in a wooded area:

A—0 to 5 inches; grayish brown (10YR 5/2) loam; moderate fine granular structure; friable; many fine roots; strongly acid; clear wavy boundary.

BA—5 to 9 inches; light yellowish brown (2.5Y 6/4) sandy clay loam; common fine prominent strong brown (7.5YR 5/8) and common fine distinct light brownish gray (2.5Y 6/2) mottles; weak fine subangular blocky structure; friable; common fine roots; common fine pores; strongly acid; clear wavy boundary.

Bt—9 to 15 inches; light yellowish brown (2.5Y 6/4) clay loam; common medium prominent yellowish brown (10YR 5/8) and gray (5Y 6/1) and few fine prominent red (2.5YR 4/8) mottles; moderate fine subangular blocky structure; firm; common fine roots; common fine pores; common distinct clay films on faces of peds; strongly acid; gradual wavy boundary.

Btg1—15 to 31 inches; light olive gray (5Y 6/2) clay; common medium prominent yellowish brown (10YR 5/8) and brownish yellow (10YR 6/6) and few fine prominent red (2.5YR 4/8) mottles; moderate coarse prismatic structure parting to moderate fine angular blocky; very firm, sticky and very plastic; common fine roots; common fine pores; common distinct clay films on faces of peds; strongly acid; gradual wavy boundary.

Btg2—31 to 36 inches; gray (5Y 6/1) clay; many medium prominent strong brown (7.5YR 5/6) mottles; weak fine subangular blocky structure; very firm, sticky and very plastic; few fine roots; common distinct clay films on faces of peds; strongly acid; gradual wavy boundary.

BCg—36 to 46 inches; gray (5Y 6/1) clay loam; few fine prominent strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; firm, sticky and plastic; few fine roots; very strongly acid; gradual wavy boundary.

Cg—46 to 60 inches; light olive gray (5Y 6/2) silty clay loam; many medium prominent light yellowish brown (2.5Y 6/4) and common fine prominent yellowish brown (10YR 5/6) mottles; massive; firm; few fine roots; very strongly acid.

The solum is 40 to more than 60 inches thick. The depth to bedrock is more than 60 inches. Reaction is very strongly acid to moderately acid in the A horizon and extremely acid to strongly acid in the B and C horizons.

The A or Ap horizon has hue of 10YR or 2.5Y, value of 2 to 5, and chroma of 1 to 3.

The BA or BE horizon has hue of 10YR to 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 or sandy clay loam.

The Bt horizon has hue of 10YR to 5Y, value of 5 or 6, and chroma of 3 to 8. It has mottles in shades of gray, brown, and red. The Btg horizon has hue of 10YR to 5Y, value of 4 to 7, and chroma of 2 or less, or it is neutral in hue and has value of 4 to 7. It has mottles in shades of yellow, brown, or red. In most pedons the Bt and Btg horizons are clay, and in some pedons they are clay loam or silty clay.

The BCg horizon has hue of 10YR to 5Y, value of 5 to 7, and chroma of 1 or 2, or it is neutral in hue and has value of 5 to 7. It is mottled in shades of yellow, brown, or red. It is silty clay loam, clay loam, or sandy clay loam.

The Cg horizon has hue of 10YR to 5Y, value of 5 to 7, and chroma of 1 or 2, or it is neutral in hue and has value of 5 to 7. In some pedons it has mottles in shades of yellow, brown, or red. It is stratified loamy or sandy alluvium.

The Wahee soils in Davidson County are taxadjuncts to the Wahee series because the content of clay is slightly more than is definitive for the series. This difference does not affect the use and management of the soils.

Wedowee Series

The Wedowee series consists of very deep, well drained, moderately permeable soils that formed in material weathered from coarse grained, felsic crystalline rocks. These soils are clayey, kaolinitic, thermic Typic Kanhapludults. They are on upland ridges and side slopes. Slope ranges from 2 to 15 percent.

Typical pedon of Wedowee sandy loam, 2 to 8 percent slopes, 1.8 miles northwest of Wallburg on

North Carolina Highway 109, south 0.6 mile on State Road 1711 (Gum Tree Road), east on a private drive and a field road to 250 feet east of a barn, and 30 feet south of the road, in a field:

Ap—0 to 9 inches; yellowish brown (10YR 5/4) sandy loam; weak medium granular structure; very friable; common fine roots; slightly acid; clear smooth boundary.

Bt—9 to 25 inches; strong brown (7.5YR 5/6) sandy clay; common medium prominent red (2.5YR 5/8), common medium distinct yellowish red (5YR 5/6), and common fine distinct brownish yellow (10YR 6/6) mottles; moderate very coarse prismatic structure parting to moderate medium subangular blocky; firm; few fine roots; common fine pores; common distinct clay films on faces of peds; common fine flakes of mica; strongly acid; gradual wavy boundary.

BC—25 to 32 inches; yellowish red (5YR 5/6) sandy clay loam; many fine distinct red (2.5YR 5/8) and common fine distinct reddish yellow (7.5YR 6/6) mottles; weak fine subangular blocky structure; friable; few fine roots; few fine pores; common fine flakes of mica; strongly acid; gradual wavy boundary.

C—32 to 60 inches; multicolored saprolite that has a texture of sandy loam; massive; very friable; common flakes of mica; strongly acid.

The solum is 20 to 40 inches thick. The depth to bedrock is more than 60 inches. Reaction is very strongly acid to slightly acid in the A or Ap horizon and very strongly acid or strongly acid in the lower horizons.

The A or Ap horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 2 to 4. The E horizon, if it occurs, has hue of 7.5YR to 2.5Y, value of 4 to 7, and chroma of 3 to 6. It is loamy sand, sandy loam, or fine sandy loam.

The BA or BE horizon, if it occurs, has hue of 5YR to 10YR, value of 5 or 6, and chroma of 4 to 6. The Bt horizon has hue of 5YR to 10YR, value of 5 or 6, and chroma of 6 to 8. It has few or common mottles in shades of red, yellow, or brown. It is clay loam, sandy clay, or clay. It contains 35 to 45 percent clay and extends to a depth of 18 to 30 inches. The BC horizon is similar in color to the Bt horizon. It is loam, sandy clay loam, or clay loam.

The C horizon is loamy saprolite that has weathered from felsic crystalline rocks.

Wickham Series

The Wickham series consists of very deep, well drained, moderately permeable soils that formed in fluvial sediments. These soils are fine-loamy, mixed, thermic Typic Hapludults. They are on low ridges of stream terraces. Slope ranges from 2 to 8 percent.

Typical pedon of Wickham fine sandy loam, 2 to 8 percent slopes, 1.8 miles south of Arcadia on North Carolina Highway 150, northwest 2 miles on State Road 1485, west 0.25 mile on a field road, and 100 feet north of the road, in a field:

Ap—0 to 7 inches; dark brown (7.5YR 4/4) fine sandy loam; moderate medium granular structure; friable; many fine roots; few rounded gravel; common fine flakes of mica and grains of feldspar; slightly acid; clear smooth boundary.

BA—7 to 11 inches; brown (7.5YR 5/4) sandy clay loam; weak fine subangular blocky structure; friable; common fine roots; many fine pores; few rounded gravel; few fine flakes of mica and grains of feldspar; slightly acid; clear wavy boundary.

Bt1—11 to 24 inches; yellowish red (5YR 4/6) clay loam; moderate medium subangular blocky structure; friable; common fine roots; common fine pores; common faint clay films on faces of peds; few fine flakes of mica and grains of feldspar; strongly acid; gradual wavy boundary.

Bt2—24 to 31 inches; yellowish red (5YR 5/6) clay loam; few fine prominent brownish yellow (10YR 6/6) mottles; weak medium subangular blocky structure; friable; few fine roots; few fine pores; common faint clay films on faces of peds; few fine flakes of mica and grains of feldspar; strongly acid; gradual wavy boundary.

Bt3—31 to 48 inches; yellowish red (5YR 5/6) clay loam; common medium prominent brownish yellow (10YR 6/6) and common fine distinct red (2.5YR 4/6) mottles; weak medium subangular blocky structure; firm; few fine pores; few faint patchy clay films on faces of peds; few fine flakes of mica and grains of feldspar; strongly acid; gradual wavy boundary.

BC—48 to 60 inches; yellowish red (5YR 5/6) clay loam; many medium prominent brownish yellow (10YR 6/6) and pale yellow (5Y 7/3) and many medium distinct red (2.5YR 4/6) mottles; massive; firm; few fine flakes of mica and grains of feldspar; strongly acid.

The solum is 36 to more than 60 inches thick. In the lower horizons of some pedons rounded cobbles and gravel are few or common. The depth to bedrock is more than 60 inches. Reaction is very strongly acid to slightly acid. The content of mica flakes ranges from none to common, and the content of feldspar grains is few or common.

The A or Ap horizon has hue of 5YR to 10YR, value of 4 to 6, and chroma of 2 to 6. The E horizon, if it occurs, has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 3 or 4. It is sandy loam or fine sandy loam.

The BA or BE horizon, if it occurs, has hue of 5YR or 7.5YR, value of 5 or 6, and chroma of 4 to 8. The Bt horizon has hue of 2.5YR or 7.5YR, value of 4 to 6, and chroma of 4 to 8. It is sandy clay loam or clay loam. In some pedons it has thin layers of clay or sandy clay.

The BC horizon has hue of 2.5YR to 10YR, value of 4 to 6, and chroma of 6 to 8. It has few to many mottles in shades of red, yellow, or brown. It is sandy loam, sandy clay loam, or clay loam.

The C horizon, if it occurs, is stratified sandy or loamy alluvium that varies in color.

Zion Series

The Zion series consists of moderately deep, well drained, moderately slowly permeable or slowly permeable soils that formed in material weathered from mafic or intermediate crystalline rocks. These soils are fine, mixed, thermic Ultic Hapludalfs. They are on upland ridges and side slopes. Slope ranges from 2 to 45 percent.

Typical pedon of Zion sandy loam, in an area of Poindexter and Zion sandy loams, 2 to 8 percent slopes; 1.5 miles north of Davidson Community College on State Road 1798, west 1.2 miles on State Road 1819 to 0.3 mile west of Lake Tom-a-lex bridge, and 160 feet north of the road, in a field:

Ap—0 to 5 inches; dark brown (10YR 4/3) sandy loam; weak fine granular structure; friable; many fine roots; few fine black concretions; about 5 percent, by volume, angular gravel; neutral; clear smooth boundary.

Bt1—5 to 8 inches; dark yellowish brown (10YR 4/4) clay loam; weak fine subangular blocky structure; firm, sticky and slightly plastic; common fine roots; common fine pores; few fine black concretions; few angular gravel; few fine grains of feldspar; neutral; clear wavy boundary.

Bt2—8 to 18 inches; yellowish brown (10YR 5/6) clay; moderate coarse prismatic structure parting to moderate medium subangular blocky; very firm, sticky and plastic; few fine roots; few fine pores; common distinct clay films on faces of peds; few fine grains of feldspar; neutral; gradual wavy boundary.

BC—18 to 23 inches; strong brown (7.5YR 5/6) clay loam; common medium faint yellowish brown (10YR 5/6) mottles and common bands of grayish and greenish saprolite; weak medium subangular blocky structure; friable; few fine roots; slightly acid; gradual wavy boundary.

C—23 to 33 inches; multicolored saprolite that has a texture of clay loam; massive; friable; few fine roots in upper part; slightly acid; clear wavy boundary.

Cr—33 to 39 inches; weathered, multicolored mafic bedrock that can be dug with difficulty using hand tools.

R—39 inches; hard, mafic bedrock.

The solum is 20 to 40 inches thick. The depth to weathered bedrock is 20 to 40 inches, and the depth to hard bedrock is 20 to 40 inches. Reaction is strongly acid to neutral in the A horizon and moderately acid to neutral in the Bt, BC, and C horizons. In most pedons the content of black or dark brown manganese concretions is few or common in some horizons.

The A or Ap horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 2 or 3.

The Bt horizon has hue of 5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 8. It is clay loam or clay. The BC horizon is similar in color to the Bt horizon. It is gravelly clay, clay, clay loam, sandy clay loam, or loam.

The C horizon is loamy saprolite weathered from mafic or intermediate crystalline rocks.

The Cr horizon is weathered bedrock that can be dug with difficulty using hand tools. The R horizon is hard, mafic bedrock.

Formation of the Soils

Soils are formed by processes of the environment acting on geologic agents (parent material), such as metamorphic, igneous, and sedimentary rocks and fluvial stream sediments. The combined influence of parent material, climate, living organisms, relief, and time determine the characteristics of a soil *(5, 7)*. These five factors of soil formation are responsible for the profile development and the chemical properties that make soils different.

General Geology and Soil Parent Material

Parent material, which weathers from underlying geologic formations, is the unconsolidated mass from which a soil forms. The character of this mass affects the kind of profile that develops and the degree of development. In Davidson County, the parent material is a major factor in determining what kind of soil forms; therefore, soils can be correlated to some degree with geologic formations.

The parent materials of the residual soils in the county generally are weathered from felsic, intermediate, and mafic crystalline rocks or from fine-grained metamorphic rocks. The crystalline rocks are primarily in the northern and northwestern parts of the county. The fine-grained metamorphic rocks, collectively referred to as Carolina slate, are in the southern and southeastern parts of the county. The boundary between these primary geologic formations trends generally northeastward from Southmont to Thomasville.

The felsic rocks are mostly granite, gneiss, or schist. Soils that formed in material weathered from these rocks generally are acid. The mafic rock is mostly gabbro. Soils that formed in material weathered from this type of rock are slightly acid to mildly alkaline. Large areas in the county are underlain by intermediate rocks, such as diorite, or have a mixture of felsic and mafic rocks. The soils that formed in these areas vary in reaction and other properties. The fine-grained metamorphic rocks are slatelike rocks that are dominantly argillite. Soils that formed in material weathered from these rocks are acid. They are characterized by a high content of silt.

Because the soils are related to geologic formations, the general soil map can serve as an approximate guide to the geology of the county. The general soil map units and examples of the geologic material from which their parent material is derived are as follows.

Chewacla-Congaree: recent alluvium.

Pacolet: felsic, igneous and metamorphic crystalline rocks (even-grained and porphyritic granite, gneiss, and schist).

Cecil-Pacolet: felsic, igneous and metamorphic crystalline rocks (even-grained granite, gneiss, and schist).

Vance-Wedowee-Pacolet: felsic, igneous and metamorphic crystalline rocks (even-grained and porphyritic granite, gneiss, and schist).

Davidson-Mecklenburg: intermediate and mafic, igneous and metamorphic crystalline rocks (diorite and gabbro).

Poindexter-Enon-Zion: mafic and intermediate crystalline rocks (gabbro and diorite).

Badin-Georgeville-Enon: fine-grained metamorphic rocks and intermediate and mafic crystalline rocks (slate, argillite, or mudstone with intermingled areas of diorite and gabbro).

Badin-Kirksey-Cid-Misenheimer: fine-grained metamorphic rocks (slate and argillite).

Uwharrie-Enon: intermingled areas of felsic, intermediate, and mafic, igneous and metamorphic crystalline rocks (diorite, gabbro, and rhyolite).

Parent material is largely responsible for the chemical and mineralogical composition of the soils and for the major differences among the soils in the county. Major differences in properties of parent material, such as texture, can be observed in the field. Less distinct differences, such as mineralogical composition, can be determined only by careful laboratory analysis.

Climate

Climate, as a factor of soil formation, affects the physical, chemical, and biological relationships in the soil, primarily through the influence of precipitation and temperature, which greatly influence the rates of

weathering of rocks and decomposition of organic matter. The amount of leaching in a soil also is related to the amount of rainfall and its movement through the soil. The effects of climate also control the kinds of plants and animals that can thrive in a region. Temperature influences the kind and growth of organisms and the speed of chemical and physical reactions in the soil.

Davidson County has a warm, humid climate. It is on a moderate plateau and ranges in elevation from about 500 feet to more than 1,180 feet. The mountains to the west have a moderating effect on the temperature. This climate favors rapid chemical processes in the decomposition of organic matter and weathering of rocks. The mild temperatures and abundant rainfall cause intense leaching and oxidizing.

The effects of climate are reflected in the soils of the county. The mild temperatures throughout the year and the abundant rainfall have depleted the organic matter and considerably leached the soluble bases, leaving most of the soils acidic. Variations in climate in the county are small and probably have not caused major local differences in the soils. The most important effects of climate are the alterations of parent material through changes in temperature and the amount of rainfall and influences on plant and animal life.

Plant and Animal Life

Plant and animal life are important factors in soil development. Their greatest influence is in the formation and differentiation of soil horizons. The kind and amount of organisms on and in the soil are determined in part by climate, by the nature of the soil materials, and by relief. Bacteria, fungi, and other micro-organisms aid in weathering rocks and in decomposing organic matter. The plants and animals that live on a soil are the primary source of organic material.

Plants generally determine the kinds and amounts of organic matter in a soil. Because of the nutrient cycle, plants also are important in changing the base status of a soil and in the leaching process.

Animals convert complex compounds into simpler forms and add their own bodies to the organic matter. In addition to adding organic matter, organisms modify certain chemical and physical properties.

In Davidson County, most of the organic material accumulates on the surface of the soil and is acted on by micro-organisms, fungi, earthworms, and other forms of life and by direct chemical reaction. The material is mixed with the uppermost part of the soil by the activities of earthworms and other small invertebrates. Rodents have had little effect on the formation of soils in the county.

In areas of native forest in the county, fewer bases are brought to the surface by plants than are moved through the soil by leaching. The soils of the county generally developed under a hardwood forest. Trees take up elements from the subsoil and add organic matter to the surface by depositing leaves, roots, twigs, and eventually the whole tree. This material is acted on by organisms and undergoes chemical changes.

Organic materials decompose rather rapidly in the county because of the moderate temperature, the abundant supply of moisture, and the character of the organic material. Because of this rapid decomposition, very little organic matter accumulates in the soil.

Relief

Relief causes differences in soil drainage, surface runoff, soil temperature, and the extent of geologic erosion. In Davidson County, relief is generally determined by the kind of underlying bedrock and the degree to which the landscape is dissected by streams.

The percolation of water through the profile is affected by relief. Because the movement of water aids chemical reactions and is necessary for leaching, it is important in soil development.

The slopes in the county range from 0 to 45 percent. The soils on the uplands in areas where the slope is less than 10 percent generally have very deep profiles that are better defined than those on the steeper slopes. Examples are the well developed Cecil, Appling, and Davidson soils. Geologic erosion may remove soil material almost as fast as it forms on some soils that have a slope of more than 15 percent. As a result, the strongly sloping to steep soils have a thinner solum than that of the less sloping soils. Examples are Poindexter and Pacolet soils.

Drainage also can be affected by relief. A high water table generally is related to nearly level relief. The Iredell soil on uplands is moderately well drained and somewhat poorly drained because it is nearly level, has slow surface runoff, and has very slow internal movement of water.

The soils on the lower positions on the landscape are less sloping and receive runoff from the adjacent higher areas. This water accumulates in the nearly level to depressional areas. An example is the somewhat poorly drained Wahee soils in low areas near streams.

Time

The length of time that the soil material has been exposed to the soil-forming processes accounts for

some differences in the soils. The time required for a well-defined soil profile to develop depends on the other factors of soil formation. Less time is required for development of a soil profile in coarse-textured material than in similar but finer textured material in similar environments. Less time is required for profile development in a warm, humid area that has a dense plant cover than in a cold, dry area that has a sparse plant cover.

The age of the soils varies considerably, and the length of time that a soil has been developing is generally reflected in the profile. The older soils generally have better defined horizons than the younger soils. In Davidson County, the effects of time as a soil-forming factor are more apparent in the older soils, such as Cecil and Appling soils, which are on the broader parts of the uplands. These soils have more distinct horizons than Chewacla soils, which formed in alluvium and are still receiving new deposits from the uplands.

Chewacla soils and other soils on flood plains have not been in place long enough to have developed distinct horizons. They are considered young soils. Other soils in the county are considered young because of their topographic position. For example, Poindexter soils are not so well developed because they are steep and geologic erosion keeps pace with soil development. This relationship between the rate of erosion and the rate of soil formation also partly accounts for the shallowness of the soil over bedrock.

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Glossary

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.

Animal unit month (AUM). The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Area reclaim (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Association, soil. A group of soils geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Atterberg limits. Atterberg limits are measured for soil materials passing the No. 40 sieve. They include the liquid limit (LL), which is the moisture content at which reduction in the soil passes from a plastic to a liquid state, and the plastic limit (PL), which is the water content corresponding to an arbitrary limit between the plastic and semisolid states of consistency of a soil.

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.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

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 fragment.

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.

Clayey. A general textural term that includes sandy clay, silty clay, and clay. According to family level criteria in the soil taxonomic system, a specific textural name referring to fine earth (particles less than 2 millimeters in size) containing 35 percent or more clay, by weight, within the control section. The content of rock fragments is less than 35 percent, by volume.

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.

Cobblestone (or cobble). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

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.

Corrosive. High risk of corrosion to uncoated steel or deterioration of concrete.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Crop residue management. Use of that portion of the plant or crop left in the field after harvest for protection or improvement of the soil.

Delineation. The process of drawing or plotting features on a map with lines and symbols.

Depth class. Refers to the depth to a root-restricting layer. Unless otherwise stated, this layer is understood to be consolidated bedrock. The depth classes in this survey are:

Very shallow	less than 10 inches
Shallow	10 to 20 inches
Moderately deep	20 to 40 inches
Deep	40 to 60 inches
Very deep	more than 60 inches

Depth to rock (in tables). Bedrock is too near the surface for the specified use.

Diorite. A coarse grained igneous rock with the composition of andesite (no quartz or orthoclase). It is composed of about 75 percent plagioclase feldspars with the balance being ferromagnesian silicates.

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.

Engineering index test data. Laboratory test and mechanical analysis of selected soils in the county.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as fire, that exposes the surface.

Erosion classes. Classes based on estimates of past erosion. The classes are as follows:

Class 1.—Soils that have lost some of the original A horizon but on the average less than 25 percent of the original A horizon or of the uppermost 8 inches (if the original A horizon was less than 8 inches thick). Throughout most of the area, the thickness of the surface layer is within the normal range of variability of the uneroded soil. Class 1 erosion typically is not designated in the name of the map unit or in the map symbol.

Class 2.—Soils that have lost an average of 25 to 75 percent of the original A horizon or of the uppermost 8 inches (if the original A horizon was less than 8 inches thick). Throughout most cultivated areas of class 2 erosion, the surface layer consists of a mixture of the original A horizon and material from below. Some areas may have intricate patterns ranging from uneroded spots to spots where all of the original A horizon has been removed.

Class 3.—Soils that have lost an average of 75 percent or more of the original A horizon or of the uppermost 8 inches (if the original A horizon was less than 8 inches thick). In most areas of class 3 erosion, material that was below the original A horizon is exposed. The plow layer consists entirely or largely of this material.

Class 4.—Soils that have lost all of the original A horizon or of the uppermost 8 inches (if the original A horizon was less than 8 inches thick) plus some or all of the deeper horizons throughout most of the area. The original soil can be identified only in spots. Some areas may be smooth, but most have an intricate pattern of gullies.

Erosion hazard. Terms describing the potential for future erosion, inherent in the soil itself, in inadequately protected areas. The following definitions are based on estimated annual soil loss in tons per acre (values determined by the Universal Soil Loss Equation assuming bare soil conditions and using rainfall and climate factors for North Carolina):

0 tons per acre	None
Less than 1 ton per acre	Slight
1 to 5 tons per acre	Moderate
5 to 10 tons per acre	Severe
More than 10 tons per acre	Very severe

Excess fines (in tables). Excess silt and clay in the soil. The soil is not a source of gravel or sand for construction purposes.

Felsic rock. A general term for light colored igneous rock and some metamorphic crystalline rock.

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.

Flooding. The temporary covering of the surface by flowing water from any source, such as overflowing streams, runoff from adjacent or surrounding slopes, and inflow from high tides. The frequency of flooding generally is expressed as none, rare, occasional, or frequent. *None* means that flooding is not probable. *Rare* means 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). The duration of flooding 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).

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Fluvial. Of or pertaining to rivers; produced by river action, as a fluvial plain.

Forest type. A classification of forest land based on the species forming the majority of live-tree stocking.

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.

Gneiss. A coarse grained metamorphic rock in which bands rich in granular minerals alternate with bands in which schistose minerals predominate. It is commonly formed by the metamorphism of granite.

Granite. A coarse grained igneous rock dominated by light colored minerals, consisting of about 50 percent orthoclase and 25 percent quartz with the balance being plagioclase feldspars and ferromagnesian silicates. Granites and granodiorites comprise 95 percent of all intrusive rocks.

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 as much as 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, as much as 3 inches (7.6 centimeters) in diameter.

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.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue at the surface of a mineral soil.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an O, A, or E horizon. The B horizon is, in part, a layer of transition from the overlying horizon to the underlying C horizon. The B horizon also has distinctive characteristics, such as accumulation of clay, sesquioxides, humus, or a combination of these; prismatic or blocky structure; redder or browner colors than those in the A horizon; or a combination of these. The combined A and B horizons are generally called the solum, or true soil. If a soil does not have a B horizon, the A horizon alone is the solum.

C horizon.—The mineral horizon or layer,

excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the A or B horizon. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, the Arabic numeral 2 precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Consolidated rock (unweathered bedrock) beneath the soil. The bedrock commonly underlies a C horizon but can be directly below an A or a B horizon.

Hornblende. A rock-forming ferromagnesian silicate mineral of the amphibole group.

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.

Igneous rock. Rock formed by solidification of molten rock, generally crystalline in nature.

Infiltration. The downward entry of water into the immediate surface of soil or other material. This contrasts with percolation, which is movement of water through soil layers or material.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intermediate rock. Igneous or metamorphic crystalline rock that is intermediate in composition between mafic and felsic rock.

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.

Loamy. A general textural term that includes coarse sandy loam, sandy loam, fine sandy loam, very fine sandy loam, loam, silt loam, silt, clay loam, sandy clay loam, and silty clay loam. According to family level criteria in the soil taxonomy system, a specific textural name referring to fine earth (particles less than 2 millimeters in size) of loamy very fine sand or finer textured material that contains less than 35 percent clay, by weight, within the control section. The content of rock fragments is less than 35 percent, by volume.

Low strength. The soil is not strong enough to support loads.

Mafic rock. A dark rock composed predominantly of magnesium silicates. It contains little quartz, feldspar, or muscovite mica.

Mean annual increment. The average yearly volume of a stand of trees from the year of origin to the age under consideration.

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.

Micas. A group of silicate minerals characterized by sheet or scale cleavage. Biotite is the ferromagnesian black mica. Muscovite is the potassic white mica.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance—*few, common,* and *many*; size—*fine, medium,* and *coarse*; and contrast—*faint, distinct,* and *prominent.* The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium,* from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse,* more than 15 millimeters (about 0.6 inch).

Mudstone. Fine grained, detrital sedimentary rock made up of silt- and clay-sized particles. Distinguished from shale by lack of fissility.

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.)

No-till planting. A method of planting crops in which there is virtually no seedbed preparation. A thin slice of the soil is opened, and the seed is planted at the desired depth.

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.

Overstory. The portion of the trees in a forest stand forming the upper crown cover.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

Percs slowly (in tables). The slow movement of water through the soil adversely affects 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.)

Piedmont. The physiographic region of central North Carolina characterized by rolling landscapes formed from the weathering of residual rock material.

Piping (in tables). Subsurface tunnels or pipelike cavities are formed by water moving through the soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

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 4.4
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
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.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

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.

Runoff class (surface). Refers to the rate at which water flows away from the soil over the surface without infiltrating. Six classes of rate of runoff are recognized:

Ponded.—Little of the precipitation and water that runs onto the soil escapes as runoff, and free water stands on the surface for significant periods. The amount of water that is removed from ponded areas by movement through the soil, by plants, or by evaporation is usually greater than the total rainfall. Ponding normally occurs on level or nearly level soils in depressions. The depth may fluctuate greatly.

Very slow.—Surface water flows away slowly, and free water stands on the surface for long periods or immediately enters the soil. Most of the water passes through the soil, is used by plants, or evaporates. The soils are commonly level or nearly level or are very open and porous.

Slow.—Surface water flows away so slowly that free water stands on the surface for moderate periods or enters the soil rapidly. Most of the water passes through the soil, is used by plants, or evaporates. The soils are nearly level or very gently sloping, or they are steeper but absorb precipitation very rapidly.

Medium.—Surface water flows away so rapidly that free water stands on the surface for only short periods. Part of the precipitation enters the soil and is used by plants, is lost by evaporation, or moves into underground channels. The soils are nearly level or gently sloping and absorb precipitation at a moderate rate, or they are steeper but absorb water rapidly.

Rapid.—Surface water flows away so rapidly that the period of concentration is brief and free water does not stand on the surface. Only a small part of the water enters the soil. The soils are mainly moderately steep or steep and have moderate or slow rates of absorption.

Very rapid.—Surface water flows away so rapidly that the period of concentration is very brief and free water does not stand on the surface. Only a small part of the water enters the soil. The soils are mainly steep or very steep and absorb precipitation slowly.

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.

Sandy. A general textural term that includes coarse sand, sand, fine sand, very fine sand, loamy coarse sand, loamy sand, loamy fine sand, and loamy very fine sand. According to family level criteria in the soil taxonomic system, a specific textural name referring to fine earth (particles less than 2 millimeters in size) of sand or loamy sand that contains less than 50 percent very fine sand, by weight, within the control section. The content of rock fragments is less than 35 percent, by volume.

Saprolite (soil science). Unconsolidated, residual material underlying the soil and grading to hard bedrock below.

Schist. A metamorphic rock dominated by fibrous or platy minerals. It has schistose cleavage and is a product of regional metamorphism.

Seasonal high water table. The highest level of a saturated zone (the apparent or perched water table) over a continuous period of more than 2 weeks in most years, but not a permanent water table.

Seepage (in tables). The movement of water through the soil adversely affects the specified use.

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer or of the underlying material. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shrink-swell. The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

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.

Slate. A fine grained metamorphic rock with well developed slaty cleavage. Formed by the low-grade regional metamorphism of shale.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a

drop of 20 feet in 100 feet of horizontal distance. In this survey area slope classes are as follows:

Nearly level	0 to 2 percent
Gently sloping	2 to 8 percent
Strongly sloping	8 to 15 percent
Moderately steep	15 to 25 percent
Steep	25 to 45 percent

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

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 compaction. An alteration of soil structure that ultimately can affect the biological and chemical properties of the soil. Soil compaction decreases the extent of voids and increases bulk density.

Soil map unit. A kind of soil or miscellaneous area or a combination of two or more soils or one or more soils and one or more miscellaneous areas that can be shown at the scale of mapping for the defined purposes and objectives of the soil survey. They are generally designed to reflect significant differences in use and management.

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

Soil strength. Load supporting capacity of a soil at specific moisture and density conditions.

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and plant and animal activities are largely confined to the solum.

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 that 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 grain* (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.

Subsurface layer. Technically, the E horizon. Generally refers to a leached horizon lighter in color and lower in organic matter content than the overlying surface layer.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior.

Terrace. An embankment, or ridge, constructed on the contour or at a slight angle to the contour across sloping soils. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet.

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." The textural classes are defined as follows:

Sands (coarse sand, sand, fine sand, and very fine sand). —Soil material in which the content of sand is 85 or more percent and the percentage of silt plus 1.5 times the percentage of clay does not exceed 15.

Loamy sands (loamy coarse sand, loamy sand, loamy fine sand, and loamy very fine sand). —Soil material in which, at the upper limit, sand is 85 to 90 percent, and the percentage of silt plus 1.5 times the percentage of clay is not less than 15; at the lower limit, the content of sand is 70 to 85 percent and the percentage of silt plus twice the percentage of clay does not exceed 30.

Sandy loams (coarse sandy loam, sandy loam, fine sandy loam, and very fine sandy loam). —Soil material in which the content of clay is 20 percent or less, the percentage of silt plus twice the percentage of clay exceeds 30, and the content of sand is 52 percent or more or soil material in which the content of clay is less than 7 percent, the content of silt is less than 50 percent, and the content of sand is 43 to 52 percent.

Loam.—Soil material that contains 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand.

Silt loam.—Soil material that contains 50 or more percent silt and 12 to 27 percent clay or 50 to 80 percent silt and less than 12 percent clay.

Silt.—Soil material that contains 80 or more percent silt and less than 12 percent clay.

Sandy clay loam.—Soil material that contains 20 to 35 percent clay, less than 28 percent silt, and 45 or more percent sand.

Clay loam.—Soil material that contains 27 to 40 percent clay and 20 to 45 percent sand.

Silty clay loam.—Soil material that contains 27 to 40 percent clay and less than 20 percent sand.

Sandy clay.—Soil material that contains 35 or more percent clay and 45 or more percent sand.

Silty clay.—Soil material that contains 40 or more percent clay and 40 or more percent silt.

Clay.—Soil material that contains 40 or more percent clay, less than 45 percent sand, and less than 40 percent silt.

Thin layer (in tables). An otherwise suitable soil material that is too thin for the specified use.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toe slope. The outermost inclined surface at the base of a hill; part of a foot slope.

Topography. The relative positions and elevations of the natural or manmade features of an area that describe the configuration of its surface.

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.

Underlying material. Technically the C horizon; the part of the soil below the biologically altered A and B horizons.

Understory. The trees and other woody species growing under a more or less continuous cover of branches and foliage formed collectively by the upper portions of adjacent trees and other woody growth.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Water table (apparent). A thick zone of free water in the soil. The apparent water table is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil.

Water table (perched). A saturated zone of water in the soil standing above an unsaturated zone.

Water table (seasonal high). The highest level of a saturated zone in the soil (the apparent or perched water table) over a continuous period of more than 2 weeks in most years, but not a permanent water table.

Weathering. All physical and chemical changes produced by atmospheric agents in rocks or other deposits at or near the earth's surface. These changes result in disintegration and decomposition of the material.

Wetness. A general term applied to soils that hold water at or near the surface long enough to be a common management problem.

Tables

TABLE 1.--TEMPERATURE AND PRECIPITATION

(Recorded in the period 1951-81 at Lexington, North Carolina)

Month	Temperature						Precipitation				
				2 years in 10 will have--				2 years in 10 will have--			
	Average daily maximum	Average daily minimum	Average daily	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	50.7	30.4	40.6	74	7	42	3.84	1.97	5.47	7	3.1
February	54.5	32.0	43.3	75	11	49	3.69	2.04	5.14	7	2.4
March	63.2	39.1	51.2	84	19	152	4.37	2.77	5.82	8	1.9
April	74.5	48.5	61.5	92	31	345	3.20	1.87	4.38	6	.0
May	81.6	56.6	69.1	95	37	592	3.77	1.98	5.32	7	.0
June	87.7	64.0	75.9	100	49	777	4.22	2.15	6.01	6	.0
July	90.8	67.8	79.3	101	57	908	4.43	2.33	6.26	8	.0
August	89.6	66.8	78.2	100	54	874	4.13	1.85	6.08	7	.0
September	83.6	60.7	72.2	96	44	666	3.54	1.09	5.53	5	.0
October	73.4	48.5	61.0	89	29	348	3.15	.97	4.93	5	.0
November	62.7	39.6	51.2	81	19	103	2.78	1.32	4.03	5	.1
December	53.0	32.4	42.7	74	11	36	3.79	1.89	5.43	7	.5
Yearly:											
Average	72.1	48.9	60.5	---	---	---	---	---	---	---	---
Extreme	---	---	---	102	6	---	---	---	---	---	---
Total	---	---	---	---	---	4,892	44.91	40.04	50.27	78	8.0

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50 degrees F).

TABLE 2.--FREEZE DATES IN SPRING AND FALL

(Recorded in the period 1951-81 at Lexington, North 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. 29	Apr. 4	Apr. 17
2 years in 10 later than--	Mar. 19	Mar. 28	Apr. 11
5 years in 10 later than--	Mar. 1	Mar. 14	Mar. 31
First freezing temperature in fall:			
1 year in 10 earlier than--	Nov. 13	Oct. 25	Oct. 14
2 years in 10 earlier than--	Nov. 18	Oct. 30	Oct. 19
5 years in 10 earlier than--	Nov. 27	Nov. 10	Oct. 30

TABLE 3.--GROWING SEASON

(Recorded in the period 1951-81 at Lexington, North Carolina)

Probability	Daily minimum temperature during growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
9 years in 10	236	210	184
8 years in 10	248	220	193
5 years in 10	270	239	212
2 years in 10	293	259	231
1 year in 10	304	269	241

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
AaA	Altavista fine sandy loam, 0 to 2 percent slopes, occasionally flooded	271	0.1
AaB	Altavista fine sandy loam, 2 to 6 percent slopes	302	0.1
ApB	Appling sandy loam, 2 to 8 percent slopes	5,995	1.7
Ar	Armenia silt loam, occasionally flooded	731	0.2
BaB	Badin channery silt loam, 2 to 8 percent slopes	22,368	6.1
BaD	Badin channery silt loam, 8 to 15 percent slopes	11,571	3.2
BaE	Badin channery silt loam, 15 to 30 percent slopes	6,179	1.7
CcB	Cecil sandy loam, 2 to 8 percent slopes	26,409	7.2
CcD	Cecil sandy loam, 8 to 15 percent slopes	6,109	1.7
CeB2	Cecil clay loam, 2 to 8 percent slopes, eroded	1,404	0.4
CeD2	Cecil clay loam, 8 to 15 percent slopes, eroded	1,079	0.3
CfB	Cecil-Urban land complex, 2 to 8 percent slopes	1,326	0.4
Ch	Chewacla loam, frequently flooded	19,908	5.4
CmB	Cid-Misenheimer complex, 0 to 4 percent slopes	6,614	1.8
Co	Congaree loam, occasionally flooded	1,586	0.4
DaB	Davidson loam, 2 to 8 percent slopes	9,131	2.5
DaD	Davidson loam, 8 to 15 percent slopes	1,672	0.5
DaE	Davidson loam, 15 to 25 percent slopes	1,217	0.3
EnB	Enon fine sandy loam, 2 to 8 percent slopes	16,546	4.6
EnD	Enon fine sandy loam, 8 to 15 percent slopes	6,002	1.7
ErB	Enon gravelly loam, 2 to 8 percent slopes	6,778	1.9
ErD	Enon gravelly loam, 8 to 15 percent slopes	2,128	0.6
EsD	Enon very stony loam, 4 to 15 percent slopes	5,833	1.6
EsE	Enon very stony loam, 15 to 25 percent slopes	1,467	0.4
EuB	Enon-Urban land complex, 2 to 8 percent slopes	1,793	0.5
GeB	Georgeville silt loam, 2 to 8 percent slopes	18,777	5.1
GeD	Georgeville silt loam, 8 to 15 percent slopes	4,376	1.2
GnD	Goldston very channery silt loam, 4 to 15 percent slopes	1,731	0.5
GnE	Goldston very channery silt loam, 15 to 45 percent slopes	1,658	0.5
HeB	Herndon silt loam, 2 to 8 percent slopes	3,678	1.0
HeD	Herndon silt loam, 8 to 15 percent slopes	969	0.3
IrB	Iredell loam, 1 to 6 percent slopes	763	0.2
KyB	Kirksey silt loam, 2 to 6 percent slopes	9,530	2.6
MeB	Mecklenburg loam, 2 to 8 percent slopes	3,652	1.0
MeD	Mecklenburg loam, 8 to 15 percent slopes	2,060	0.6
MeB2	Mecklenburg clay loam, 2 to 8 percent slopes, eroded	819	0.2
MeD2	Mecklenburg clay loam, 8 to 15 percent slopes, eroded	224	0.1
Ok	Oakboro silt loam, frequently flooded	5,437	1.5
PaB	Pacolet sandy loam, 2 to 8 percent slopes	15,632	4.3
PaD	Pacolet sandy loam, 8 to 15 percent slopes	19,530	5.3
PaE	Pacolet sandy loam, 15 to 25 percent slopes	16,156	4.5
PaF	Pacolet sandy loam, 25 to 45 percent slopes	3,726	1.0
Pt	Pits, quarries	301	0.1
PnB	Poindexter and Zion sandy loams, 2 to 8 percent slopes	5,970	1.6
PnD	Poindexter and Zion sandy loams, 8 to 15 percent slopes	11,448	3.2
PnE	Poindexter and Zion sandy loams, 15 to 25 percent slopes	13,678	3.8
PnF	Poindexter and Zion sandy loams, 25 to 45 percent slopes	2,109	0.6
PuD	Poindexter-Zion-Urban land complex, 2 to 15 percent slopes	334	0.1
SfB	Sedgefield sandy loam, 2 to 8 percent slopes	4,349	1.2
Ud	Udorthents, loamy	1,579	0.4
Ur	Urban land	1,997	0.6
UwD	Uwharrie stony silt loam, 4 to 15 percent slopes, very bouldery	4,619	1.3
UwF	Uwharrie stony silt loam, 15 to 45 percent slopes, very bouldery	7,682	2.1
VaB	Vance sandy loam, 2 to 8 percent slopes	7,231	2.0
VaD	Vance sandy loam, 8 to 15 percent slopes	2,687	0.7
Wa	Wahee loam, occasionally flooded	652	0.2
WeB	Wedowee sandy loam, 2 to 8 percent slopes	4,468	1.2
WeD	Wedowee sandy loam, 8 to 15 percent slopes	5,307	1.5
WkB	Wickham fine sandy loam, 2 to 8 percent slopes	1,071	0.3
	Water	13,992	3.9
	Total	362,611	100.0

TABLE 5.--PRIME FARMLAND

(Only the soils considered prime farmland are listed. Urban or built-up areas of the soils listed are not considered prime farmland. If a soil is prime farmland only under certain conditions, the conditions are specified in parentheses after the soil name)

Map symbol	Soil name
AaA	Altavista fine sandy loam, 0 to 2 percent slopes, occasionally flooded
AaB	Altavista fine sandy loam, 2 to 6 percent slopes
ApB	Appling sandy loam, 2 to 8 percent slopes
CcB	Cecil sandy loam, 2 to 8 percent slopes
CeB2	Cecil clay loam, 2 to 8 percent slopes, eroded
Ch	Chewacla loam, frequently flooded (only drained areas either protected from flooding or not frequently flooded during the growing season)
Co	Congaree loam, occasionally flooded
DaB	Davidson loam, 2 to 8 percent slopes
EnB	Enon fine sandy loam, 2 to 8 percent slopes
GeB	Georgeville silt loam, 2 to 8 percent slopes
HeB	Herndon silt loam, 2 to 8 percent slopes
KyB	Kirksey silt loam, 2 to 6 percent slopes
MeB	Mecklenburg loam, 2 to 8 percent slopes
MeB2	Mecklenburg clay loam, 2 to 8 percent slopes, eroded
Ok	Oakboro silt loam, frequently flooded (only drained areas either protected from flooding or not frequently flooded during the growing season)
PaB	Pacolet sandy loam, 2 to 8 percent slopes
SfB	Sedgefield sandy loam, 2 to 8 percent slopes
VaB	Vance sandy loam, 2 to 8 percent slopes
WeB	Wedowee sandy loam, 2 to 8 percent slopes
WkB	Wickham fine sandy loam, 2 to 8 percent slopes

TABLE 6.--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	Corn silage	Soybeans	Tobacco	Wheat	Grass-legume hay	Pasture
		Bu	Tons	Bu	Lbs	Bu	Tons	AUM*
AaA---------- Altavista	IIw	120	22	45	2,600	55	5.4	9.0
AaB---------- Altavista	IIe	110	22	40	2,600	55	5.1	8.5
ApB---------- Appling	IIe	95	19	35	2,400	45	4.8	8.0
Ar---------- Armenia	IIIw	70	14	30	---	---	4.5	7.5
BaB---------- Badin	IIIe	85	16	30	---	40	3.9	6.5
BaD---------- Badin	IVe	75	14	25	---	35	3.6	6.0
BaE---------- Badin	VIe	---	---	---	---	---	3.3	5.5
CcB---------- Cecil	IIe	95	19	35	2,100	45	3.8	8.0
CcD---------- Cecil	IVe	80	14	25	1,900	40	3.2	7.0
CeB2---------- Cecil	IIIe	80	14	25	1,800	40	2.8	5.5
CeD2---------- Cecil	IVe	60	12	20	---	35	2.2	4.5
CfB. Cecil- Urban land								
Ch---------- Chewacla	IVw	80	16	30	---	30	5.4	9.0
CmB:								
Cid----------	IIw	90	16	35	---	40	3.5	8.0
Misenheimer----	IIIw	60	12	20	---	30	3.0	5.0
Co---------- Congaree	IIw	130	22	45	2,400	60	5.4	9.0
DaB---------- Davidson	IIe	110	22	45	---	45	5.0	8.0
DaD---------- Davidson	IVe	80	15	30	---	40	4.8	7.5
DaE---------- Davidson	VIe	---	---	---	---	---	4.0	7.2

See footnotes at end of table.

TABLE 6.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn	Corn silage	Soybeans	Tobacco	Wheat	Grass-legume hay	Pasture
		Bu	Tons	Bu	Lbs	Bu	Tons	AUM*
EnB---------- Enon	IIIe	85	17	30	1,900	40	4.5	7.5
EnD---------- Enon	IVe	75	13	25	1,700	40	4.0	5.5
ErB---------- Enon	IIIe	80	16	25	1,800	40	4.0	6.0
ErD---------- Enon	IVe	70	13	20	1,600	35	3.8	5.5
EsD---------- Enon	VIs	---	---	---	---	---	---	4.5
EsE---------- Enon	VIIs	---	---	---	---	---	---	---
EuB. Enon-Urban land								
GeB---------- Georgeville	IIe	95	19	35	---	40	4.8	8.0
GeD---------- Georgeville	IVe	70	14	25	---	35	4.5	7.0
GnD---------- Goldston	IVs	---	---	---	---	28	---	4.5
GnE---------- Goldston	VIIs	---	---	---	---	---	---	3.0
HeB---------- Herndon	IIe	95	19	35	---	40	4.8	8.0
HeD---------- Herndon	IVe	70	14	25	---	35	4.5	7.0
IrB---------- Iredell	IIe	65	13	25	---	---	4.0	7.0
KyB---------- Kirksey	IIe	85	16	30	---	40	4.2	6.5
MeB---------- Mecklenburg	IIe	90	18	35	2,200	35	3.6	6.0
MeD---------- Mecklenburg	IVe	70	14	25	---	30	3.0	5.0
MeB2---------- Mecklenburg	IIIe	75	13	30	1,600	30	2.7	4.5
MeD2---------- Mecklenburg	IVe	60	12	20	---	25	2.3	4.0
Ok---------- Oakboro	IVw	80	16	30	---	33	4.5	7.0

See footnotes at end of table.

TABLE 6.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn	Corn silage	Soybeans	Tobacco	Wheat	Grass-legume hay	Pasture
		Bu	Tons	Bu	Lbs	Bu	Tons	AUM*
PaB---------- Pacolet	IIe	80	17	28	2,200	40	4.2	7.0
PaD---------- Pacolet	IVe	70	14	22	1,400	30	4.0	6.5
PaE---------- Pacolet	VIe	---	---	---	---	---	---	5.0
PaF---------- Pacolet	VIIe	---	---	---	---	---	---	4.0
Pt**. Pits								
PnB: Poindexter-----	IIe	60	12	25	2,200	45	2.7	4.5
Zion----------	IIe	60	12	25	2,200	30	2.7	4.5
PnD: Poindexter-----	IIIe	50	10	20	1,800	40	2.0	4.0
Zion----------	IIIe	50	10	20	1,800	25	2.0	4.0
PnE---------- Poindexter and Zion	IVe	---	---	---	---	---	---	3.4
PnF---------- Poindexter and Zion	VIIe	---	---	---	---	---	---	---
PuD: Poindexter.								
Zion.								
Urban land.								
SfB---------- Sedgefield	IIe	85	17	35	2,200	50	3.3	5.5
Ud. Udorthents								
Ur**. Urban land								
UwD---------- Uwharrie	VIs	---	---	---	---	---	---	4.0
UwF---------- Uwharrie	VIIs	---	---	---	---	---	---	---
VaB---------- Vance	IIIe	80	16	35	2,000	45	4.5	7.5
VaD---------- Vance	VIe	---	---	---	---	---	4.2	7.0

See footnotes at end of table.

TABLE 6.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn	Corn silage	Soybeans	Tobacco	Wheat	Grass-legume hay	Pasture
		Bu	Tons	Bu	Lbs	Bu	Tons	AUM*
Wa---------- Wahee	IIw	110	20	35	---	50	5.4	8.0
WeB---------- Wedowee	IIe	80	16	35	2,200	40	4.8	7.0
WeD---------- Wedowee	IVe	60	13	20	1,400	30	4.0	6.5
WkB---------- Wickham	IIe	115	22	35	2,600	50	5.5	9.0

* 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.

** See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY

(Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available)

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant**
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index*	Volume*	
AaA, AaB-------- Altavista	9A	Slight	Moderate	Slight	Slight	Loblolly pine------- White oak---------- Shortleaf pine------ Sweetgum---------- Red maple---------- Yellow-poplar------- Southern red oak---- Northern red oak---- Willow oak---------- American sycamore---	91 77 --- --- --- --- --- --- --- ---	133 59 --- --- --- --- --- --- --- ---	Loblolly pine, yellow-poplar.
ApB---------- Appling	8A	Slight	Slight	Slight	Slight	Loblolly pine------- Shortleaf pine------ Virginia pine------- White oak---------- Yellow-poplar------- Sweetgum---------- Southern red oak---- Hickory---------- Northern red oak----	81 65 74 90 88 --- --- --- ---	112 99 114 72 86 --- --- --- ---	Loblolly pine, yellow-poplar.
Ar---------- Armenia	6W	Slight	Moderate	Moderate	Slight	Loblolly pine------- Shortleaf pine------ White oak----------	67 58 47	88 84 32	Loblolly pine.
BaB, BaD-------- Badin	8D	Slight	Slight	Slight	Moderate	Loblolly pine------- Shortleaf pine------ Virginia pine------- Yellow-poplar------- White oak---------- Hickory---------- Chestnut oak-------- Northern red oak---- Southern red oak----	80 68 --- --- 63 --- --- --- ---	110 106 --- --- 46 --- --- --- ---	Loblolly pine.
BaE---------- Badin	8R	Moderate	Moderate	Slight	Moderate	Loblolly pine------- Shortleaf pine------ Virginia pine------- Yellow-poplar------- White oak---------- Hickory---------- Chestnut oak-------- Northern red oak---- Southern red oak----	80 68 --- --- 63 --- 66 --- ---	110 106 --- --- 46 --- 48 --- ---	Loblolly pine.
CcB, CcD-------- Cecil	8A	Slight	Slight	Slight	Slight	Loblolly pine------- Shortleaf pine------ Virginia pine------- White oak---------- Northern red oak---- Southern red oak---- Yellow-poplar------- Hickory----------	80 69 73 79 82 79 92 ---	110 108 113 61 64 61 93 ---	Loblolly pine, yellow-poplar.

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Potential productivity: Common trees	Site index	Volume*	Trees to plant**
CeB2, CeD2---- Cecil	7C	Slight	Moderate	Moderate	Slight	Loblolly pine	72	96	Loblolly pine.
						Shortleaf pine	66	101	
						Virginia pine	65	101	
						White oak	64	47	
						Northern red oak	---	---	
						Southern red oak	---	---	
						Hickory	---	---	
Ch---- Chewacla	9W	Slight	Moderate	Slight	Slight	Yellow-poplar	100	107	Sweetgum, yellow-poplar, loblolly pine.
						Loblolly pine	96	145	
						Sweetgum	97	128	
						Water oak	86	81	
						Eastern cottonwood	---	---	
						Blackgum	---	---	
						Red maple	---	---	
						Willow oak	---	---	
						American sycamore	---	---	
CmB***:									
Cid----	6W	Slight	Moderate	Slight	Moderate	Shortleaf pine	56	80	Shortleaf pine, loblolly pine.
						White oak	52	36	
						Virginia pine	---	---	
						Loblolly pine	---	---	
						Southern red oak	---	---	
						Sweetgum	---	---	
						Blackgum	---	---	
						Willow oak	---	---	
						Northern red oak	---	---	
						Red maple	---	---	
						Hickory	---	---	
Misenheimer----	6D	Slight	Slight	Moderate	Severe	Shortleaf pine	60	---	Loblolly pine.
						White oak	59	---	
						Willow oak	59	---	
						Sweetgum	---	---	
						Red maple	---	---	
						Blackgum	---	---	
						Hickory	---	---	
						Post oak	---	---	
						Virginia pine	---	---	
						Southern red oak	---	---	
Co---- Congaree	10A	Slight	Slight	Slight	Slight	Sweetgum	100	138	Loblolly pine, yellow-poplar.
						Yellow-poplar	107	119	
						Red maple	---	---	
						Loblolly pine	90	131	
						Eastern cottonwood	107	147	
						American sycamore	89	96	
						Blackgum	---	---	
						Scarlet oak	100	82	
						Willow oak	95	92	
						Green ash	---	---	
						American beech	---	---	

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Potential productivity: Common trees	Site index	Volume*	Trees to plant**
DaB, DaD--Davidson	9A	Slight	Slight	Slight	Slight	Loblolly pine	86	123	Loblolly pine, yellow-poplar.
						Shortleaf pine	68	106	
						Northern red oak	80	62	
						Southern red oak	72	54	
						Sweetgum	80	79	
						White oak	71	53	
						Yellow-poplar	80	71	
						Virginia pine	---	---	
						Hickory	---	---	
DaE--Davidson	9R	Moderate	Moderate	Slight	Slight	Loblolly pine	86	123	Loblolly pine, yellow-poplar.
						Shortleaf pine	68	106	
						Northern red oak	80	62	
						Southern red oak	72	54	
						Sweetgum	80	79	
						White oak	71	53	
						Yellow-poplar	80	71	
						Virginia pine	---	---	
						Hickory	---	---	
EnB, EnD, ErB, ErD--Enon	7A	Slight	Slight	Slight	Slight	Loblolly pine	73	98	Loblolly pine.
						Shortleaf pine	63	95	
						Virginia pine	---	---	
						Northern red oak	---	---	
						Sweetgum	87	98	
						White oak	---	---	
						Yellow-poplar	88	86	
						Hickory	---	---	
						Southern red oak	---	---	
EsD--Enon	7X	Slight	Severe	Severe	Slight	Loblolly pine	73	98	Loblolly pine.
						Shortleaf pine	63	95	
						Virginia pine	---	---	
						Northern red oak	---	---	
						Sweetgum	87	69	
						White oak	---	---	
						Yellow-poplar	88	86	
						Hickory	---	---	
						Southern red oak	---	---	
EsE--Enon	7X	Moderate	Severe	Severe	Slight	Loblolly pine	73	98	Loblolly pine.
						Shortleaf pine	63	95	
						Virginia pine	---	---	
						Northern red oak	---	---	
						Sweetgum	87	98	
						White oak	---	---	
						Yellow-poplar	88	86	
						Hickory	---	---	
						Southern red oak	---	---	
GeB, GeD--Georgeville	8A	Slight	Slight	Slight	Slight	Loblolly pine	81	133	Loblolly pine, yellow-poplar.
						Shortleaf pine	63	95	
						White oak	69	51	
						Northern red oak	---	---	
						Southern red oak	67	49	
						Hickory	---	---	
						Sweetgum	---	---	
						Yellow-poplar	---	---	

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant**
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Volume*	
GnD--Goldston	7D	Slight	Slight	Moderate	Severe	Loblolly pine	73	98	Loblolly pine.
						Shortleaf pine	63	95	
						Southern red oak	63	46	
						White oak	63	46	
						Post oak	---	---	
						Hickory	---	---	
						Longleaf pine	---	---	
GnE--Goldston	7D	Moderate	Moderate	Moderate	Severe	Loblolly pine	73	98	Loblolly pine.
						Shortleaf pine	63	95	
						Southern red oak	63	46	
						White oak	63	46	
						Post oak	---	---	
						Blackjack oak	---	---	
HeB, HeD--Herndon	8A	Slight	Slight	Slight	Slight	Loblolly pine	80	---	Loblolly pine.
						Shortleaf pine	61	---	
						White oak	65	---	
						Southern red oak	72	---	
						Yellow-poplar	91	---	
						Northern red oak	---	---	
						Sweetgum	---	---	
						Hickory	---	---	
IrB--Iredell	6C	Slight	Moderate	Moderate	Slight	Loblolly pine	67	133	Loblolly pine.
						Shortleaf pine	58	84	
						Post oak	44	29	
						White oak	47	32	
KyB--Kirksey	6W	Slight	Moderate	Slight	Slight	Loblolly pine	67	---	Loblolly pine.
						Shortleaf pine	---	---	
						Southern red oak	---	---	
						Willow oak	---	---	
						Red maple	---	---	
						Blackgum	---	---	
						Yellow-poplar	---	---	
						Northern red oak	---	---	
						White oak	---	---	
						Sweetgum	---	---	
MeB, MeD--Mecklenburg	7A	Slight	Slight	Slight	Slight	Loblolly pine	75	101	Loblolly pine.
						Shortleaf pine	64	97	
						Virginia pine	62	95	
						Yellow-poplar	97	79	
						Northern red oak	---	---	
						Sweetgum	---	---	
						White oak	---	---	
						Hickory	---	---	
						Southern red oak	---	---	
MeB2, MeD2--Mecklenburg	6C	Moderate	Moderate	Moderate	Slight	Loblolly pine	66	86	Loblolly pine.
						Northern red oak	---	---	
						Shortleaf pine	59	86	
						Virginia pine	---	---	
						Sweetgum	---	---	
						White oak	---	---	
						Hickory	---	---	
						Southern red oak	---	---	
						Yellow-poplar	---	---	

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant**
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Volume*	
Ok---------- Oakboro	7W	Slight	Moderate	Slight	Slight	Yellow-poplar	99	105	Yellow-poplar, loblolly pine.
						Northern red oak	78	60	
						Shortleaf pine	79	128	
						Sweetgum	---	---	
						Blackgum	---	---	
						Red maple	---	---	
						American sycamore	---	---	
						Hickory	---	---	
						White oak	---	---	
						Willow oak	---	---	
PaB, PaD-------- Pacolet	8A	Slight	Slight	Slight	Slight	Loblolly pine	78	107	Loblolly pine, shortleaf pine, yellow-poplar, eastern white pine.
						Shortleaf pine	70	110	
						Yellow-poplar	90	90	
						Virginia pine	---	---	
						Northern red oak	---	---	
						Hickory	---	---	
						White oak	---	---	
PaE, PaF-------- Pacolet	8R	Moderate	Moderate	Slight	Slight	Loblolly pine	78	107	Loblolly pine, yellow-poplar.
						Shortleaf pine	70	110	
						Yellow-poplar	90	90	
						Virginia pine	---	---	
						Northern red oak	---	---	
						Hickory	---	---	
						White oak	---	---	
						Southern red oak	---	---	
PnB***, PnD***: Poindexter-----	6D	Slight	Slight	Slight	Moderate	Loblolly pine	70	93	Loblolly pine.
						Shortleaf pine	60	88	
						Virginia pine	65	100	
						Southern red oak	60	43	
						Hickory	---	---	
						Sweetgum	---	---	
						White oak	---	---	
						Northern red oak	---	---	
Zion----------	6D	Slight	Slight	Slight	Moderate	Loblolly pine	70	93	Loblolly pine, eastern white pine.
						Northern red oak	70	52	
						Shortleaf pine	60	88	
						Virginia pine	60	91	
						Southern red oak	---	---	
						Hickory	---	---	
						Sweetgum	---	---	
						White oak	---	---	
PnE***: Poindexter-----	6R	Moderate	Moderate	Slight	Moderate	Loblolly pine	70	93	Loblolly pine.
						Shortleaf pine	60	88	
						Virginia pine	65	100	
						Southern red oak	60	43	
						Northern red oak	---	---	
						Hickory	---	---	
						Sweetgum	---	---	
						White oak	---	---	

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant**
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Volume*	
PnE***:									
Zion	6R	Moderate	Moderate	Slight	Moderate	Loblolly pine	70	93	Loblolly pine.
						Northern red oak	70	52	
						Shortleaf pine	60	88	
						Virginia pine	60	91	
						Southern red oak	---	---	
						Hickory	---	---	
						Sweetgum	---	---	
						White oak	---	---	
PnF***:									
Poindexter	6R	Severe	Severe	Slight	Moderate	Loblolly pine	70	93	Loblolly pine.
						Shortleaf pine	60	88	
						Virginia pine	65	100	
						Southern red oak	60	43	
						Northern red oak	---	---	
						Hickory	---	---	
						Sweetgum	---	---	
						White oak	---	---	
Zion	6R	Severe	Severe	Slight	Moderate	Loblolly pine	70	93	Loblolly pine.
						Northern red oak	70	52	
						Shortleaf pine	60	88	
						Virginia pine	60	91	
						Southern red oak	---	---	
						Hickory	---	---	
						Sweetgum	---	---	
						White oak	---	---	
SfB	8W	Slight	Moderate	Slight	Slight	Loblolly pine	80	110	Loblolly pine.
Sedgefield						Shortleaf pine	---	---	
						Virginia pine	---	---	
						Southern red oak	---	---	
						Northern red oak	---	---	
						Sweetgum	---	---	
						Yellow-poplar	---	---	
						White oak	---	---	
						Willow oak	---	---	
						Blackgum	---	---	
						Red maple	---	---	
UwD	5X	Slight	Moderate	Slight	Slight	Black oak	84	66	Loblolly pine.
Uwharrie						Yellow-poplar	96	100	
						White oak	---	---	
						Southern red oak	---	---	
						Chestnut oak	---	---	
						Shortleaf pine	---	---	
						Black cherry	---	---	
						Hickory	---	---	
						Northern red oak	---	---	
UwF	5R	Moderate	Moderate	Slight	Slight	Black oak	84	66	Loblolly pine.
Uwharrie						Yellow-poplar	96	100	
						White oak	---	---	
						Southern red oak	---	---	
						Chestnut oak	---	---	
						Shortleaf pine	---	---	
						Hickory	---	---	
						Northern red oak	---	---	

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Potential productivity: Common trees	Site index	Volume*	Trees to plant**
VaB, VaD--------- Vance	7A	Slight	Slight	Slight	Slight	Loblolly pine------- Shortleaf pine------ White oak---------- Northern red oak---- Hickory---------- Virginia pine------- Yellow-poplar------- Southern red oak---- Sweetgum----------	73 68 76 72 --- --- --- 72 ---	98 106 58 54 --- --- --- 54 ---	Loblolly pine.
Wa--------- Wahee	9W	Slight	Moderate	Moderate	Slight	Loblolly pine------- Sweetgum---------- Blackgum---------- Water oak---------- Swamp chestnut oak-- Willow oak---------- Southern red oak---- Shortleaf pine------ Pin oak---------- Red maple---------- Yellow-poplar------- American sycamore---	86 90 --- --- --- --- --- --- --- --- --- ---	123 106 --- --- --- --- --- --- --- --- --- ---	Loblolly pine, yellow-poplar.
WeB, WeD-------- Wedowee	8A	Slight	Slight	Slight	Slight	Loblolly pine------- Virginia pine------- Shortleaf pine------ Southern red oak---- Northern red oak---- White oak---------- Yellow-poplar------- Sweetgum---------- Hickory----------	80 70 69 70 68 65 --- --- ---	110 109 108 52 50 48 --- --- ---	Loblolly pine, Virginia pine, shortleaf pine, yellow-poplar.
WkB--------- Wickham	9A	Slight	Slight	Slight	Slight	Loblolly pine------- Yellow-poplar------- White oak---------- Southern red oak---- Sweetgum---------- Red maple---------- Northern red oak---- Hickory---------- Shortleaf pine------	90 89 84 82 --- --- 89 --- ---	131 88 66 64 --- --- 71 --- ---	Loblolly pine, yellow-poplar.

* 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.

** If hardwoods are desired on a forest site, rely on natural reproduction (seeds and sprouts) of acceptable species. Special site preparation techniques may be required.

*** See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 8.--RECREATIONAL DEVELOPMENT

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated)

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
AaA Altavista	Severe: flooding.	Moderate: wetness.	Moderate: wetness, flooding.	Moderate: wetness.	Moderate: wetness, flooding.
AaB Altavista	Moderate: wetness.	Moderate: wetness.	Moderate: slope, wetness.	Moderate: wetness.	Moderate: wetness.
ApB Appling	Slight	Slight	Moderate: slope, small stones.	Slight	Slight.
Ar Armenia	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
BaB Badin	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight	Moderate: small stones, large stones.
BaD Badin	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight	Moderate: small stones, large stones, slope.
BaE Badin	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.	Severe: slope.
CcB Cecil	Slight	Slight	Moderate: slope.	Slight	Slight.
CcD Cecil	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
CeB2 Cecil	Slight	Slight	Moderate: slope.	Slight	Slight.
CeD2 Cecil	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
CfB*: Cecil	Slight	Slight	Moderate: slope.	Slight	Slight.
Urban land.					
Ch Chewacla	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
CmB*: Cid	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: small stones, wetness.	Moderate: wetness.	Moderate: wetness.

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
CmB*:					
Misenheimer	Severe: wetness, depth to rock.	Severe: depth to rock.	Severe: small stones, wetness, depth to rock.	Moderate: wetness.	Severe: depth to rock.
Co Congaree	Severe: flooding.	Moderate: flooding.	Severe: flooding.	Moderate: flooding.	Severe: flooding.
DaB Davidson	Slight	Slight	Moderate: slope, small stones.	Slight	Slight.
DaD Davidson	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
DaE Davidson	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
EnB Enon	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, small stones, percs slowly.	Slight	Slight.
EnD Enon	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight	Moderate: slope.
ErB Enon	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight	Moderate: small stones, large stones.
ErD Enon	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight	Moderate: small stones, large stones.
EsD Enon	Severe: small stones.	Severe: small stones.	Severe: large stones, slope, small stones.	Moderate: large stones.	Severe: small stones, large stones.
EsE Enon	Severe: slope, small stones.	Severe: slope, small stones.	Severe: large stones, slope, small stones.	Moderate: large stones, slope.	Severe: small stones, large stones.
EuB*:					
Enon	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, small stones, percs slowly.	Slight	Slight.
Urban land.					
GeB Georgeville	Slight	Slight	Moderate: slope.	Slight	Slight.
GeD 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
GnD Goldston	Severe: small stones, depth to rock.	Severe: small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: small stones.	Severe: large stones, depth to rock.
GnE Goldston	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope, small stones.	Severe: large stones, slope, depth to rock.
HeB Herndon	Slight	Slight	Moderate: slope.	Slight	Slight.
HeD Herndon	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
IrB Iredell	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
KyB Kirksey	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, small stones, wetness.	Moderate: wetness.	Moderate: wetness.
MeB Mecklenburg	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, small stones.	Slight	Slight.
MeD Mecklenburg	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
MeB2 Mecklenburg	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, percs slowly.	Slight	Slight.
MeD2 Mecklenburg	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
Ok Oakboro	Severe: flooding, wetness.	Moderate: flooding, wetness.	Severe: flooding, wetness.	Moderate: wetness, flooding.	Severe: flooding.
PaB Pacolet	Slight	Slight	Moderate: slope, small stones.	Slight	Slight.
PaD Pacolet	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
PaE Pacolet	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
PaF Pacolet	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Pt*. Pits					

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
PnB*:					
Poindexter	Slight	Slight	Moderate: slope, small stones, depth to rock.	Slight	Moderate: depth to rock.
Zion	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, small stones, depth to rock.	Slight	Moderate: droughty, depth to rock.
PnD*:					
Poindexter	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope, depth to rock.
Zion	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight	Moderate: droughty, slope, depth to rock.
PnE*:					
Poindexter	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
Zion	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
PnF*:					
Poindexter	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Zion	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
PuD*:					
Poindexter	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope, depth to rock.
Zion	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight	Moderate: droughty, slope, depth to rock.
Urban land.					
SfB Sedgefield	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
Ud. Udorthents					
Ur*. Urban land					
UwD Uwharrie	Moderate: dusty, slope.	Moderate: slope.	Severe: slope.	Moderate: large stones.	Severe: large stones.

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
UwF Uwharrie	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, large stones.
VaB Vance	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, small stones.	Slight	Slight.
VaD Vance	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
Wa Wahee	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
WeB Wedowee	Slight	Slight	Moderate: slope.	Slight	Slight.
WeD Wedowee	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
WkB Wickham	Slight	Slight	Moderate: slope.	Slight	Slight.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 9.--WILDLIFE HABITAT

(See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated)

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---- Altavista	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
AaB---- Altavista	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
ApB---- Appling	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Ar---- Armenia	Fair	Good	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair.
BaB---- Badin	Fair	Good	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
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.
CcB---- Cecil	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
CcD---- Cecil	Fair	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.
CeD2---- Cecil	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
CfB*: Cecil.										
Urban land.										
Ch---- Chewacla	Very poor.	Poor	Poor	Good	Good	Fair	Fair	Poor	Good	Fair.
CmB*: Cid----	Fair	Good	Good	Fair	Fair	Fair	Poor	Good	Fair	Poor.
Misenheimer----	Fair	Good	Good	Fair	Fair	Fair	Fair	Good	Good	Fair.
Co---- Congaree	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
DaB---- Davidson	Good	Good	Good	Good	Fair	Poor	Very poor.	Good	Good	Poor.
DaD---- Davidson	Fair	Good	Good	Good	Fair	Very poor.	Very poor.	Good	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
DaE---- Davidson	Poor	Fair	Good	Good	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
EnB---- Enon	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
EnD---- Enon	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
ErB---- Enon	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
ErD---- Enon	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
EsD, EsE---- Enon	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
EuB*: Enon.										
Urban land.										
GeB---- Georgeville	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
GeD---- Georgeville	Poor	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
GnD---- Goldston	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
GnE---- Goldston	Very poor.	Very poor.	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
HeB---- Herndon	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
HeD---- Herndon	Fair	Good	Fair	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
IrB---- Iredell	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
KyB---- Kirksey	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
MeB---- Mecklenburg	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MeD---- Mecklenburg	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
MeB2---- Mecklenburg	Poor	Fair	Fair	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
MeD2---- Mecklenburg	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
Ok---- Oakboro	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
PaB---- Pacolet	Fair	Fair	Fair	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
PaD---- Pacolet	Poor	Fair	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
PaE, PaF---- Pacolet	Very poor.	Poor	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
Pt*. Pits										
PnB*: Poindexter--------	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Zion----------	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
PnD*: Poindexter--------	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Zion----------	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
PnE*: Poindexter--------	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Zion----------	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
PnF*: Poindexter--------	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Zion----------	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
PuD*: Poindexter.										
Zion.										
Urban land.										
SfB---- Sedgefield	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Ud. Udorthents										
Ur*. Urban land										

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
UwD---- Uwharrie	Very poor.	Poor	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
UwF---- Uwharrie	Very poor.	Very poor.	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
VaB---- Vance	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
VaD---- Vance	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Wa---- Wahee	Fair	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
WeB, WeD---- Wedowee	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
WkB---- Wickham	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 10.--BUILDING SITE DEVELOPMENT

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition 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--Altavista	Severe: wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding.	Moderate: wetness, flooding.
AaB--Altavista	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Moderate: wetness, low strength.	Moderate: wetness.
ApB--Appling	Moderate: too clayey.	Slight	Slight	Moderate: slope.	Moderate: low strength.	Slight.
Ar--Armenia	Severe: wetness.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: shrink-swell, wetness, low strength.	Severe: wetness.
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: small stones, large stones.
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: small stones, large stones, slope.
BaE--Badin	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
CcB--Cecil	Moderate: too clayey.	Slight	Slight	Moderate: slope.	Moderate: low strength.	Slight.
CcD--Cecil	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.	Moderate: slope.
CeB2--Cecil	Moderate: too clayey.	Slight	Slight	Moderate: slope.	Moderate: low strength.	Slight.
CeD2--Cecil	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.	Moderate: slope.
CfB*: Cecil	Moderate: too clayey.	Slight	Slight	Moderate: slope.	Moderate: low strength.	Slight.
Urban land.						
Ch--Chewacla	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: wetness, flooding.

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
CmB*:						
Cid	Severe: depth to rock, wetness.	Moderate: wetness, shrink-swell, depth to rock.	Severe: wetness, depth to rock.	Moderate: wetness, shrink-swell.	Severe: low strength.	Moderate: wetness.
Misenheimer	Severe: wetness, depth to rock.	Severe: wetness.	Severe: wetness, depth to rock.	Severe: wetness.	Moderate: wetness, depth to rock.	Severe: depth to rock.
Co	Moderate: wetness, flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.
Congaree						
DaB	Moderate: too clayey.	Slight	Slight	Moderate: slope.	Moderate: low strength.	Slight.
Davidson						
DaD	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.	Moderate: slope.
Davidson						
DaE	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Davidson						
EnB	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: low strength, shrink-swell.	Slight.
Enon						
EnD	Moderate: too clayey, slope.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, slope.	Severe: low strength, shrink-swell.	Moderate: slope.
Enon						
ErB	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: low strength, shrink-swell.	Moderate: small stones, large stones.
Enon						
ErD	Moderate: too clayey, slope.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: slope, shrink-swell.	Severe: low strength, shrink-swell.	Moderate: small stones, large stones.
Enon						
EsD	Moderate: too clayey, slope.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, slope.	Severe: low strength, shrink-swell.	Severe: small stones, large stones.
Enon						
EsE	Severe: slope.	Severe: shrink-swell, slope.	Severe: slope, shrink-swell.	Severe: shrink-swell, slope.	Severe: low strength, slope, shrink-swell.	Severe: small stones, large stones.
Enon						
EuB*:						
Enon	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: low strength, shrink-swell.	Slight.
Urban land.						
GeB	Moderate: too clayey.	Slight	Slight	Moderate: slope.	Moderate: low strength.	Slight.
Georgeville						

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
GeD---------- Georgeville	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.	Moderate: slope.
GnD---------- 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: large stones, depth to rock.
GnE---------- Goldston	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: large stones, slope, depth to rock.
HeB---------- Herndon	Moderate: too clayey.	Slight---------	Slight---------	Moderate: slope.	Moderate: low strength.	Slight.
HeD---------- Herndon	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.	Moderate: slope.
IrB---------- Iredell	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell, low strength.	Moderate: wetness.
KyB---------- Kirksey	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Severe: low strength.	Moderate: wetness.
MeB---------- Mecklenburg	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Slight.
MeD---------- Mecklenburg	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.
MeB2--------- Mecklenburg	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Slight.
MeD2--------- Mecklenburg	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.
Ok---------- Oakboro	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding.
PaB---------- Pacolet	Moderate: too clayey.	Slight---------	Slight---------	Moderate: slope.	Moderate: low strength.	Slight.
PaD---------- Pacolet	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.	Moderate: slope.
PaE, PaF---------- Pacolet	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Pt*. Pits						

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
PnB*:						
Poindexter	Moderate: depth to rock.	Slight	Moderate: depth to rock.	Moderate: slope.	Moderate: low strength.	Moderate: depth to rock.
Zion	Severe: depth to rock.	Severe: shrink-swell.	Severe: depth to rock, shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Moderate: droughty, depth to rock.
PnD*:						
Poindexter	Moderate: depth to rock, slope.	Moderate: slope.	Moderate: depth to rock, slope.	Severe: slope.	Moderate: slope, low strength.	Moderate: slope, depth to rock.
Zion	Severe: depth to rock.	Severe: shrink-swell.	Severe: depth to rock, shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength.	Moderate: droughty, slope, depth to rock.
PnE*, PnF*:						
Poindexter	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Zion	Severe: depth to rock, slope.	Severe: shrink-swell, slope.	Severe: depth to rock, slope, shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength, slope.	Severe: slope.
PuD*:						
Poindexter	Moderate: depth to rock, slope.	Moderate: slope.	Moderate: depth to rock, slope.	Severe: slope.	Moderate: slope, low strength.	Moderate: slope, depth to rock.
Zion	Severe: depth to rock.	Severe: shrink-swell.	Severe: depth to rock, shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength.	Moderate: droughty, slope, depth to rock.
Urban land.						
SfB	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: low strength, shrink-swell.	Moderate: wetness.
Ud.						
Udorthents						
Ur*						
Urban land						
UwD	Moderate: too clayey, slope, large stones.	Moderate: shrink-swell, slope, large stones.	Moderate: slope, shrink-swell, large stones.	Severe: slope.	Severe: low strength.	Severe: large stones.
UwF	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope, large stones.
VaB	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: 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
VaD---------- Vance	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.
Wa---------- Wahee	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: wetness.
WeB---------- Wedowee	Moderate: too clayey.	Slight---------	Slight---------	Moderate: shrink-swell, slope.	Moderate: low strength.	Slight.
WeD---------- Wedowee	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.	Moderate: slope.
WkB---------- Wickham	Slight---------	Slight---------	Slight---------	Moderate: slope.	Slight---------	Slight.

* 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," "fair," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
AaA---- Altavista	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: wetness, too clayey.
AaB---- Altavista	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: wetness, too clayey.
ApB---- Appling	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight----	Fair: too clayey, hard to pack.
Ar---- Armenia	Severe: flooding, wetness, percs slowly.	Severe: flooding.	Severe: flooding, wetness, too clayey.	Severe: flooding, wetness.	Poor: too clayey, hard to pack, wetness.
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.
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.
CcB---- Cecil	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight----	Fair: too clayey, hard to pack.
CcD---- Cecil	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, hard to pack, slope.
CeB2---- Cecil	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight----	Fair: too clayey, hard to pack.
CeD2---- Cecil	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, hard to pack, slope.
CfB*: Cecil----	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight----	Fair: too clayey, hard to pack.

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
CfB*: Urban land.					
Ch---------- Chewacla	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: hard to pack, wetness.
CmB*: Cid----------	Severe: depth to rock, wetness, percs slowly.	Severe: depth to rock, wetness.	Severe: depth to rock, wetness, too clayey.	Severe: depth to rock.	Poor: depth to rock, too clayey, hard to pack.
Misenheimer--------	Severe: depth to rock, wetness.	Severe: seepage, depth to rock, wetness.	Severe: depth to rock, seepage, wetness.	Severe: depth to rock, wetness.	Poor: depth to rock, small stones, wetness.
Co---------- Congaree	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: thin layer.
DaB---------- Davidson	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight----------	Fair: too clayey, hard to pack.
DaD---------- Davidson	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, hard to pack, slope.
DaE---------- Davidson	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
EnB---------- Enon	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight----------	Poor: too clayey, hard to pack.
EnD---------- Enon	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
ErB---------- Enon	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight----------	Poor: too clayey, hard to pack.
ErD, EsD---------- Enon	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
EsE---------- Enon	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
EuB*: Enon----------	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight----------	Poor: too clayey, hard to pack.
Urban land.					

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
GeB---------- Georgeville	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight----------	Fair: too clayey, hard to pack.
GeD---------- Georgeville	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, hard to pack, slope.
GnD---------- 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.
GnE---------- 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.
HeB---------- Herndon	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight----------	Fair: too clayey, hard to pack.
HeD---------- Herndon	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, hard to pack, slope.
IrB---------- Iredell	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
KyB---------- Kirksey	Severe: wetness, percs slowly.	Severe: wetness.	Severe: depth to rock, wetness.	Moderate: depth to rock, wetness.	Fair: depth to rock, too clayey.
MeB---------- Mecklenburg	Severe: percs slowly.	Moderate: seepage, slope.	Severe: too clayey.	Slight----------	Poor: too clayey, hard to pack.
MeD---------- Mecklenburg	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
MeB2--------- Mecklenburg	Severe: percs slowly.	Moderate: seepage, slope.	Severe: too clayey.	Slight----------	Poor: too clayey, hard to pack.
MeD2--------- Mecklenburg	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
Ok---------- Oakboro	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, depth to rock, wetness.	Severe: flooding, wetness.	Poor: wetness.
PaB---------- Pacolet	Moderate: percs slowly.	Moderate: seepage, slope.	Slight----------	Slight----------	Fair: too clayey.

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
PaD---------- Pacolet	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: too clayey, slope.
PaE, PaF---------- Pacolet	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Pt*. Pits					
PnB*: Poindexter---------	Severe: depth to rock.	Severe: seepage, depth to rock.	Severe: depth to rock, seepage.	Severe: seepage, depth to rock.	Poor: depth to rock.
Zion----------	Severe: depth to rock, percs slowly.	Severe: depth to rock.	Severe: depth to rock, too clayey.	Severe: depth to rock.	Poor: depth to rock, too clayey, hard to pack.
PnD*: Poindexter---------	Severe: depth to rock.	Severe: seepage, slope, depth to rock.	Severe: depth to rock, seepage.	Severe: seepage, depth to rock.	Poor: depth to rock.
Zion----------	Severe: depth to rock, percs slowly.	Severe: depth to rock, slope.	Severe: depth to rock, too clayey.	Severe: depth to rock.	Poor: depth to rock, too clayey, hard to pack.
PnE*, PnF*: 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.
Zion----------	Severe: depth to rock, percs slowly, 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.
PuD*: Poindexter---------	Severe: depth to rock.	Severe: seepage, slope, depth to rock.	Severe: depth to rock, seepage.	Severe: seepage, depth to rock.	Poor: depth to rock.
Zion----------	Severe: depth to rock, percs slowly.	Severe: depth to rock, slope.	Severe: depth to rock, too clayey.	Severe: depth to rock.	Poor: depth to rock, too clayey, hard to pack.
Urban land.					
SfB---------- Sedgefield	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.

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
Ud. Udorthents					
Ur*. Urban land					
UwD Uwharrie	Moderate: percs slowly, slope, large stones.	Severe: large stones, slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
UwF Uwharrie	Severe: slope.	Severe: large stones, slope.	Severe: too clayey, slope.	Severe: slope.	Poor: too clayey, slope, hard to pack.
VaB Vance	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight	Poor: too clayey, hard to pack.
VaD Vance	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
Wa Wahee	Severe: flooding, wetness, percs slowly.	Severe: flooding.	Severe: flooding, wetness, too clayey.	Severe: flooding, wetness.	Poor: too clayey, hard to pack, wetness.
WeB Wedowee	Moderate: percs slowly.	Moderate: slope, seepage.	Moderate: too clayey.	Slight	Fair: too clayey.
WeD Wedowee	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, slope.
WkB Wickham	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: too clayey.

* 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. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
AaA, AaB---------- Altavista	Fair: wetness, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
ApB---------- Appling	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Ar---------- Armenia	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness, too clayey.
BaB, 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.
CcB, CcD, CeB2, CeD2-- Cecil	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
CfB*: Cecil----------	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Urban land.				
Ch---------- Chewacla	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
CmB*: Cid----------	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, too clayey.
Misenheimer----------	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, depth to rock.
Co---------- Congaree	Fair: low strength, wetness, thin layer.	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer.
DaB, DaD---------- Davidson	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
DaE---------- Davidson	Fair: low strength, 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
EnB, EnD Enon	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
ErB, ErD, EsD Enon	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, too clayey.
EsE Enon	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope, too clayey.
EuB*: Enon	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Urban land.				
GeB, GeD Georgeville	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
GnD Goldston	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
GnE Goldston	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
HeB, HeD Herndon	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
IrB Iredell	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones.
KyB Kirksey	Fair: depth to rock, wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, area reclaim, small stones.
MeB, MeD, MeB2, MeD2 Mecklenburg	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Ok Oakboro	Fair: depth to rock, thin layer, wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, large stones, area reclaim.
PaB, PaD Pacolet	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
PaE 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
PaF Pacolet	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
Pt*. Pits				
PnB*: Poindexter	Poor: depth to rock.	Improbable: excess fines, thin layer.	Improbable: excess fines, thin layer.	Fair: small stones, depth to rock.
Zion	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
PnD*: Poindexter	Poor: depth to rock.	Improbable: excess fines, thin layer.	Improbable: excess fines, thin layer.	Fair: small stones, slope, depth to rock.
Zion	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
PnE*: Poindexter	Poor: depth to rock.	Improbable: excess fines, thin layer.	Improbable: excess fines, thin layer.	Poor: slope.
Zion	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
PnF*: Poindexter	Poor: slope, depth to rock.	Improbable: excess fines, thin layer.	Improbable: excess fines, thin layer.	Poor: slope.
Zion	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
PuD*: Poindexter	Poor: depth to rock.	Improbable: excess fines, thin layer.	Improbable: excess fines, thin layer.	Fair: small stones, slope, depth to rock.
Zion	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Urban land.				

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
SfB---------- Sedgefield	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Ud. Udorthents				
Ur*. Urban land				
UwD---------- Uwharrie	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, large stones.
UwF---------- Uwharrie	Severe: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope, large stones.
VaB, VaD---------- Vance	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Wa---------- Wahee	Poor: wetness, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
WeB, WeD---------- Wedowee	Good----------	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
WkB---------- Wickham	Good----------	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 13.--WATER MANAGEMENT

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not evaluated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
AaA---------- Altavista	Moderate: seepage.	Severe: piping, wetness.	Flooding-------	Wetness--------	Wetness, soil blowing.	Favorable.
AaB---------- Altavista	Moderate: seepage, slope.	Severe: piping, wetness.	Slope----------	Wetness, slope.	Wetness, soil blowing.	Favorable.
ApB---------- Appling	Moderate: seepage, slope.	Severe: hard to pack.	Deep to water	Slope----------	Soil blowing---	Favorable.
Ar---------- Armenia	Slight---------	Severe: hard to pack, wetness.	Percs slowly, flooding.	Wetness, percs slowly.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
BaB---------- Badin	Moderate: seepage, depth to rock, slope.	Severe: thin layer.	Deep to water	Depth to rock, slope.	Depth to rock	Depth to rock.
BaD, BaE---------- Badin	Severe: slope.	Severe: thin layer.	Deep to water	Depth to rock, slope.	Slope, depth to rock.	Slope, depth to rock.
CcB---------- Cecil	Moderate: seepage, slope.	Severe: piping, hard to pack.	Deep to water	Slope----------	Favorable------	Soil blowing.
CcD---------- Cecil	Severe: slope.	Severe: piping, hard to pack.	Deep to water	Slope----------	Slope----------	Slope, soil blowing.
CeB2---------- Cecil	Moderate: seepage, slope.	Severe: piping, hard to pack.	Deep to water	Slope----------	Favorable------	Favorable.
CeD2---------- Cecil	Severe: slope.	Severe: piping, hard to pack.	Deep to water	Slope----------	Slope----------	Slope.
CfB*: Cecil----------	Moderate: seepage, slope.	Severe: piping, hard to pack.	Deep to water	Slope----------	Favorable------	Soil blowing.
Urban land.						
Ch---------- Chewacla	Moderate: seepage.	Severe: piping, hard to pack, wetness.	Flooding-------	Wetness, flooding.	Wetness--------	Wetness.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
CmB*:						
Cid	Moderate: depth to rock.	Severe: hard to pack.	Percs slowly, depth to rock.	Wetness, percs slowly.	Depth to rock, erodes easily, wetness.	Erodes easily, depth to rock, percs slowly.
Misenheimer	Severe: depth to rock.	Severe: thin layer, piping.	Depth to rock	Wetness, depth to rock.	Depth to rock, wetness.	Wetness, depth to rock.
Co Congaree	Moderate: seepage.	Severe: piping.	Flooding	Wetness	Erodes easily, wetness.	Erodes easily.
DaB Davidson	Moderate: seepage, slope.	Severe: hard to pack.	Deep to water	Slope	Favorable	Favorable.
DaD, DaE Davidson	Severe: slope.	Severe: hard to pack.	Deep to water	Slope	Slope	Slope.
EnB Enon	Moderate: slope.	Severe: hard to pack.	Deep to water	Slope, percs slowly, soil blowing.	Percs slowly, soil blowing.	Percs slowly.
EnD Enon	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, percs slowly, soil blowing.	Slope, percs slowly, soil blowing.	Slope, percs slowly.
ErB Enon	Moderate: slope.	Severe: hard to pack.	Deep to water	Percs slowly, slope.	Percs slowly	Percs slowly.
ErD Enon	Severe: slope.	Severe: hard to pack.	Deep to water	Percs slowly, slope.	Slope, percs slowly.	Slope, percs slowly.
EsD, EsE Enon	Severe: slope.	Severe: hard to pack.	Deep to water	Percs slowly, slope.	Slope, large stones, percs slowly.	Large stones, slope, percs slowly.
EuB*:						
Enon	Moderate: slope.	Severe: hard to pack.	Deep to water	Slope, percs slowly, soil blowing.	Percs slowly, soil blowing.	Percs slowly.
Urban land.						
GeB Georgeville	Moderate: slope, seepage.	Severe: hard to pack.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
GeD Georgeville	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
GnD, GnE 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.
HeB Herndon	Moderate: seepage, slope.	Severe: hard to pack.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
HeD Herndon	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
IrB Iredell	Moderate: slope.	Severe: hard to pack.	Percs slowly, slope.	Slope, wetness.	Wetness	Wetness, percs slowly.
KyB Kirksey	Moderate: seepage, depth to rock, slope.	Severe: piping.	Slope	Wetness, slope, erodes easily.	Erodes easily, wetness.	Erodes easily.
MeB Mecklenburg	Moderate: slope, seepage.	Severe: hard to pack.	Deep to water	Percs slowly, slope.	Percs slowly	Percs slowly.
MeD Mecklenburg	Severe: slope.	Severe: hard to pack.	Deep to water	Percs slowly, slope.	Slope, percs slowly.	Slope, percs slowly.
MeB2 Mecklenburg	Moderate: slope, seepage.	Severe: hard to pack.	Deep to water	Percs slowly, slope.	Percs slowly	Percs slowly.
MeD2 Mecklenburg	Severe: slope.	Severe: hard to pack.	Deep to water	Percs slowly, slope.	Slope, percs slowly.	Slope, percs slowly.
Ok Oakboro	Moderate: seepage, depth to rock.	Severe: piping, wetness.	Flooding	Wetness, flooding.	Wetness	Wetness.
PaB Pacolet	Moderate: seepage, slope.	Severe: piping.	Deep to water	Slope	Soil blowing	Favorable.
PaD, PaE, PaF Pacolet	Severe: slope.	Severe: piping.	Deep to water	Slope	Soil blowing, slope.	Slope.
Pt*. Pits						
PnB*: Poindexter	Severe: seepage.	Severe: piping, thin layer.	Deep to water	Slope, depth to rock.	Depth to rock	Depth to rock.
Zion	Moderate: seepage, depth to rock, slope.	Severe: thin layer.	Deep to water	Slope, droughty, soil blowing.	Depth to rock	Droughty.
PnD*, PnE*, PnF*: Poindexter	Severe: seepage, slope.	Severe: piping, thin layer.	Deep to water	Slope, depth to rock.	Slope, depth to rock.	Slope, depth to rock.
Zion	Severe: slope.	Severe: thin layer.	Deep to water	Slope, droughty, soil blowing.	Slope, depth to rock.	Slope, droughty.
PuD*: Poindexter	Severe: seepage, slope.	Severe: piping, thin layer.	Deep to water	Slope, depth to rock.	Slope, depth to rock.	Slope, depth to rock.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
PuD*: Zion	Severe: slope.	Severe: thin layer.	Deep to water	Slope, droughty, soil blowing.	Slope, depth to rock.	Slope, droughty.
Urban land.						
SfB--- Sedgefield	Moderate: seepage, slope.	Severe: hard to pack.	Percs slowly, slope.	Slope, wetness.	Wetness, soil blowing, percs slowly.	Wetness, percs slowly.
Ud. Udorthents						
Ur*. Urban land						
UwD, UwF--- Uwharrie	Severe: slope.	Severe: hard to pack.	Deep to water	Large stones, slope.	Slope, large stones.	Large stones, slope.
VaB--- Vance	Moderate: slope.	Severe: hard to pack.	Deep to water	Slope, percs slowly, soil blowing.	Percs slowly---	Percs slowly.
VaD--- Vance	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, percs slowly, soil blowing.	Slope, percs slowly.	Slope, percs slowly.
Wa--- Wahee	Slight---	Severe: wetness, hard to pack.	Percs slowly, flooding.	Wetness---	Wetness, percs slowly.	Wetness, percs slowly.
WeB--- Wedowee	Moderate: slope, seepage.	Severe: piping.	Deep to water	Slope---	Favorable---	Favorable.
WeD--- Wedowee	Severe: slope.	Severe: piping.	Deep to water	Slope---	Slope---	Slope.
WkB--- Wickham	Moderate: seepage, slope.	Severe: piping.	Deep to water	Slope---	Soil blowing---	Favorable.

* 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		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>3 inches	4	10	40	200		
	In				Pct					Pct	
AaA, AaB--------- Altavista	0-9	Fine sandy loam	ML, CL-ML, SM, SC-SM	A-4	0	95-100	90-100	65-99	35-60	<23	NP-7
	9-60	Clay loam, sandy clay loam, loam.	CL, CL-ML, SC, SC-SM	A-4, A-6, A-7	0	95-100	95-100	60-99	45-75	20-45	5-28
ApB-------------- Appling	0-9	Sandy loam-------	SM, SC-SM	A-2	0-5	86-100	80-100	55-91	15-35	<35	NP-7
	9-33	Sandy clay, clay loam, clay.	MH, ML, CL	A-7	0-5	95-100	90-100	70-95	51-80	41-74	15-30
	33-42	Sandy clay, clay loam, sandy clay loam.	SC, CL	A-4, A-6, A-7	0-5	95-100	85-100	70-90	40-75	25-45	8-22
	42-60	Variable---------	---	---	---	---	---	---	---	---	---
Ar--------------- Armenia	0-6	Silt loam--------	CL-ML, CL, ML	A-4, A-6, A-7-6	0-1	95-100	90-100	75-95	51-80	20-50	5-20
	6-11	Sandy loam, sandy clay loam, clay loam.	CL, SC	A-2, A-6, A-7	0-1	95-100	85-100	70-90	30-75	25-50	11-30
	11-43	Clay, silty clay, clay loam.	CH	A-7	0-1	95-100	95-100	85-100	65-95	55-100	30-70
	43-60	Sandy loam, sandy clay loam, clay loam.	SC, CL	A-2, A-4, A-6	0-5	85-100	75-100	55-90	30-70	25-40	7-20
BaB, BaD, BaE---- Badin	0-6	Channery silt loam.	ML, SM, SC-SM, GM	A-4, A-6, A-2-4	0-10	60-100	50-85	45-85	30-80	25-50	4-20
	6-24	Silty clay, silty clay loam, channery silty clay loam.	CL, CH, ML	A-6, A-7	0-5	65-100	60-100	55-100	50-98	30-65	15-35
	24-41	Weathered bedrock	---	---	---	---	---	---	---	---	---
	41-45	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
CcB, CcD--------- 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
	6-9	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
	9-58	Clay, clay loam	MH, ML	A-7, A-5	0-5	97-100	92-100	72-99	55-95	41-80	9-37
	58-72	Variable---------	---	---	---	---	---	---	---	---	---
CeB2, CeD2------- Cecil	0-5	Clay loam--------	SM, SC, CL, ML	A-4, A-6	0-5	75-100	75-100	68-95	38-81	21-35	3-15
	5-43	Clay, clay loam	MH, ML	A-7, A-5	0-5	97-100	92-100	72-99	55-95	41-80	9-37
	43-50	Variable---------	---	---	---	---	---	---	---	---	---
CfB*: Cecil----------	0-5	Sandy loam-------	SM, SC-SM	A-2, A-4	0-5	84-100	80-100	67-90	26-42	<30	NP-7
	5-9	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
	9-58	Clay, clay loam	MH, ML	A-7, A-5	0-5	97-100	92-100	72-99	55-95	41-80	9-37
Urban land.											

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>3 inches	4	10	40	200		
	In				Pct					Pct	
Ch---------- Chewacla	0-9	Loam----------	ML, CL, CL-ML	A-4, A-6, A-7	0	98-100	95-100	70-100	55-90	25-49	4-20
	9-15	Fine sandy loam, silty clay loam, clay loam.	ML, CL	A-4, A-6, A-7	0	96-100	95-100	80-100	51-98	30-49	4-22
	15-52	Sandy clay loam, loam, sandy loam.	SM, SC-SM, ML, CL	A-4, A-7-6, A-6	0	96-100	95-100	60-100	36-70	20-45	2-15
CmB*: Cid----------	0-12	Silt loam--------	SM, ML	A-4	0-5	90-100	80-100	65-85	35-75	<35	NP-10
	12-26	Silty clay loam, silty clay, clay.	ML, MH, CL, CH	A-7	0-5	90-100	80-100	75-100	60-98	45-70	15-36
	26-29	Channery silty clay, channery silty clay loam, silty clay.	ML, MH	A-7	0-10	65-100	60-100	55-95	50-85	45-70	15-36
	29-34	Weathered bedrock	---	---	---	---	---	---	---	---	---
	34-38	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Misenheimer-----	0-7	Channery silt loam.	GM, SM, ML	A-4, A-2-4	0-15	65-90	55-80	30-80	25-75	20-40	NP-10
	7-17	Channery silt loam, channery loam, channery silty clay loam.	GM, SM, ML	A-4, A-2-4, A-6, A-7	0-15	65-90	55-80	30-80	25-75	20-45	NP-15
	17-31	Weathered bedrock	---	---	---	---	---	---	---	---	---
	31-35	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Co---------- Congaree	0-10	Loam----------	CL-ML, ML, CL	A-4	0	95-100	95-100	70-100	51-90	20-35	3-10
	10-62	Silty clay loam, fine sandy loam, loam.	SC, ML, CL, SM	A-4, A-6, A-7	0	95-100	95-100	70-100	40-90	25-50	3-22
DaB, DaD, DaE---- Davidson	0-7	Loam----------	CL, CL-ML, ML	A-4, A-6	0	94-100	84-100	80-95	60-75	18-30	3-15
	7-72	Clay----------	CL, CH, ML, MH	A-7, A-6	0	96-100	95-100	85-100	65-85	35-65	12-33
EnB, EnD--------- Enon	0-8	Fine sandy loam	SM, SC-SM, SC	A-2-4, A-4	0-5	80-100	80-100	60-85	25-49	<30	NP-10
	8-34	Clay loam, clay	CH, CL	A-7-6	0-5	85-100	80-100	75-98	65-95	40-90	25-65
	34-60	Variable---------	---	---	---	---	---	---	---	---	---
ErB, ErD--------- Enon	0-7	Gravelly loam----	SM, SC-SM, SC, GM	A-2-4, A-4, A-6, A-2-6	2-10	60-95	55-90	30-65	20-50	<30	NP-12
	7-11	Sandy clay loam, clay loam, gravelly sandy clay loam.	CL	A-4, A-6	0-10	80-100	60-100	55-90	50-80	25-40	7-20
	11-30	Clay, clay loam	CH, CL	A-7-6	0-5	85-100	80-100	75-98	65-95	40-75	25-49
	30-60	Variable---------	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>3 inches	4	10	40	200		
	In				Pct					Pct	
EsD, EsE--------- Enon	0-6	Very stony loam	GM, GC, SM, SC	A-1, A-2-4	25-50	45-85	35-75	25-55	10-35	<30	NP-10
	6-9	Sandy clay loam, clay loam.	CL	A-4, A-6	5-10	80-100	80-100	70-90	50-80	25-40	7-20
	9-23	Clay, clay loam	CH, CL	A-7-6	0-10	85-100	80-100	65-98	55-95	40-75	25-49
	23-60	Variable---------	---	---	---	---	---	---	---	---	---
EuB*: Enon----------	0-8	Fine sandy loam	SM, SC-SM, SC	A-2-4, A-4	0-5	80-100	80-100	60-85	25-49	<30	NP-10
	8-34	Clay loam, clay	CH, CL	A-7-6	0-5	85-100	80-100	75-98	65-95	40-90	25-65
	34-60	Variable---------	---	---	---	---	---	---	---	---	---
Urban land.											
GeB, GeD--------- Georgeville	0-9	Silt loam--------	CL, ML	A-6, A-7, A-4	0-2	90-100	90-100	85-100	65-98	24-49	3-20
	9-49	Clay, silty clay, silty clay loam.	MH, ML	A-7	0-1	95-100	95-100	90-100	75-98	41-85	15-45
	49-60	Silty 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
GnD, GnE--------- Goldston	0-10	Very channery silt 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
	10-16	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
	16-22	Weathered bedrock	---	---	---	---	---	---	---	---	---
	22-26	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
HeB, HeD--------- Herndon	0-8	Silt loam--------	ML, CL, CL-ML	A-4, A-6	0-2	90-100	85-100	80-98	60-90	<36	NP-12
	8-64	Silty clay loam, silty clay, clay.	MH, ML, CL	A-7	0-1	98-100	90-100	80-99	70-98	41-70	13-40
	64-72	Silt loam, loam, fine sandy loam.	MH, ML	A-7, A-5	0-2	90-100	85-100	80-99	51-95	41-70	9-36
IrB--------- Iredell	0-7	Loam----------	ML, CL-ML, CL	A-4, A-6	0-1	99-100	95-100	80-95	51-70	25-38	5-12
	7-26	Clay----------	CH	A-7	0	99-100	60-100	60-100	55-95	54-115	29-85
	26-60	Variable---------	---	---	---	---	---	---	---	---	---
KyB--------- Kirksey	0-6	Silt loam--------	ML, CL-ML	A-4	0-2	90-100	88-100	80-95	70-90	15-40	NP-8
	6-36	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	20-50	7-26
	36-42	Silt loam, fine sandy loam, loam.	ML, CL-ML, CL	A-4, A-6	0-10	95-100	90-100	85-96	50-90	15-40	NP-12
	42-46	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
MeB, MeD--------- Mecklenburg	0-8	Loam----------	ML, SM, CL-ML, CL	A-4, A-6	0-5	90-100	80-100	65-90	36-65	20-40	NP-15
	8-25	Clay----------	CH, MH	A-7	0-5	90-100	85-100	80-100	75-95	51-75	20-43
	25-36	Loam, sandy clay loam, clay loam.	CL	A-4, A-6, A-7	0-5	90-100	85-100	80-100	50-80	25-49	8-25
	36-60	Variable---------	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>3 inches	4	10	40	200		
	In				Pct					Pct	
MeB2, MeD2--- Mecklenburg	0-5	Clay loam---	CL	A-6, A-7-6	0-5	90-100	90-100	80-100	50-80	25-49	11-25
	5-21	Clay---	CH, MH	A-7	0-5	90-100	85-100	80-100	75-95	51-75	20-43
	21-29	Loam, sandy clay loam, clay loam.	CL	A-4, A-6, A-7	0-5	90-100	85-100	80-100	50-80	25-49	8-25
	29-60	Variable---	---	---	---	---	---	---	---	---	---
Ok--- Oakboro	0-10	Silt loam---	ML, CL-ML, CL	A-4, A-6	0-15	96-100	95-100	85-100	60-90	<35	NP-15
	10-43	Loam, silt loam, silty clay loam.	ML, CL-ML, CL	A-4, A-6	0-15	96-100	95-100	85-100	70-95	<35	NP-15
	43-47	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
PaB, PaD, PaE, PaF--- Pacolet	0-7	Sandy loam---	SM, SC-SM	A-2, A-1-b, A-4	0-2	85-100	80-100	42-90	16-42	<28	NP-7
	7-24	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
	24-37	Clay loam, sandy clay loam, sandy 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
	37-60	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
Pt*. Pits											
PnB*, PnD*, PnE*, PnF*: Poindexter---	0-4	Sandy loam---	SM, SC, SC-SM	A-2, A-4	0	90-100	85-100	50-100	20-50	<25	NP-10
	4-13	Clay loam, sandy clay loam, gravelly loam.	SC, CL	A-6	0	90-100	50-100	45-100	35-85	30-40	11-20
	13-36	Silty clay loam, loam, gravelly sandy loam.	SM, ML, CL-ML, SC-SM	A-2, A-4	0	90-100	50-100	45-95	30-70	<20	NP-5
	36-42	Weathered bedrock	---	---	---	---	---	---	---	---	---
Zion---	0-5	Sandy loam---	SM, SC, SC-SM	A-2, A-4	0-5	85-100	85-100	50-100	20-50	<25	NP-10
	5-23	Clay, silty clay, clay loam.	CH, CL	A-7	0	95-100	90-100	85-100	80-95	41-80	20-50
	23-33	Gravelly clay, clay loam, clay.	CH, SC, GC	A-7	0-20	55-95	45-95	40-90	36-85	50-70	30-40
	33-39	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
PuD*: Poindexter---	0-4	Sandy loam---	SM, SC, SC-SM	A-2, A-4	0	90-100	85-100	50-100	20-50	<25	NP-10
	4-13	Clay loam, sandy clay loam, gravelly loam.	SC, CL	A-6	0	90-100	50-100	45-100	35-85	30-40	11-20
	13-36	Silty clay loam, loam, gravelly sandy loam.	SM, ML, CL-ML, SC-SM	A-2, A-4	0	90-100	50-100	45-95	30-70	<20	NP-5
	36-42	Weathered bedrock	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>3 inches	4	10	40	200		
	In				Pct					Pct	
PuD*:											
Zion	0-5	Sandy loam	SM, SC, SC-SM	A-2, A-4	0-5	85-100	85-100	50-100	20-50	<25	NP-10
	5-23	Clay, silty clay, silty clay loam.	CH, CL	A-7	0	95-100	90-100	85-100	80-95	41-80	20-50
	23-33	Gravelly clay, clay loam, clay.	CH, SC, GC	A-7	0-20	55-95	45-95	40-90	36-85	50-70	30-40
	33-39	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Urban land.											
SfB	0-12	Sandy loam	SM, SC, ML, CL	A-2, A-4, A-6	0-5	90-100	85-100	50-100	30-60	<35	NP-12
Sedgefield	12-30	Sandy clay, clay loam, clay.	CL, CH	A-7	0-5	95-100	95-100	73-93	60-85	45-85	25-60
	30-35	Sandy loam, sandy clay loam, clay loam.	SC, CL	A-6, A-7, A-4	0-5	95-100	90-100	60-90	36-65	20-45	8-25
	35-60	Variable	---	---	---	---	---	---	---	---	---
Ud.											
Udorthents											
Ur*.											
Urban land											
UwD, UwF	0-4	Stony silt loam	ML, CL, CL-ML	A-4	15-35	90-100	85-100	65-100	51-98	<40	NP-10
Uwharrie	4-8	Silt loam, silty clay loam, clay loam.	ML, MH	A-4, A-6, A-7	0-30	75-100	65-100	60-100	51-98	32-61	4-28
	8-36	Silty clay, clay loam, clay.	MH, ML, CL, CH	A-7	0-10	95-100	95-100	70-100	60-95	40-80	20-40
	36-70	Silty clay, clay loam, silt loam.	CL, ML, CL-ML	A-4, A-6, A-7	0-10	95-100	95-100	70-95	60-95	25-48	6-20
	70-99	Variable	---	---	---	---	---	---	---	---	---
VaB, VaD	0-9	Sandy loam	SM, SC-SM	A-2, A-4	0-5	90-100	80-100	55-80	15-40	<27	NP-7
Vance	9-33	Clay loam, sandy clay, clay.	CH	A-7	0-5	95-100	90-100	75-95	65-80	51-80	25-48
	33-60	Variable	---	---	---	---	---	---	---	---	---
Wa	0-5	Loam	ML, CL-ML, CL	A-4	0	100	100	90-98	51-75	20-35	2-10
Wahee	5-46	Clay, clay loam, sandy clay loam.	CL, CH	A-6, A-7	0	100	100	85-100	51-92	38-81	16-54
	46-60	Variable	---	---	---	---	---	---	---	---	---
WeB, WeD	0-9	Sandy loam	SM, SC-SM	A-4, A-2-4	0	95-100	90-100	50-99	23-50	<30	NP-6
Wedowee	9-25	Sandy clay, clay loam, clay.	SC, ML, CL, MH	A-6, A-7	0	95-100	95-100	65-97	45-75	30-58	10-30
	25-60	Sandy clay loam, clay loam, sandy loam.	SC, SC-SM, CL, CL-ML	A-2, A-4, A-6	0	80-100	70-100	60-80	30-60	20-35	5-15
WkB	0-7	Fine sandy loam	SM, SC-SM, ML, CL-ML	A-4	0	95-100	90-100	70-100	45-80	<25	NP-7
Wickham	7-60	Sandy clay loam, clay loam, 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

* 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 "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		Organic matter
								K	T	
	In	Pct	g/cc	In/hr	In/in	pH				Pct
AaA, AaB--------- Altavista	0-9 9-60	10-24 18-35	1.30-1.50 1.30-1.50	2.0-6.0 0.6-2.0	0.12-0.20 0.12-0.20	4.5-6.5 4.5-6.0	Low---------- Low----------	0.24 0.24	5	.5-3
ApB-------------- Appling	0-9 9-33 33-42 42-60	5-20 35-60 20-50 ---	1.40-1.65 1.25-1.45 1.25-1.45 ---	2.0-6.0 0.6-2.0 0.6-2.0 ---	0.10-0.15 0.15-0.17 0.12-0.16 ---	4.5-6.0 4.5-5.5 4.5-5.5 ---	Low---------- Low---------- Low---------- ----------	0.24 0.28 0.28 ----	4	.5-2
Ar--------------- Armenia	0-6 6-11 11-43 43-60	10-27 15-40 35-60 15-30	1.20-1.50 1.30-1.60 1.20-1.50 1.30-1.60	0.6-2.0 0.06-0.6 0.06-0.2 0.2-0.6	0.16-0.24 0.12-0.20 0.12-0.20 0.10-0.18	5.6-7.3 6.1-7.8 6.1-7.8 6.1-7.8	Low---------- Moderate----- High--------- Low----------	0.37 0.28 0.20 0.28	5	1-4
BaB, BaD, BaE---- Badin	0-6 6-24 24-41 41-45	10-27 35-55 --- ---	1.40-1.60 1.30-1.50 --- ---	0.6-2.0 0.6-2.0 --- ---	0.14-0.20 0.14-0.19 --- ---	3.6-6.5 4.5-5.5 --- ---	Low---------- Moderate----- ---------- ----------	0.15 0.24 ---- ----	2	1-3
CcB, CcD--------- Cecil	0-6 6-9 9-58 58-72	5-20 20-35 35-70 ---	1.30-1.50 1.30-1.50 1.30-1.50 ---	2.0-6.0 0.6-2.0 0.6-2.0 ---	0.12-0.14 0.13-0.15 0.13-0.15 ---	4.5-6.5 4.5-5.5 4.5-5.5 ---	Low---------- Low---------- Low---------- ----------	0.28 0.28 0.28 ----	4	.5-2
CeB2, CeD2------- Cecil	0-5 5-43 43-50	20-35 35-70 ---	1.30-1.50 1.30-1.50 ---	0.6-2.0 0.6-2.0 ---	0.13-0.15 0.13-0.15 ---	4.5-6.5 4.5-5.5 ---	Low---------- Low---------- ----------	0.28 0.28 ----	3	.5-1
CfB*: Cecil----------- Urban land.	0-5 5-9 9-58	5-20 20-35 35-70	1.30-1.50 1.30-1.50 1.30-1.50	2.0-6.0 0.6-2.0 0.6-2.0	0.12-0.14 0.13-0.15 0.13-0.15	4.5-6.0 4.5-5.5 4.5-5.5	Low---------- Low---------- Low----------	0.28 0.28 0.28	4	.5-2
Ch--------------- Chewacla	0-9 9-15 15-52	10-35 18-35 18-35	1.30-1.60 1.30-1.50 1.30-1.60	0.6-2.0 0.6-2.0 0.6-2.0	0.15-0.24 0.15-0.24 0.12-0.20	5.1-6.5 4.5-6.5 5.1-7.3	Low---------- Low---------- Low----------	0.28 0.32 0.28	5	1-4
CmB*: Cid------------- Misenheimer----- Co--------------- Congaree	0-12 12-26 26-29 29-34 34-38 0-7 7-17 17-31 31-35 0-10 10-62	10-25 35-60 35-60 --- --- 7-27 7-35 --- --- 10-25 18-35	1.35-1.60 1.25-1.55 1.25-1.55 --- --- 1.40-1.60 1.40-1.60 --- --- 1.20-1.40 1.20-1.50	0.6-2.0 0.06-0.2 0.06-0.2 --- --- 0.6-6.0 0.6-6.0 --- --- 0.6-2.0 0.6-2.0	0.14-0.20 0.12-0.18 0.12-0.18 --- --- 0.12-0.18 0.12-0.18 --- --- 0.12-0.20 0.12-0.20	4.5-5.5 4.5-5.5 4.5-5.5 --- --- 4.5-5.5 4.5-5.5 --- --- 4.5-7.3 4.5-7.3	Low---------- Moderate----- Moderate----- ---------- ---------- Low---------- Low---------- ---------- ---------- Low---------- Low----------	0.37 0.28 0.28 ---- ---- 0.15 0.15 ---- ---- 0.37 0.37	2 1 5	.5-2 .5-1 <4
DaB, DaD, DaE---- Davidson	0-7 7-72	15-27 40-75	1.30-1.55 1.20-1.50	0.6-2.0 0.6-2.0	0.14-0.18 0.12-0.16	4.5-6.5 4.5-6.5	Low---------- Low----------	0.28 0.24	5	.5-2

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		Organic matter
								K	T	
	In	Pct	g/cc	In/hr	In/in	pH				Pct
EnB, EnD	0-8	5-15	1.45-1.65	2.0-6.0	0.11-0.15	5.6-7.3	Low	0.24	3	.5-2
Enon	8-34	35-60	1.20-1.40	0.06-0.2	0.12-0.16	5.1-7.8	High	0.28		
	34-60	---	---	---	---	---				
ErB, ErD	0-7	5-20	1.45-1.65	2.0-6.0	0.08-0.15	5.6-7.3	Low	0.15	3	.5-2
Enon	7-11	20-35	1.30-1.50	0.6-2.0	0.12-0.15	6.1-7.3	Low	0.24		
	11-30	35-60	1.20-1.40	0.06-0.2	0.12-0.15	6.1-7.8	High	0.28		
	30-60	---	---	---	---	---				
EsD, EsE	0-6	5-20	1.45-1.65	2.0-6.0	0.06-0.11	5.6-7.3	Low	0.10	3	.5-2
Enon	6-9	20-35	1.30-1.50	0.6-2.0	0.12-0.15	6.1-7.3	Low	0.24		
	9-23	35-60	1.20-1.40	0.06-0.2	0.12-0.16	6.1-7.8	High	0.28		
	23-60	---	---	---	---	---				
EuB*:										
Enon	0-8	5-15	1.45-1.65	2.0-6.0	0.11-0.15	5.6-7.3	Low	0.24	3	.5-2
	8-34	35-60	1.20-1.40	0.06-0.2	0.12-0.16	5.1-7.8	High	0.28		
	34-60	---	---	---	---	---				
Urban land.										
GeB, GeD	0-9	27-35	1.20-1.40	0.6-2.0	0.13-0.18	4.5-6.5	Low	0.49	4	<.5
Georgeville	9-49	35-65	1.20-1.40	0.6-2.0	0.13-0.18	4.5-5.5	Low	0.28		
	49-60	15-40	1.20-1.40	0.6-2.0	0.05-0.10	4.5-5.5	Low	0.32		
GnD, GnE	0-10	5-15	1.40-1.60	2.0-6.0	0.06-0.12	4.5-6.0	Low	0.05	1	.5-2
Goldston	10-16	5-27	1.40-1.60	2.0-6.0	0.06-0.12	3.6-5.5	Low	0.05		
	16-22	---	---	---	---	---				
	22-26	---	---	---	---	---				
HeB, HeD	0-8	5-27	1.20-1.40	0.6-2.0	0.14-0.20	4.5-6.5	Low	0.43	5	.5-1
Herndon	8-64	35-60	1.30-1.60	0.6-2.0	0.13-0.18	3.6-5.5	Low	0.28		
	64-72	10-30	1.20-1.40	0.6-2.0	0.05-0.08	3.6-5.5	Low	0.32		
IrB	0-7	15-35	1.20-1.40	0.6-2.0	0.14-0.17	6.1-7.3	Low	0.32	3	.5-2
Iredell	7-26	40-60	1.20-1.45	0.06-0.2	0.16-0.22	5.6-7.8	Very high	0.20		
	26-60	---	---	---	---	---				
KyB	0-6	4-20	1.20-1.40	0.6-2.0	0.15-0.22	4.5-6.5	Low	0.43	3	.5-2
Kirksey	6-36	18-35	1.20-1.40	0.2-0.6	0.12-0.18	4.5-5.5	Low	0.43		
	36-42	5-25	1.20-1.40	0.6-2.0	0.11-0.15	4.5-5.5	Low	0.43		
	42-46	---	---	---	---	---				
MeB, MeD	0-8	8-25	1.30-1.50	0.6-2.0	0.14-0.19	5.6-7.3	Low	0.24	4	.5-2
Mecklenburg	8-25	40-60	1.40-1.60	0.06-0.2	0.12-0.14	5.6-7.3	Moderate	0.28		
	25-36	20-35	1.40-1.60	0.6-2.0	0.12-0.14	5.6-7.3	Low	0.32		
	36-60	---	---	---	---	---				
MeB2, MeD2	0-5	20-35	1.40-1.60	0.6-2.0	0.12-0.14	5.6-7.3	Low	0.28	2	.5-1
Mecklenburg	5-21	40-60	1.40-1.60	0.06-0.2	0.12-0.14	5.6-7.3	Moderate	0.28		
	21-29	20-35	1.40-1.60	0.6-2.0	0.12-0.14	5.6-7.3	Low	0.32		
	29-60	---	---	---	---	---				
Ok	0-10	10-27	1.30-1.50	0.6-2.0	0.15-0.20	4.5-7.3	Low	0.28	3	1-4
Oakboro	10-43	18-35	1.30-1.50	0.6-2.0	0.15-0.25	4.5-6.5	Low	0.28		
	43-47	---	---	---	---	---				
PaB, PaD, PaE, PaF	0-7	8-20	1.00-1.50	2.0-6.0	0.08-0.12	4.5-6.0	Low	0.20	3	.5-2
Pacolet	7-24	35-65	1.30-1.50	0.6-2.0	0.12-0.15	4.5-6.0	Low	0.28		
	24-37	15-30	1.20-1.50	0.6-2.0	0.08-0.15	4.5-6.0	Low	0.28		
	37-60	10-25	1.20-1.50	0.6-2.0	0.08-0.15	4.5-6.0	Low	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		Organic matter
								K	T	
	In	Pct	g/cc	In/hr	In/in	pH				Pct
Pt*.										
Pits										
PnB*, PnD*, PnE*, PnF*:										
Poindexter	0-4	5-18	1.30-1.55	2.0-6.0	0.08-0.15	5.1-7.3	Low	0.28	3	.5-2
	4-13	20-35	1.35-1.45	0.6-2.0	0.13-0.19	5.1-7.3	Low	0.24		
	13-36	10-35	1.30-1.55	0.6-6.0	0.08-0.15	5.1-7.3	Low	0.24		
	36-42	---	---	0.0-0.06	---	---				
Zion	0-5	5-18	1.30-1.55	2.0-6.0	0.08-0.15	5.1-7.3	Low	0.28	2	.5-2
	5-23	35-60	1.20-1.50	0.06-0.6	0.10-0.19	5.1-7.3	High	0.28		
	23-33	35-50	1.30-1.60	0.2-2.0	0.07-0.15	5.6-7.3	High	0.17		
	33-39	---	---	0.0-0.01	---	---				
PuD*:										
Poindexter	0-4	5-18	1.30-1.55	2.0-6.0	0.08-0.15	5.1-7.3	Low	0.28	3	.5-2
	4-13	20-35	1.35-1.45	0.6-2.0	0.13-0.19	5.1-7.3	Low	0.24		
	13-36	10-35	1.30-1.55	0.6-6.0	0.08-0.15	5.1-7.3	Low	0.24		
	36-42	---	---	0.0-0.06	---	---				
Zion	0-5	5-18	1.30-1.55	2.0-6.0	0.08-0.15	5.1-7.3	Low	0.28	2	.5-2
	5-23	35-60	1.20-1.50	0.06-0.6	0.10-0.19	5.1-7.3	High	0.28		
	23-33	35-50	1.30-1.60	0.2-2.0	0.07-0.15	5.6-7.3	High	0.17		
	33-39	---	---	0.0-0.01	---	---				
Urban land.										
SfB	0-12	8-20	1.40-1.60	2.0-6.0	0.10-0.15	5.1-6.5	Low	0.28	3	.5-2
Sedgefield	12-30	35-60	1.25-1.40	0.06-0.2	0.14-0.18	5.1-6.5	High	0.28		
	30-35	10-35	1.35-1.50	0.6-2.0	0.12-0.15	5.6-7.8	Moderate	0.28		
	35-60	---	---	---	---	---				
Ud.										
Udorthents										
Ur*.										
Urban land										
UwD, UwF	0-4	10-35	1.20-1.50	0.6-2.0	0.08-0.12	4.5-6.0	Low	0.20	4	.2-5
Uwharrie	4-8	10-35	1.20-1.50	0.6-2.0	0.10-0.16	4.5-6.0	Low	0.28		
	8-36	35-75	1.25-1.55	0.6-2.0	0.12-0.16	4.5-6.0	Moderate	0.28		
	36-70	15-60	1.30-1.60	0.6-2.0	0.12-0.16	4.5-6.0	Moderate	0.28		
	70-99	---	---	---	---	---				
VaB, VaD	0-9	8-20	1.45-1.70	2.0-6.0	0.10-0.14	4.5-6.0	Low	0.24	3	.5-2
Vance	9-33	35-60	1.25-1.40	0.06-0.2	0.12-0.15	4.5-5.5	Moderate	0.28		
	33-60	---	---	---	---	---				
Wa	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
Wahee	5-46	35-60	1.40-1.60	0.06-0.2	0.12-0.20	3.6-5.5	Moderate	0.28		
	46-60	---	---	---	---	---				
WeB, WeD	0-9	5-20	1.25-1.60	2.0-6.0	0.10-0.18	4.5-6.5	Low	0.24	3	<1
Wedowee	9-25	35-45	1.30-1.50	0.6-2.0	0.12-0.18	4.5-5.5	Low	0.28		
	25-60	15-30	1.20-1.50	0.6-2.0	0.08-0.15	4.5-5.5	Low	0.28		
WkB	0-7	8-15	1.45-1.65	2.0-6.0	0.11-0.16	4.5-6.5	Low	0.24	5	.5-2
Wickham	7-60	18-35	1.30-1.50	0.6-2.0	0.12-0.17	4.5-6.5	Low	0.24		

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 16.--SOIL AND WATER FEATURES

("Flooding" and "water table" and terms such as "brief," "apparent," and "perched" are explained in the text. The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

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			
AaA---------- Altavista	C	Occasional	Very brief	Mar-Jul	1.5-2.5	Apparent	Dec-Apr	>60	---	Moderate	Moderate.
AaB---------- Altavista	C	None--------	---	---	1.5-2.5	Apparent	Dec-Apr	>60	---	Moderate	Moderate.
ApB---------- Appling	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
Ar---------- Armenia	D	Occasional	Brief-----	Dec-Apr	0.5-1.5	Apparent	Dec-Apr	>60	---	High-----	Low.
BaB, BaD, BaE----- Badin	B	None--------	---	---	>6.0	---	---	20-40	Soft	High-----	High.
CcB, CcD, CeB2, CeD2---------- Cecil	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
CfB*: Cecil----------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
Urban land.											
Ch---------- Chewacla	C	Frequent----	Brief to long.	Nov-Apr	0.5-1.5	Apparent	Nov-Apr	>60	---	High-----	Moderate.
CmB*: Cid----------	C	None--------	---	---	1.5-2.5	Perched	Dec-May	20-40	Hard	High-----	High.
Misenheimer------	C	None--------	---	---	1.0-1.5	Perched	Dec-Apr	10-20	Soft	High-----	High.
Co---------- Congaree	B	Occasional	Brief-----	Nov-Apr	2.5-4.0	Apparent	Nov-Apr	>60	---	Moderate	Moderate.
DaB, DaD, DaE----- Davidson	B	None--------	---	---	>6.0	---	---	>60	---	High-----	Moderate.
EnB, EnD, ErB, ErD, EsD, EsE---- Enon	C	None--------	---	---	>6.0	---	---	>60	---	High-----	Moderate.
EuB*: Enon----------	C	None--------	---	---	>6.0	---	---	>60	---	High-----	Moderate.
Urban land.											
GeB, GeD---------- Georgeville	B	None--------	---	---	>6.0	---	---	>60	---	High-----	High.
GnD, GnE---------- Goldston	C	None--------	---	---	>6.0	---	---	10-20	Soft	Moderate	High.
HeB, HeD---------- Herndon	B	None--------	---	---	>6.0	---	---	>60	---	High-----	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			
IrB---------- Iredell	C/D	None--------	---	---	1.0-2.0	Perched	Dec-Apr	>60	---	High-----	Low.
KyB---------- Kirksey	C	None--------	---	---	1.5-3.0	Perched	Dec-Mar	40-60	Hard	Moderate	High.
MeB, MeD, MeB2, MeD2---------- Mecklenburg	C	None--------	---	---	>6.0	---	---	>60	---	High-----	Moderate.
Ok---------- Oakboro	C	Frequent----	Brief-----	Nov-Apr	1.0-2.0	Apparent	Dec-Apr	40-60	Hard	High-----	Moderate.
PaB, PaD, PaE, PaF---------- Pacolet	B	None--------	---	---	>6.0	---	---	>60	---	High-----	High.
Pt*. Pits											
PnB*, PnD*, PnE*, PnF*:											
Poindexter------	B	None--------	---	---	>6.0	---	---	20-40	Soft	Moderate	Moderate.
Zion----------	C	None--------	---	---	>6.0	---	---	20-40	Hard	High-----	Moderate.
PuD*:											
Poindexter-------	B	None--------	---	---	>6.0	---	---	20-40	Soft	Moderate	Moderate.
Zion----------	C	None--------	---	---	>6.0	---	---	20-40	Hard	High-----	Moderate.
Urban land.											
SfB---------- Sedgefield	C	None--------	---	---	1.0-1.5	Perched	Jan-Mar	>60	---	High-----	Moderate.
Ud. Udorthents											
Ur*. Urban land											
UwD, UwF---------- Uwharrie	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
VaB, VaD---------- Vance	C	None--------	---	---	>6.0	---	---	>60	---	High-----	High.
Wa---------- Wahee	D	Occasional	Very brief to brief.	Dec-Apr	0.5-1.5	Apparent	Dec-Mar	>60	---	High-----	High.
WeB, WeD---------- Wedowee	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	High.
WkB---------- Wickham	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	High.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 17.--ENGINEERING INDEX TEST DATA

(Dashes indicate that data were not available. The soils are the typical pedons for the series in the survey area. For the location of the pedons, see the section "Soil Series and Their Morphology")

Soil name, report number, horizon, and depth in inches	Classification		Grain-size distribution: Percentage passing sieve-- No. 4	No. 10	No. 40	No. 200	Percentage smaller than-- .02 mm	.005 mm	.002 mm	Liquid limit	Plasticity index	Moisture density: Maximum dry density	Optimum moisture
	Unified	AASHTO								Pct		Lb/ft^3	
Altavista fine sandy loam*:													
(S80NC-057-001)													
Ap---- 0 to 9	CL-ML	A-4(0)	99	98	87	52	32	21	14	20	5	120.0	10.9
Bt1--- 9 to 24	CL	A-7-6(20)	100	98	87	63	49	41	36	42	24	112.1	15.9
BC---- 47 to 60	CL	A-6(6)	99	97	85	52	37	30	27	35	18	117.8	13.0
Armenia silt loam:													
(S80NC-057-002)													
A------ 0 to 6	ML	A-7-5(10)	100	100	93	60	33	14	6	49	19	86.3	28.2
Btg1--- 11 to 19	CH	A-7-6(20)	100	100	91	70	57	50	44	67	47	105.6	20.4
C------ 51 to 60	SC	A-2-4(0)	100	100	79	32	16	11	8	30	7	121.7	14.0
Badin channery silt loam:													
(S80NC-057-003)													
Ap----- 0 to 6	SM	A-5(1)	60	52	47	45	38	19	8	49	4	21.0	---
Bt----- 9 to 20	MH	A-7-5(20)	100	99	96	91	83	57	36	51	21	24.0	---
Congaree loam:													
(S80NC-057-004)													
Ap----- 0 to 10	ML	A-4(4)	100	100	100	70	39	22	13	34	6	102.3	20.0
C2----- 14 to 32	CL	A-4(4)	100	100	100	65	38	26	17	31	9	112.4	14.9
C4----- 46 to 62	ML	A-4(1)	100	100	99	52	31	24	19	29	5	113.0	14.4
Kirksey silt loam:													
(S80NC-057-005)													
E------ 2 to 6	ML	A-4(7)	99	98	95	90	77	31	15	32	7	99.6	19.3
Bt1---- 6 to 19	ML	A-4(7)	99	98	96	94	81	36	22	31	7	104.2	18.5
BC----- 27 to 36	CL	A-7-6(20)	100	100	88	84	73	43	28	50	26	107.3	17.3
Wahee loam**:													
(S80NC-057-006)													
A------ 0 to 5	ML	A-4(5)	100	100	94	67	45	25	14	35	9	94.7	20.5
Btg1--- 15 to 31	CH	A-7-6(20)	100	100	99	92	80	71	63	81	52	91.6	26.7
Cg----- 46 to 60	CH	A-7-6(20)	100	100	98	89	74	52	38	53	28	95.1	23.8

* The content of clay in the Bt horizon is slightly higher than that allowed for the series. This difference does not affect use, management, or interpretations.

** The content of clay, liquid limit, and plasticity index are somewhat higher than normal for the series. This difference does not affect use, management, or interpretations.

TABLE 18.--CLASSIFICATION OF THE SOILS

(An asterisk in the first column indicates that the soil is a taxadjunct to the series. See text for a description of those characteristics of the soil that are outside the range of the series)

Soil name	Family or higher taxonomic class
Altavista	Fine-loamy, mixed, thermic Aquic Hapludults
Appling	Clayey, kaolinitic, thermic Typic Kanhapludults
Armenia	Fine, montmorillonitic, thermic Typic Argiaquolls
Badin	Clayey, mixed, thermic Typic Hapludults
Cecil	Clayey, kaolinitic, thermic Typic Kanhapludults
Chewacla	Fine-loamy, mixed, thermic Fluvaquentic Dystrochrepts
Cid	Clayey, mixed, thermic Aquic Hapludults
Congaree	Fine-loamy, mixed, nonacid, thermic Typic Udifluvents
Davidson	Clayey, kaolinitic, thermic Rhodic Kandiudults
Enon	Fine, mixed, thermic Ultic Hapludalfs
Georgeville	Clayey, kaolinitic, thermic Typic Hapludults
Goldston	Loamy-skeletal, siliceous, thermic, shallow Typic Dystrochrepts
Herndon	Clayey, kaolinitic, thermic Typic Hapludults
Iredell	Fine, montmorillonitic, thermic Typic Hapludalfs
Kirksey	Fine-silty, siliceous, thermic Aquic Hapludults
Mecklenburg	Fine, mixed, thermic Ultic Hapludalfs
Misenheimer	Loamy, siliceous, thermic, shallow Aquic Dystrochrepts
Oakboro	Fine-loamy, mixed, thermic Fluvaquentic Dystrochrepts
Pacolet	Clayey, kaolinitic, thermic Typic Kanhapludults
Poindexter	Fine-loamy, mixed, thermic Typic Hapludalfs
Sedgefield	Fine, mixed, thermic Aquultic Hapludalfs
Udorthents	Udorthents
Uwharrie	Clayey, mixed, thermic Typic Hapludults
Vance	Clayey, mixed, thermic Typic Hapludults
*Wahee	Clayey, mixed, thermic Aeric Endoaquults
Wedowee	Clayey, kaolinitic, thermic Typic Kanhapludults
Wickham	Fine-loamy, mixed, thermic Typic Hapludults
Zion	Fine, mixed, thermic Ultic Hapludalfs

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